

1-1-2007

An ontological turn: reconceptualizing a teacher education course using a realist framework.

Gordon L. Brown
University of Wollongong, gbrown@uow.edu.au

Follow this and additional works at: <https://ro.uow.edu.au/edupapers>



Part of the [Education Commons](#)

Recommended Citation

Brown, Gordon L.: An ontological turn: reconceptualizing a teacher education course using a realist framework. 2007, 1-20.
<https://ro.uow.edu.au/edupapers/576>

The Ontological Turn: Reconceptualising a Teacher Education Course using a Realist Framework

Gordon Brown
University of Wollongong

Abstract

It is a truism that teaching and teacher education in Australia and elsewhere is under increasing scrutiny and pressure. Stakeholders like governments, school systems and media commentators make their views well known within a policy framework of tightening university budgets, increasing accountability (of teachers and universities), market forces and more stringent expectations of teaching. The advent of a course review of a teacher education course at the University of Wollongong in this context has presented an opportunity to re-think some fundamental assumptions of both the existing mainstream primary teacher education course and a smaller scale alternative course run within the Faculty of Education there.

Briefly, the existing mainstream course is modeled on the general liberal arts degree structure that is widely used. The alternative mode is known as the Knowledge Building Community (or KBC). Both of these modes embody assumptions (more deliberately so in the case of the KBC) about learning, knowledge, pedagogy and other aspects of teacher education, and the KBC makes its point of difference from the mainstream in applying theories clustered around student-centred learning environments, such as problem-based learning, situated cognition, school-based learning and so on. The model arising out of the present course review critiques the positions of both these models, roughly and respectively being positivist and constructivist approaches. Instead, it posits a realist, specifically a critical realist, view of knowledge and social explanation. Here, the starting point is neither the subject (as in traditional models) nor the learner (as in constructivist models) but the learning environment (the ontology), which is defined as the circumstances that enable and constrain learning. This became a focus for reconceptualising teacher education within the constraints given above and, we will argue, for reconceptualising the work of teachers.

Introduction

This paper reports on the development of a teacher education program that marks a departure from both a traditional university liberal arts-style course and a semi-integrated student-centred learning environment-style course. The course development project has taken place in the context of pressures and influences, both internal and external to the Faculty, that have emerged during the life of the present program:

- external reviews of teacher education and related fields, e.g. MACQT (1998), Ramsey (2000), Vinson (2002), DEST (2003) and the current federal Australian review of teacher education (TE) announced February 2005;
- research developments in education and TE education in particular, e.g. Jonassen & Land (2000a), Hoban (2005);
- the advent of the NSW Institute of Teachers (NSWIT), which has produced a set of Professional Teaching Standards to which our graduates must conform;

- the Quality Teaching initiative of the NSW Department of Education and Training (DET), the largest employer of our graduates;
- developments in the research and practice of teacher and other professional education, including the trend to four years as the standard length of program;
- the Knowledge Building Community (KBC) program within our Faculty, as an alternative to the mainstream program, and an instance of a development of teacher education practice and application of teacher education research; and
- further increase in public, political and media scrutiny of teacher education and school and university education more generally.

We will argue that this project responds to each of these pressures and offers both practical and theoretical opportunities.

The mainstream program

The majority of primary TE students in the faculty study within what has become known as the 'mainstream' program after the advent of the Knowledge Building Community (KBC) program. It is a three year Bachelor of Teaching program with an optional one year conversion to a Bachelor of Education qualification. The mainstream program is successful on a number of measures: the course is accredited, it handles a large intake of about 150 students per year, it is well supported by school systems and a large number of schools, and the rates of graduate satisfaction and graduate employment compare more than favourably with equivalent courses elsewhere. In the 2005 national Australian analysis of student exit surveys the faculty scored highest across the university, which itself scored highest across the nation.

Nonetheless, a number of reports and research papers present criticisms of courses like this one that resonate with feedback from faculty, students and schools. Hoban (2005a, p. 13) cites US research by Tom (1997) that lists common concerns with conventional TE programs:

- unclear program goals;
- fragmented courses which lack relevance and coherence;
- incoherence between courses from different faculties;
- discontinuities between university courses and school practice;
- unclear career path of teachers and their role in practicum supervision;
- independent department structures in faculties of education that promote a lack of collaboration;
- low status of teacher educators within a faculty of education;
- too many stakeholders involved in teacher education;
- lack of planning for implementing change strategies; and
- vulnerability of teacher education to one-off reforms.

This is consistent with recent Australian reviews. For example:

A major theme of this report ... has been the need for sustained critical reflection on teaching practices by teachers, operating as professional communities and nurtured by appropriate forms of professional development. It follows that novice teachers need more than assistance with the mechanics of instruction and classroom management techniques, although the importance in this day and age of those attributes can hardly be over-stated. In addition, the teacher in preparation needs theoretical understandings (particularly those of a kind that bring into question the assumed 'commonsense' of professional and classroom practice), a range of inquiry orientations, and openness to ways of thinking about teaching, schooling and society...[T]he complaint of many novice teachers [is] that they have received little pre-service assistance with practical challenges like managing a class, understanding and managing the DET's reporting requirements, and establishing a working partnership with their students' parents. (Vinson 2002, p.98)

Consistent with this argument is Ramsey's (2000) view that 'compared with other professions, student teachers spend minimal amounts of time in schools and other educational settings. Also, what they do there is of doubtful value' (p. 10). Again there is the call for a more central and authentic role for the school setting and better coordination of the whole, including content covered on campus.

While student feedback in the faculty is generally positive, where it is adverse it reflects these findings: differences in approach between the curriculum subjects were sometimes confusing, the practical application of the foundation subjects was sometimes unclear, the selection of electives was pragmatic (usually for timetable fit) rather than useful, and the practicum experiences were (are) highly variable in quality and content, and too different a culture from study on campus. While most TE students found their practicum useful (and often more so than studies on campus), they did report a variety of less than satisfactory experiences over which we have little control in the present model, such as teachers who have no programs, or omit a KLA, or make it clear they are waiting for retirement.

At the same time, there are models of TE that address such issues (for example in Hoban 2005). Hoban argues the value of a unifying framework, and suggests a meta-framework for use in planning TE courses. He synthesises TE research to argue for four types of links 'that underpin the conceptual framework proposed for TE design' (2005a, p. 14):

- conceptual links across the program;
- theory-practice links between school and university settings;
- social-cultural links amongst participants in the program; and
- personal links that shape the identity of teacher educators.

The KBC Program

The KBC program is a development of, or reaction to, the 'mainstream' program. The relationship between these two approaches is well made by Jonassen and Land's (2000a) distinction between traditional instructional LEs (as in the Wollongong mainstream program) and student-centred LEs (as in the differentiated half of the KBC program). Student-centred LEs are probably the most vigorous recent development in LEs, and they are commonly positioned in opposition to traditional instructional LEs (Jonassen & Land 2000a; Cambourne 2002). Key markers of difference are set out in Table 1.

Table 1
Indicators of shifts in approaches to LEs (from Jonassen & Land 2000b)

<i>Aspect</i>	<i>Traditional Instructional Learning Environments</i>	<i>Student-Centred Learning Environments</i>
Learning	Knowledge transmission; individual; process of information reception, storage, retrieval and comparison with others	Meaning making; social; process of internal and social negotiation (dialogue) and shared with others
Locus of meaning	Heads of individuals	Individual and socially negotiating minds and the discourses of the community
Contributing disciplines	Psychology	Anthropology, sociology, ethnography

Bases for conceptions of learning	Cognitivism, behaviourism, communications theory	Social constructivism, situated learning, everyday reasoning, activity theory, ecological psychology, distributed cognitions, case-based reasoning
-----------------------------------	--------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------

As tends to be the case in simple categorisations, the extent to which the *traditional instruction* category, roughly what Cambourne (2002) calls the ‘objectivist’ model, adequately captures the mainstream model at Wollongong is not straightforward. Likewise the designation “KBC” accounts for only half the subjects; for the other half, KBC students sit in on mainstream classes, so the designation “student-centred” applies only to the differentiated half of the KBC program, however “student-centred” that may be.

Using the KBC program as a particular instance of the student-centred LE type, a range of benefits has been identified (Kiggins 2001, Kiggins 2002, Cambourne 2002):

- increased and more structured support for student teachers (called *associate teachers*);
- greater trust, collaboration, ownership, responsibility for learning, links between theory and practice, understanding of the culture and operation of schools, congruence between campus and schools and generally a greater contextualisation of learning; and
- more efficient use of student time in that unnecessary duplication and assessment is removed.

Significantly, the KBC model, which replaces half of the mainstream program, is an attempt to implement a cohesive or synergistic suite of theories. The model draws on a range of more-or-less related approaches and theories, including problem-based learning (PBL), a social constructivist theory of learning, community learning, reflective practice, mentored learning, collaborative learning and situation-based learning. At least for the specifically KBC-cohort subjects this contrasts strongly with the more liberal arts structure of the mainstream model, where subjects have a greater capacity to reflect the particular enthusiasms of the teaching staff. Anecdotal evidence from staff in schools and school systems is that KBC students are impressively able to articulate an educational agenda in discussions and practice. Importantly, these successes mean that there is valuable corporate knowledge within the faculty.

However, the cost/benefit ratio is unclear. There has been no external evaluation of the program. There are two discourses about the KBC operating in the Faculty, for and against, which rarely engage with each other (although the present writing team is one such combination). The opposing discourse in the Faculty has two foci. One is comparison: the KBC model operates within a resource envelope (funding, rooming and staffing) not available to the rest of the Faculty, and a parameter of the development project is that it should not cost more than the existing mainstream program. The second focus is the possibility of other alternatives to the mainstream program. The present paper responds to both.

Developing some principles

We take the title and content of Brian Cambourne’s 2002 ATEA roundtable discussion paper (*Trying to change pre-service teacher education: nibbling around the edges vs. going the whole hog*) to be a challenge to teacher educators in a position

such as our present one, contemplating their TE courses. In that spirit, we take up the challenge.

We take whatever successes are due to the KBC program to arise from one or more of at least these six factors:

1. it is an example of going the whole hog, not nibbling around the edges;
2. there is, to a much greater degree than in the mainstream program, a cohesiveness and consistency from its theoretical framework through to its implementation;
3. its theoretical framework and processes of implementation have practical application, (i.e. they have resulted in some successes and improvements);
4. it is strongly supported by the Faculty, its students, the university, schools, school systems, teacher unions and, importantly, a senior academic who is a strong and skilled advocate;
5. it has been conceptualised and implemented by a small and essentially like-minded team; and
6. it has enabled the development of particular relations – student-student, student-lecturer, student-mentor, student-learning environment, and faculty-school. These relations are a key factor in enabling certain types of learning.

Accordingly, we have applied these in thinking through the development of the model considered here.

1776 words

The model (2450 words)

This model is by no means the only model that could be developed using a realist framework, i.e. acceptance of a realist analysis does not commit one to this model.

1. A whole-of-course approach: ‘going the whole hog rather than nibbling around the edges’

This model has a whole-of-course or degree-level focus, not a subject-level or strand-level focus, as in the present liberal arts degree structure. It is designed to be cost neutral when compared with the present mainstream course. The main initial cost increase arises from the increased time in schools, as supervision/mentoring costs. However, it makes savings by offering fewer electives. The structure as set out in Appendix 1 is cheaper than the existing mainstream course and markedly cheaper than if run as a KBC program. Savings made are planned to be returned to the course as discussed below.

The general philosophy is that the Learning Environment (LE) is central, and that for the most part students are never more than half a week away from being in a school-based LE.

It is a four-year (eight semester) course. (See Appendix 2) This brings the undergraduate course (three plus optional one years) into line with the existing general standard and meets the expected required standard. It enables the course to use a greater variety of learning environments while remaining within the existing organisational structure (set credit points for example) of the university. Each semester comprises a suite of subjects that is written with the other subjects for that semester in mind. This is to facilitate where possible a homogeneous, rather than a segmented, experience for students in their learning, in the manner of the KBC model.

This is but one indication of a course (degree)-level orientation rather than a subject-level orientation as in the mainstream course at present. The four years (eight semesters) have a 2+2 arrangement, somewhat analogous to junior secondary students choosing at their second year their electives for the following two years. During semester 4 (in the subject Professional Development 1) students are assessed in some way yet to be devised and agreed. On this basis, students may be directed to particular electives to further develop areas in which they have inadequately progressed (in accordance with explicitly written course rules). Others have the option to develop areas in which they show demonstrable proficiency. Professional Studies Electives will be designed to cater for both students requiring extra time and/or remediation, and those seeking extension. That is, these subjects (as with all subjects in the course) will model what we preach in catering for diverse prior knowledge, experience and ability.

Some content is written into multiple subjects in a planned fashion, including classroom/behaviour management, cultural sensitivity, professional development and ICT education. Again, this reflects the course-based rather than subject-based level of organization. Overseas pracs (a feature of the existing course) can be taken as an alternative to the block prac scheduled for year 2.

2. Theoretical framework

The theoretical framework is based on a critical realist understanding of the social sciences. Philosophy of the natural and social sciences provides three main accounts: *empiricism*, *idealism* and *realism*. *Empiricism* is the view that knowledge derives from our sense experiences and is justified by introspection on those experiences. This is the view that underpins the traditional instruction LE. It implies a social ontology of sensing individuals and leads to a scepticism of an independent physical ontology. *Idealism* is the view that knowledge is a construction of the mind, meaning that reality comprises or depends upon minds or ideas. This is the view that underpins the student-centred LE. It implies a social ontology of interactive groups and also leads to a scepticism of an independent physical ontology.

We have shown above that there are practical benefits and deficiencies in the Wollongong mainstream and KBC models. By analogy we argue that these characteristics are indicative of the traditional instruction and student-centred models more generally. More importantly, however, we argue that there are theoretical flaws in both approaches, flaws that are addressed by the third approach in the philosophy of the sciences, *realism*.

Realism is the view that the objects of our knowledge, or reality, exist and act independently of our knowledge of them (see Appendix 1). Put another way, the natural and social worlds exist whether or not we have knowledge of them, even allowing that the social world is partly human dependent and has a partly linguistic character. This reality, then, enables and constrains what is possible for us to know. In contrast to both empiricism and idealism, to be is not to be known. In the natural world oceans and the fish that swim in them exist whether we have knowledge of them or not. In the social world, relations (like the landlord-tenant relation and the teacher-student relation) exist whether we have knowledge of them or not, as do social positions, social rules, the meanings of texts and the reasons and beliefs of

individuals. These natural and social objects have ways or acting or tendencies (sometimes called *causal powers* in critical realism) that can lead to events, but in the social world many different tendencies will be present at the one time, and so any particular tendency or causal power – cause – may or may not manifest as an event. In turn, any one event may or may not be observed. Thus in a recent case in NSW politics, a politician might hold racist beliefs, but they might not manifest as racist behaviour when he is sober and other beliefs act as intervening causes. In turn, even if such behaviour were to manifest, it might not necessarily be observed by anyone else. Teachers and students are causal agents, whose knowledge, skills, beliefs and reasons are causes. Texts and symbols, or more specifically their meanings, are causes: syllabus documents, programs, and the symbols on computer screens and in books.

This version of realism is thus a deep realism with an ontology of causes, events and experiences. (Shallow realism is the sense that everybody is realist about something: even those who assert that everything is discourse are realist about discourse). It recognises, however, that knowledge is constructed and therefore fallible. However, not all claims to knowledge of the social and natural worlds are equal in their grasp of the underlying tendencies or ways of acting, and we can have rational grounds for choosing between knowledge claims on the basis of checking them. From this, to show that a belief is false is to criticise it, and so a social science must be critical, hence, *critical realism*.

Finally, social explanation in critical realism looks neither to individually acting agents (as in objectivism) nor to the collective (as in social constructivism), but to relations: relations between positions and practices. Society (the class, the school, the community) is ‘both the ever-present condition and the continually reproduced outcome of human agency’ (Bhaskar 1989, p.34).

A (critical) realist model therefore begins not with the knowledge, as in traditional instructional LEs, or with the student, as in student-centred LEs, but with a consideration of the learning environment, which has consequent implications for the nature of knowledge, learning and teaching.

2.1 The Learning Environment (LE)

Primacy in this model is given to the Learning Environment (LE), which is defined as the conditions that enable and constrain learning. Put another way, it is the LE that determines the possibilities of knowledge. The LE therefore is not merely the context for learning. The LE comprises physical, social, psychological, curricular, pedagogical and other dimensions. It is real, open and dynamic, layered and emergent, and moral, as discussed above.

The question to be asked is: what must the LE be like to enable student teachers to learn the types of knowledge that are needed to be learned? The LEs that enable different types of knowledge will be different. Broadly, they will be *on-site* (mostly in schools), *on-campus* and *on-line*.

- i. *On-site*: The course (see Appendix 1) is predicated on time being spent in schools in most weeks of the course. Time in schools is increased over the present model in three ways: in most semesters students spend one ‘immersion’ day per week in a mentoring school, the total number of practicum days is increased, and the final semester includes a five week internship. Students also

complete a required number of hours in community service that is child- or adolescent-related. The existing practice of students planning and teaching in science and creative arts in schools continues and is additional to this total. The title *mentoring schools* indicates a change in the way some (but by any means not all) supervising teachers (to use their current designation) will contribute to TE in the course. It also signifies a change in the relation between the Faculty and the mentoring teachers who for this exercise are working as part of the Faculty, towards the goals of the Faculty's TE program. (See below)

- ii. *On-campus*: On campus, faculty will be encouraged to construct the Learning Environment(s) to best enable the types of learnings required. We expect that, with support, this will develop over time, but the model can be commenced without this. We note that the new medical faculty building will contain a number of small rooms on the basis of the medical course being a problem-based learning environment, which is exactly the line of thinking (constructing the learning environment to enable the desired learning) we are advocating here.
- iii. *On-line*: On-line Learning Environments will be used
 - as virtual simulations of other Learning Environments,
 - for the acquisition of subject and pedagogical knowledge,
 - for the acquisition of ICT pedagogical skills,
 - for the production of artefacts such as e-portfolios, and
 - for on-line discussions, such as on-line mentoring.

The faculty already has the corporate knowledge that produced initiatives such as a virtual classroom and an on-line mentoring program. Longer-term planning is underway for students to each have a laptop, PDA or other ICT device to engage with their LE.

The development process includes processes of subject development and staff development that will enable the three general types of LE to be well integrated with each other – seamlessly where possible – in a planned fashion.

2.2 Knowledge

The model applies what could be called a *realist-constructivist* view, indicating its partial similarities with social constructivism, and foundation on critical realist tenets. It recognises that

- i. there is a natural and social reality whether or not we have knowledge of it,
- ii. this knowledge is socially and individually constructed, and
- iii. there are nonetheless rational grounds for choosing one knowledge claim over another.

(That is, it is (i) ontologically realist, (ii) epistemologically relativist, and (iii) judgementally rationalist). Part of the social reality at (i) is that classrooms, teacher-student relations, the meanings of curriculum documents, texts and websites, and the beliefs and reasons of students and teachers all exist whether we have knowledge of them or not. It shares (ii) but not (i) or, implicitly, (iii) with constructivist, particularly social constructivist, models of learning, teaching and curriculum. At (i) it shares transmission and behaviourist models the existence of external knowledge, where some of this is knowledge that should be learned by teachers: e.g. content knowledge that is set out in curriculum documents and possessed by teachers that should be learned.

Knowledge can be categorised in different ways, as discussed above. Some knowledge (like maths) is highly structured and tightly bounded, and even (like the set of conditions that require mandatory notification of suspected child abuse) non-negotiable. In Maton's (2006) terms, such knowledge has a strong knowledge structure but a weak knower structure: little variation between knowers is accepted. Some knowledge (like cultural studies) is loosely structured and weakly bounded: variation is accepted, sometimes expected, between the different constructions of learners. Some knowledge is explicit, and some is tacit. Much of the practical knowledge possessed by teachers is tacit. Different types of LEs best enable the learning of these different types of knowledge.

2.3 Learning

Learning is an emergent property of the LE. It has biological, social, psychological and other dimensions that are enabled and constrained by the LE; learning cannot be reduced to merely the psychological, social or other dimensions.

The social construction of knowledge is often characterised in contrast with traditional transmission or behaviourist views of learning. This is often done by appealing to the fluidity and indeterminate nature of contextual and authentic knowledge and to justify the unpredictability of learning outcomes. A realist constructivist view, however, points also to the existence of some knowledges that are not, or are minimally, fluid and indeterminate. This would suggest that while the individual learner constructs his or her own knowledge, highly structured knowledge does not licence just any constructions of knowledge to be formed and expressed unchecked. That is, it does not necessarily and in every case mean that students negotiate their own selection of content, manner of proceeding or criteria for judgement. This is so for two reasons.

- i. Some content is clearly structured, tightly bounded and even non-negotiable. This is not to legitimate a simple transmission theory of learning, but in these cases it does de-legitimate student negotiation of content and perhaps approach. Facilitation of student construction of knowledge in these cases needs to be thought through and factored into the design of subjects and the specification of content.
- ii. Learning in workplace and other contexts does not always or even usually allow for negotiation of approach, rarely for negotiation of content and often or usually presumes the transmission of content. Examples are the communication of knowledge at staff meetings and many training sessions, memoranda (emails or on paper), and the introduction of curriculum and policy documents. Graduate teachers should be able to demonstrate proficiency in such contexts. A realist-constructivist view of learning acknowledges that in becoming aware of her/his construction of knowledge, the learner also needs to become appraised of criteria for, and ways of, validating their knowledge.

2.4 Teaching

This model sees teachers as a causal agent in the LE, whose beliefs, reasons, skills, knowledge and dispositions are causes (but not the only causes) of student learning. Teachers interact with other causes in the LE (like the physical setting, the social setting and the meanings in curriculum documents) to bring about learning. Different

LEs will require different teaching strategies, and changes in subject content and articulation may require changes in teaching strategies.

3 Consistency between the theoretical framework and the implementation

While a critical realist or realist constructivist framework has been used to construct the model, this does not require that all faculty become card-carrying critical realists, just as in the present model one does not have to agree with transmission theories of learning and teaching in order to deliver effective lectures. All the same, there are elements of constructivist and other models used at present that are consistent with a realist constructivist approach in teaching. The focus in this section, on the consistency between the theory and implementation, has to do instead with the follow-through from the principles and design of the course to its implementation.

3.1 Working in and with on-site LEs

LEs have a central place in this model, and the relations between on-site and other LEs are different to the relations between the campus and practicum and demonstration schools in the current model. One instance of a changed relation is that between the faculty and what in this model becomes the mentoring rather than the supervising teacher. Mentoring teachers are seen as working within our Faculty program towards Faculty ends, and to this end need to be embraced as teaching colleagues within the course. Costings show that there is scope for paying for the professional development of the mentoring teachers in the course. A second instance of a changed relation is between the school and what in this model becomes the university mentor rather than the liaison lecturer.

3.2 Staff Development

This model has staff development implications that go to the heart of its viability and success:

- for mentoring, as discussed above;
- for possible changes to the content that some staff currently teach;
- to enable the integration (to whatever extent) of subjects in each semester; and
- through advocating the course to school systems, the mentoring schools, principals and mentoring teachers.

3.3 Costings

The model makes savings over the existing program. These savings are returned to the program to workload the school visits by the University Mentors and for some teacher release or other support for in-service work with the Mentoring Teachers. This addresses two significant problems that this faculty shares with most education faculties,

1. the variable quality of supervision in schools and lack of identification of collaborating teachers with the TE course, and
2. the variable quality of and sometimes absent liaison with schools by university liaison staff, regardless of workload allocated.

Ideally, those teaching on campus in a semester would also be mentoring in schools in that semester so that they have a current appreciation of how their work on campus is being translated in TE work in schools. Initially, those with a high research output will continue that focus, but there are some who have expressed an interest in researching their area in the context of the new program. We hope the program will lend support to a group within the faculty who research their own teaching.

4 Teams

One of the factors identified above as contributing to the KBC model is that it is implemented by a small and like-minded team. By definition a small team is not possible with the mainstream course, and I do not presume to judge the like-mindedness of the faculty. However, while the course is not organised around strands, as in the present course, there is a natural opportunity for teams based on semesters. We have mentioned that subjects are intended to be developed and implemented in collaboration and consultation with staff developing and implementing other subjects in the same semester. This is highly desirable. Lack of cohesion (perceived or actual) is a recurrent theme in criticisms of TE courses, and this model has been devised as a concerted attempt to address this matter. Again, it reflects the course-level rather than subject-level focus.

5 Relations

Part of the rationale for the proposed structure is to recast a number of relations: faculty-school, student-student, student-teacher, student-tutor/lecturer, tutor/lecturer-tutor/lecturer, and student-learning environment. This will depend on a number of factors, including the degree of collaboration/integration between subjects, the nature of the LE on campus, our ability to promote the course and its approach to stakeholders in schools, and the professional development of staff. It reads as a tall order to busy people, which it is, but we would argue it applies to the effectiveness of any TE course.

3 A theoretical framework

The KBC program is grounded in constructivist, more particularly a *social constructivist*, theory of learning (Kiggins 2001). Social constructivism is an example of *idealism*: the view that knowledge is a construction of the mind. Cambourne (2002) has argued for the KBC framework by critiquing what he identified as a 'strong objectivist' model that underpins the learning, teaching and assessment typical of universities in general and, implicitly, the mainstream TE program in particular¹. The objectivist model is an example of *empiricism*: the view that knowledge comes from sense experiences. The development of the KBC program in reaction to an empiricist approach is an example of a wider and well-documented trend in education work, a shift in interest from traditional instructional learning environments to student-centred learning environments (Jonassen & Land 2000b).

The juxtaposition of these two theoretical frameworks is instructive in several ways.

- a. Arguing for and from a theoretical framework establishes a standard, which any other input to the current TE course should match.

¹ In passing, the critique of objectivism offers a valuable insight: that the existing university environment has constraints to learning built into it. One we have mentioned – the pressure for lectures because of economic rather than educational reasons – and another is the recording by the university of assessments of learning as numbers on a 1-100 scale. These may or may not be avoidable – this is not the place to be investigating such strategies – but it is important to identify and remain aware of constraints.

- b. We will argue that the objectivist (in Cambourne) or traditional instruction model (in Table 1, from Jonassen & Land) is flawed, though not quite for the same reasons given by Cambourne, but has some merit.
- c. We will also argue that the general social constructivist paradigm is also flawed, but has merit.
- d. We will propose a critical realist, or what could be called a *realist-constructivist*, alternative as a framework that addresses the flaws in both the objectivist/empiricist and constructivist/idealist approaches.

With respect to (a), this very section is a response.

At (b) a critique of empiricism/objectivism reveals both flaws and elements of value in that model for a TE course. Empiricism, in which knowledge is gained through sense experiences, addresses only the experience of events. Causation is thus seen as a regular pattern of events: causal events followed by effect events. This fails to explain why scientific experiments are intelligible. In the natural world scientific experiments are intelligible because the conditions that produce events in the closed system of an experiment must also apply in the open systems that characterise extra-experimental circumstances. That is, the causes of the events in the experiment exist both within and outside the experimental conditions; the experiment is a necessary intervention to control all causes except the one under investigation. Causes are not events, then, but the tendency or way of acting of something. There can be causes present in open systems that do not produce their effects because other causes are interfering with their action. Further, there can be events that go unexperienced. The position that there is a reality whether we have knowledge of it or not, is realism, and the differentiation of reality into causes, events and experiences is *depth-realism* or *critical realism*.

Another critique of empiricism is that it addresses only sensing individuals, yet there is strong evidence to show that learners construct their own meanings, not passively receive knowledge, and do so using communal, not isolated, resources (linguistic, conceptual and other). This is the position of social constructivism.

The caution at this point is not to throw the baby out with the bathwater. Even after allowing that learners construct their own meaning, it is nonsense to argue that there cannot be sharing and communication of meaning. All discourse is intelligible precisely because there is (however flawed) sharing and communication of meaning. Some knowledge *is* propositional, tightly structured and strongly bounded, and some of this type of knowledge should be learned as part of learning to be a teacher.

Cambourne's argument is consistent with arguments used both to critique empiricist models of learning environments and to develop student centred, social constructivist learning environments (Jonassen & Land 2000), of which the KBC model is an example. His argument also alerts us to: another way of doing things, of seeing things, besides the traditional course structure; the impossibility and unreasonableness of specifying large amounts of knowledge as mandatory; and to the existence of knowledge that is not propositional, particularly the knowledge in education that is tacit, weakly bounded, fluid and contextual.

At (c), there are also problems with social constructivist models. A strict constructivism is flawed, chiefly because in holding that learners construct their own knowledge it lacks any means of deciding between different knowledges and of recognising the existence of knowledges that should be learned (see (d) below). However, there is an alternative to both these two frameworks: realism.

(d) The alternative to the empiricist and idealist traditions is **realism**: the view that the possibilities for knowledge are given in an external reality². The fundamental realist position is that the objects of knowledge exist independently of our knowledge of them. Before proceeding, however, it is important to note that this statement as it stands includes shallow or naïve versions of realism in the sense that in some way just about everybody is realist about something: even those who assert that everything is language are realist about the existence of language. We refer instead to deep realism, particularly here the paradigm called *critical realism* (Bhaskar 1996; Sayer 1992; Collier 1994; Archer, et al 1998), henceforth CR. CR asserts that

- i. there is an external reality (natural and social) whether or not we have knowledge of it, but
- ii. our knowledge of it is socially and individually constructed, and
- iii. this knowledge can be subject to empirical check – there can be rational grounds for choosing between knowledge claims.

That is, CR asserts respectively *ontological realism*, *epistemological relativism* and *judgemental rationality*.

The difference at (i) is that in asserting the existence an external reality that exists whether we have knowledge of it or not, realism distinguishes between what we know and what there is. Strictly, empiricist models like behaviourism and transmission theories limit what there is (or what we can say about what there is) to what we sense. Strictly, idealist models like situated learning and social constructivism limit what there is (or what we can say about what there is) to our mental constructions. Sometimes an external reality is implied, e.g. in situated learning (surely the learning is situated in an external reality!), but at base it is not:

Although operationalized somewhat differently, constructivist learning environments share key epistemological foundations and assumptions. Constructivists view reality and meaning as personally rather than universally defined. (Land & Hannafin 2000, p. 5)

Contra Land and Hannafin, for critical realists meaning is personally and socially defined, but reality is not. Reality exists whether we have knowledge of it or not. In the natural world oceans and the fish that swim in them exist whether we have knowledge of them or not. In the social world, relations (like the landlord-tenant relation and the student-teacher relation) exist whether we have knowledge of them or not, as do social positions, social rules, the meanings of texts and the reasons and beliefs of individuals. The meanings of texts to be taught in transmission theories of learning are understood in realism as part of a larger framework of social reality, some of which is set out in TE courses for students to learn.

At (ii), realism parts company with empiricism, which sees only individually sensing learners. Here, realism is similar to constructivist theories of learning and teaching:

² Some signposts to (critical) realism are given in Appendix 3 as an introduction to those unfamiliar with this approach and to underpin the following discussion.

knowledge is individually and socially constructed. This is one reason for the merit of the KBC and other constructivist models. A realist critique distinguishes the objectivist/empiricist model from Cambourne's (2002) characterisation of it. In the simplest and strictest form of the objectivist model, objective, uncontested propositional knowledge is transmitted by the knowledgeable to the unknowledgeable by psychological/mentalist processes. For Cambourne, it presumes the lecture + tutorial model to be 'the best pedagogical approach' and its purpose 'to impart ALL [sic] the knowledge and skills they will ever need'. We would argue that the position is more pragmatic: the Faculty uses the lecture + tutorial format because it is seen as the most cost-effective method for mass education, and the purpose is instead to develop sufficient knowledge and skills to make an effective start. Also, the epistemology is not of 'correctly structured, "true" propositional knowledge' but variably contested knowledge within and between disciplines and subjects. On this basis, the case made against objectivism turns out to be the untenability of a strong version of empiricism that is not the situation in the Faculty (or the university). The realist critique is important because the construction of knowledge is work (Bhaskar 1997), and the relative cost of the lecture + tutorial approach has to be accounted for; it is not simply a pedagogical matter.

At (iii), though, realism parts company with idealism, particularly relativism: in principle, knowledge claims can be tested, allowing us to choose between them. Furthermore, CR is critical in that to show that a belief is false is to criticise it, and for critical realists this is a role of a social science.

Realism distinguishes between causes, events and experiences (i.e. it argues for a threefold ontology of causes, events and experiences). This leads to a different notion of cause and effect than empiricists and idealists would understand. That notion sees causality as a relationship between different *events*: cause and effect. Realism, however, sees a cause as the *way of acting*, or *tendency*, or *causal power* or *liability* or *mechanism* of an object (whether natural or social). In non-experimental conditions, i.e. in most of the natural world and all of the social world, multiple causes are operating at the same time, and therefore can be interfering with each other. This is an important difference between empiricist/idealist models and realism, because it draws our attention to the existence of causes whether or not they result in events and to events whether or not they are observed. Gravity is acting on the roof above you, for example, but it doesn't fall to the ground because the walls are pushing up against it. A politician might hold racist beliefs, for example, but they might not manifest as racist behaviour when the person is sober and other beliefs act as intervening causes. In realism, there can be causes without events, and events that go unexperienced by an observer. (To explain in realism is to suggest a cause(s) and offer evidence.) Teachers and students are causal agents, whose beliefs and reasons are causes. Texts and symbols, or more specifically their meanings, are causes: syllabus documents, programs, and the symbols on computers screens and in books.

Implications of a realist framework for the present context

The realist account of knowledge, that the possibilities for knowledge are given in an external reality, means that primacy is given to the environment (the ontology). The Learning Environment (LE) is therefore not merely the location of learning, but the circumstances that enable and constrain learning. Student-centred learning

environments are an excellent case in point (although we would argue they are under-theorised):

An important feature of the KBC Project is that the KBC facilitator team must arrange a designated homeroom ... This physical space plays a vital role in the establishment of the KBC. The homeroom provides stability, a sense of belonging, and a place to display work products and emphasises a point of difference from the traditional mainstream. (Kiggins 2002, p. 13)

School-based learning (SBL) is the second learning principle of the KBC project. Schools are more than just a conglomeration of buildings and people; rather they are a set of individual cultures which have evolved in response to the wider cultural values (Bullough 1987). (Kiggins 2002, p. 5)

The LE is not merely the physical location, though: it has physical, social, pedagogical and curricular dimensions.

A realist construction of the LE (Brown 2004; Brown, in preparation) suggests that the LE is real, open and dynamic, layered and emergent, and moral.

- The LE *is real* in that it comprises such things as material (tangible) objects, relations between actors/positions, the beliefs and reasons of actors, and meanings of texts, that exist whether we have knowledge of them or not.
- The LE, like any social system, *is an open system* with multiple causes existing that may be interfering with the action of each other. (Remember that a cause is not an event but the tendency or way of acting of something.) Thus there can be causes existing whether or not they result in an event. Likewise there can be events whether or not they are experienced. With multiple causes operating in an open system, events can be unpredictable and the system not only *changes* but changes often in ways that are difficult or impossible to predict accurately.
- The LE *is layered and emergent*. It comprises different layers or levels of organization, e.g. the physical, chemical, biological, social. Each of these layers has properties that arise from the organization of that layer and that cannot be reduced to the properties of lower layers, e.g. you cannot explain social phenomena simply in terms of biology, or the biological in terms of the chemical. Equally, you cannot predict the properties of the higher level from the properties of the lower level. E.g. you cannot predict the social from the biological, although biological causes (like fatigue) can affect the social. The properties at the higher level are said therefore to be *emergent*. Learning is an emergent property of the LE, and is not simply explained by the biology of the learner or the sociology of the group.
- The LE *is moral*, in that it reflects the values decisions of the actors and others.

Social explanation in realism looks neither to individually acting agents (as in objectivism) nor to society/the collective (as in social constructivism), but relations: relations between positions and practices. Society (the class, the school, the community) is 'both the ever-present condition and the continually reproduced outcome of human agency' (Bhaskar). Thus one characteristic of the Learning Environment (and school culture and the community) is that it changes, and though these changes are the outcome of human agency, it can change in unpredictable ways.

Given that the LE enables and constrains learning, the question arises: what must the Learning Environment be like to enable the kind of learnings required by student teachers? From this, the question naturally follows: what kinds of knowledges, skills, attitudes and values are required to be learned by student teachers?

Much, but not all, knowledge is propositional knowledge, and forms part of what Archer (1998) has called the Cultural System and Popper has called the Third World, whose content and meanings exist whether or not we have knowledge of them. Some of this is highly structured and tightly bounded: the 'established body of ... propositional knowledge' (Cambourne 2002) at the heart of the objectivist model. Maton (2006, in press) Other knowledge, like tacit knowledge, is typically weakly structured and loosely bounded. This is at the heart of what is often proposed in social constructionist, social reconstructionist or reconceptualist approaches, in which 'school settings are seen as uncertain, dynamic and problematic ... [and] the knowledge to be learned is uncertain and constructed by the student interacting with the environment rather than by passive reception' (Grow-Maienza 1996, p. 512). Maton has developed Bernstein's approach to show how knowledge and knowers can be coded using concepts of knowledge structures and knower structures:

The notion of legitimation codes is based on the simple idea that actors are not only positioned in both a structure of knowledge and in a structure of knowers but also establish in their symbolic practices different forms of relations to these two structures. One can thereby analytically distinguish between an *epistemic relation* (ER) to the knowledge structure and a *social relation* (SR) to the knower structure. Each of these relations can exhibit relatively stronger (+) or weaker (-) classification and framing. Varying their strengths for each relation independently generates four principal codes: ER+/-, SR+/- ... In other words, actors may emphasise the knowledge structure, the knower structure, neither or both as the basis of distinctiveness, authority and status; conversely, their identity, relations and consciousness is shaped in different ways by these two kinds of structures. These legitimation codes represent different 'settings' of the epistemic device, the means whereby intellectual and educational fields are maintained, reproduced, transformed and changed (Moore & Maton 2001). Whoever controls the epistemic device possesses the means to set the shape of the field in their favour, making what characterises their own practices (in terms of legitimation codes) the basis of status and achievement in the field. (Maton 2006, in press)

This allows us to code LEs: LEs specialise both types of knowledge and of knowers. The traditional instruction and student-centred LEs each have their insights, but both miss the point. A realist model will identify and code the different types of knowledge to be learned, and provide the LEs to best enable that learning. This is why schools have science labs and art studios.

A starting point in identifying knowledge content is the statement of Professional Teaching Standards (NSWIT 2004) to which our graduates must conform:

Professional Knowledge

1. Teachers know their subject content and how to teach that content to their students.
2. Teachers know their students and how their students learn.

Professional Practice

3. Teachers plan, assess and report for effective learning.
4. Teachers communicate effectively with their students.
5. Teachers create and maintain safe and challenging learning environments through the use of effective classroom management skills.

Professional Commitment

6. Teachers continually improve their professional knowledge and practice.
7. Teachers are actively engaged members of their profession and the wider community.

This framework of standards is a real part of the Cultural System of NSW education whether we have knowledge of it or not, and must be addressed. We might also identify other learnings. For example there is a large range of statements of teaching competencies in Australia at present, and elsewhere, and an even larger quantity to be found in the TE literature. In any event, to enable the learning of the seven NSW elements suggests a variety of Learning Environments.

Bibliography

- Archer, M., (1998) 'Addressing the cultural system', in M. Archer, R. Bhaskar, A. Collier, T. Lawson & A. Norrie (Eds.) *Critical realism: essential readings*. Routledge: London. pp. 503-543
- Bhaskar, R. (1989) *The possibility of naturalism* (2nd edn) Harvester Wheatsheaf: Hempel Hemstead
- Bhaskar, R. (1997) *A realist theory of science*. London: Verso
- Brown, G. (2003) *The ontology of learning environments*. Paper presented at the Annual Conference of the International Association of Critical Realism. Cambridge 2003
- Brown, G. (In preparation) *Learning environments*. Chapter for forthcoming book edited by P. Kell, D. Konza & W. Vialle as an LNL project.
- Cambourne, B. (2002) *Trying to change pre-service teacher education: nibbling around the edges vs. going the whole hog*. Roundtable paper presented to the ATEA Conference, 2002, Brisbane
- Cambourne, B., Ferry, B. & Kiggins, J. (2003) 'The Knowledge Building Community Odyssey: Reflections on the Journey' *Change: Transformations in Education*, 6 (2) 57-66.
- Cambourne, B., Kiggins, J. & Ferry, B. (2003) 'Replacing Traditional Lectures, Tutorials And Exams With A Knowledge Building Community (KBC): A Constructivist, Problem-Based Approach To Pre-Service Primary Teacher Education'. *English Teaching: Practice and Critique* 2 (3) 7-21
- Curriculum Corporation (2003) *A national framework for professional standards for teaching*. Ministerial Council on Youth, Education, Employment and Youth Affairs (MCEETYA): Carlton South, Victoria
- Danermark, B., Ekström, M., Jakobsen, L. & Karlsson, J. Ch. (2002) *Explaining society: critical realism in the social sciences*. Routledge: London
- Darling-Hammond, L. & Cobb, V. L. (1996) 'The changing context of teacher education', in F. B. Murray (Ed.) *The teacher educator's handbook: Building a knowledge base for the preparation of teachers*. Jossey-Bass: San Francisco, pp. 14-62
- DEST (2003) *Australia's Teachers: Australia's Future - Advancing Innovation, Science, Technology and Mathematics*. Committee for the Review of Teaching and Teacher Education, October 2003. Commonwealth of Australia
- Feiman-Nemser, S. & Remillard, J. (1996) 'Perspectives on learning to teach', in F. B. Murray (Ed.) *The teacher educator's handbook: Building a knowledge base for the preparation of teachers*. Jossey-Bass: San Francisco, pp. 63-91
- Hoban, G. F. (ed.) (2005) *The missing links in teacher education design: developing a multi-linked conceptual framework*. Springer: Dordrecht
- Howey, K. R. & Zimpher, N. L. (1996) Patterns in prospective teachers: guides for designing preservice programs, in F. B. Murray (Ed.) *The teacher educator's handbook: Building a knowledge base for the preparation of teachers*. Jossey-Bass: San Francisco, pp. 465-505
- Jonassen, D. H. & Land, S. M (Eds.) (2000a) *Theoretical foundations of learning environments*. Marwah, New Jersey: Lawrence Erlbaum Associates
- Jonassen, D. H. & Land, S. M. (2000b) Preface, in D. H. Jonassen & S. M. Land (Eds.) *Theoretical foundations of learning environments*. Marwah, New Jersey: Lawrence Erlbaum Associates, pp. iii-ix
- Kiggins, J. (2001) *From project to program: the evolution of an alternative teacher education model*. Paper presented at the AARE Conference, 2001

- Kiggins, J. (2002) *Understanding and exploring the relationships of a knowledge building community in teacher education*. Paper presented at the AARE Conference, 2002
- Kiggins, J., Cambourne, B. & Ferry, B. (2005) 'Re-organising and integrating the knowledge bases of initial teacher education: the Knowledge Building Community program', in G. F. Hoban (Ed.) *The missing links in teacher education design: developing a multi-linked conceptual framework*. Springer: Dordrecht
- Land, S. M. & Hannafin, M. J. (2000). 'Student-centred learning environments', in D. H. Jonassen & S. M. Land (Eds.) *Theoretical foundations of learning environments*. Marwah, New Jersey: Lawrence Erlbaum Associates, pp. 1-24
- MACQT (1998) *Teacher preparation for student management: responses and directions*. Report by the Ministerial Advisory Council on the Quality of Teaching, October 1998. NSW Department of Education and Training: Sydney
- Maton, K. (2006, in press) 'On knowledge structures and knower structures', in R. Moore, M. Arnot, J. Beck & H. Daniels (Eds.) *Knowledge, power and educational reform: applying the sociology of Basil Bernstein* Routledge: London
- New, C. (2003) 'Feminism, critical realism and the linguistic turn', in J. Cruickshank (Ed.) *Critical realism: the difference it makes*. Routledge: London
- NSW Institute of Teachers (2004) *Professional Teaching Standards*
- Ramsey, G. (2002) *Quality matters. Revitalising teaching: critical times, critical choices*. NSW Department of Education and Training: Sydney
- Sayer, A. (1992) *Method in social science: a realist approach* (2nd edn) Routledge: London
- Sayer, A. (2000) *Realism and social science*. SAGE: London
- Seddon, T. (1999) 'A self-managing teaching profession for the learning society'. *Unicorn* 25-1, 15-29
- Vinson, T. (2002) *Report of the independent inquiry into public education in New South Wales*. NSW Government: Sydney

Appendix 1:
Some basic tenets of Critical Realism
(from Sayer 1992, pp. 5-6)

1. The world exists independently of our knowledge of it.
2. Our knowledge of that world is fallible and theory-laden. Concepts of truth and falsity fail to provide a coherent view of the relationship between knowledge and its object. Nevertheless knowledge is not immune to empirical check, and its effectiveness in informing and explaining successful material practice is not mere accident.
3. Knowledge develops neither wholly continuously, as the steady accumulation of facts within a stable conceptual framework, nor wholly discontinuously, through simultaneous and universal changes in concepts.
4. There is necessity in the world; objects –whether natural or social – necessarily have particular causal powers or ways of acting and particular susceptibilities.
5. The world is differentiated and stratified, consisting not only of events, but objects, including structures, which have powers and liabilities capable of generating events. These structures may be present even where, as in the social world and much of the natural world, they do not generate regular patterns of events.
6. Social phenomena such as actions, texts and institutions are concept-dependent. We therefore have not only to explain their production and material effects but to understand, read or interpret what they mean. Although they have to be interpreted by starting from the researcher's own frames of meaning, by and large they exist regardless of the researcher's interpretations of them. A qualified version of 1 therefore still applies to the social world. In view of 4-6, the methods of social science and natural science have both differences and similarities.
7. Science or the production of any other kind of knowledge is a social practice. For better or worse (not just worse) the conditions and social relations of the production of knowledge influence its content. Knowledge is also largely – though not exclusively – linguistic, and the nature of language and the way we communicate are not incidental to what is known and communicated. Awareness of these relationships is vital in evaluating knowledge.
8. Social science must be critical of its object. In order to be able to explain and understand social phenomena we have to evaluate them critically.