Disciplines, outcomes and purpose in social science education

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Abstract

The gap between school knowledge and academic knowledge has long been acknowledged. The division of the curriculum into separate academic subjects has sometimes been blamed for this problem. On this reading it would make sense to re-model the curriculum so that teaching is multi-disciplinary. However, efforts to achieve this ideal have a poor record in England. In this paper we suggest that the answer to the problem is more likely to lie in the way that the curriculum is built from a careful analysis of the actual outcomes of learning. We briefly outline three projects that are based on this supposition, describing the theoretical underpinnings and the main features of the projects[1].

1. Introduction

The history of social science education and economics education in particular, in England has revolved around two problems. First, when curricula are designed to induct students into particular disciplines, students learn bodies of knowledge that they are unable to use in making sense of their daily lives. Second, when curricula are designed to equip students with a multi-disciplinary range of skills and ideas students and teachers find themselves wandering rather aimlessly amidst an ill-defined landscape of ill-fitting ideas. Curriculum policy tends to swing rather haplessly from attempting to address one of these problems towards attempting to address the other. It is true that it takes a decade and a half or more for the scale of each of either of these problems to start to build sufficient pressure to prompt policy change. However, this length of time is usually sufficient to ensure that there has been enough staffing change in the civil services and curriculum agencies to enable policy change to be pursued as if we had never been there before.

In this paper we review the potential for the application of three ideas that might lead to a way out of this unproductive policy oscillation. Each of these ideas is the subject of research and development project at Staffordshire University[2] and collectively they contribute to an approach to curriculum and teacher development that focuses attention on the outcomes of learning.

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[1] More information about the projects is available on our web site at http://www.staffs.ac.uk/schools/business/iepr/info/Current-projects.html

[2] A project 'Embedding Threshold concepts in First Year Undergraduate Economics' is funded by the Higher Education Funding Council for England. This project runs from 2004 – 2007 and it is a collaboration between the Universities of Coventry, Durham, West of England and Staffordshire. A second project, 'Learning Study in Initial Teacher Education' (2004-2006), is funded by the Teacher Training Agency.

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2. Problem 1: Academic and everyday understanding

Dislocation between school knowledge and personal knowledge is a well-known theme of different perspectives on learning. In the social constructivist tradition this problem has been forcefully articulated by Barnes (1976) and graphically illustrated in Carraher, T., Carraher, D. and Schliemann's (1985) account of the mathematical thinking of young street traders in Brazil. These young people were able to cope with the calculations required by their trading even though they could not compute similar problems that were presented in school. Young people develop 'everyday' ways of seeing the world that remain untouched by their experience in school. Dahlgren's (1984 and 1989) phenomenographic investigations[3] of university students' understanding of price has suggested that a conception of price as a 'the sum of the value of a product's constituents' persists in their everyday thinking despite teaching that has encouraging them to adopt a conception of price as the outcome of supply and demand. The work of Perkins (Perkins, Faraday, Bushey 1991) and others has shown how the informal arguments that are usually deployed in everyday situations lack critical qualities that are expected in academic discourse. In particular, they exposed a tendency towards 'confirmatory bias'. In everyday arguments individuals tend to put forward many arguments in support of their own position and to neglect arguments against their position.

Consequently it is no surprise to find economics educators bemoaning the inadequacies of students' ability to apply the concepts they appear to have learned (Livesey 1986; Levacic 1987; Frank 2005). Commitment to developing understanding of a narrowly defined discipline generates alienation between students' experience inside and outside school (Davies 2000). In order to grasp the concepts and models employed by the discipline all extraneous distractions must be cut out. The process of learning the discipline involves the creation of distance between everyday experience and the perspective developed through learning the subject. As a result, school learning has a limited impact on the ways in which most students view their personal worlds. Is multi-disciplinary learning the answer to this problem?

3. Problem 2: Operationalising multi-disciplinary curricula

The desirability of equipping students to integrate understanding drawn from different disciplines in order to make sense of their social experience is rarely questioned, but sustained effort to secure this idealised outcome has come in periodic waves. In the 1960s a teacher-led development dubbed 'The New Social Studies' (Lawton, Dufour 1973) had some success through a broad-based social studies that was offered in place of separate teaching of geography and history in a significant minority of schools in England. This movement rose on the tide of enthusiasts' convictions and foundered amidst criticisms that teaching was characterised by poor preparation and vague discussion (Rogers 1968). Lawton and Dufour (1973) identified the ill-defined nature of the subject and a lack of specialised qualified teachers of the subject as key causes of these problems. More recently, government alarm at perceived low commitment of young people to social structures and objectives prompted the government to introduce a Citizenship curriculum (DfEE 2000) as a requirement for all students. A review by the government inspectorate (HMI 2005) of provision for citizenship education in schools found that 'pupils' achievement and the quality of teaching compare unfavourably with established subjects and there is little that is graded very good' and '… most teaching is satisfactory, but citizenship is generally less well taught where tutors (non-specialists) are involved. Assessment is the aspect of teaching that teachers feel least confident about, and in half of the schools pupils do not know what they need to do to make progress (from the overview of the report). These judgements resonate strongly with the criticisms levelled by the inspectorate (HMI 1990) at 'Integrated Humanities', fifteen years earlier. The same criticisms are evident in both cases: not enough specialised teachers and insufficient precision in specifying intended learning outcomes. In short, we find a triumph of aims over method. In one case the impetus came from teachers and in the other case the impetus came from government, but the same problems occurred regardless of the structural approach.

To some extent these problems may be particular to curriculum history in England. Academic status associated with a cadre of specialist trained teachers has been the hallmark of successful subjects in English schools (Goodson 1985). Gilbert (1984) illustrates this phenomenon in relation to the development of economics as a school subject. Yet Brophy's (1992) criticisms of social studies teaching in the US broadly echo those that have been repeated over the decades in England. The attempted solution to these problems currently pursued in England is to train teachers who are specialists in

[3] Most reporting of phenomenographic research concentrates on providing examples of students thinking. An example which includes sustained extracts from phenomenographic interviews can be found in Wood (1989). An example of the use of phenomenographic method in relation to Citizenship Education can be found in Hughes et al. (2006).

Citizenship Education. This makes sense insofar as these teachers are more likely to possess a good stock of relevant knowledge and they are more likely to be motivated to promote the development of the subject and its status in schools. But it fails to address the problem of students' learning. At best, this approach can only generate a new body of school knowledge that students fail to use in trying to make sense of their social experience. The aim of helping students to build integrated perspectives on social phenomena requires an articulation in terms of how students' learn. It is to this task that we now turn.

4. Learning and Disciplinary knowledge

In this section we begin with the assumption that curriculum design should be developed *from* an analysis of students' learning. That is, rather than speculating about what we want students to understand, we might begin with a review of what students do understand and, in particular, with *variation* in students' understanding. Benchmarks of quality of understanding from one or more disciplines may be then used as reference points in reviewing this variation and devising programmes of teaching that aim to improve students' understanding. We provide some examples of how this approach to learning and curriculum design might be put into practice by referring to three development projects that are currently underway at Staffordshire University. These projects provide exemplification rather than a complete, coherent framework. The theoretical perspectives that underpin these projects are, we believe, compatible, although each theoretical perspective has generated its own agenda for development.

4.1 Learning Study

The first project applies 'Learning study' (Pang, Marton 2003 and 2005) in the context of initial teacher education. Learning study combines two elements. It takes the collaborative 'plan-teach-review' teacher development model of Japanese 'Lesson Study' (discussed in JSSE 2004/1 and in particular by Lewis 2004) and focuses the process using variation theory. In lesson study groups of teachers work intensively together to plan a lesson. One of the group then teaches the lesson whilst the others observe. These observations then provide the basis for a searching reflection on how the teaching helped learners during the lesson. In 'Learning Study' variation theory is used to focus teachers' attention on variation in outcomes of learning. Initially, the teachers gather data from students in order to identify different ways of understanding a phenomenon. This may be illustrated through an example used by the teachers cited in Pang and Marton's (2005) paper: students' understanding of changes in the price of face masks in the context of the SARS epidemic in Hong Kong.

The SARS example was chosen because the students were studying in Hong Kong and had recent personal experience of the SARS epidemic. The teachers aimed to develop students' theoretical understanding *through* re-working their thinking about a phenomenon within their personal experience. This is quite different from illustrating a theoretical point by subsequently referring to an example that is familiar to the students. Before planning the lesson the teachers gathered data on students' understanding of changes in price though phenomenographic interviews. In these interviews students were asked to explain changes of price in contexts with which they were familiar. The interviewers probed understanding without prompting any particular way of viewing the phenomenon. The data yielded by this method were then carefully reviewed to identify qualitatively different ways of understanding. Five types of understanding were identified: prices change in response to: (i) changes in the character or quality of the product; (ii) changes in the supply cost of the product; (iii) changes in demand for the product (iv) changes in supply and demand for the product and (v) the magnitude of difference between change in supply and change in demand for the product.

These five ways of understanding were placed in a hierarchy (i)-(v) reflecting the teachers' beliefs about qualities of understanding. This process of privileging one way of understanding in relation to another necessarily reflects perceptions of disciplines and their relevance to making sense of particular phenomena. Having determined that 'the magnitude of difference between change in supply and change in demand for the product' was the preferred type of understanding the teachers planned their lesson to focus on *variation* in this attribute of the phenomenon. Pang and Marton (2005) provide evidence suggesting that focusing teaching on variation in the target attribute of the phenomenon yields significantly better improvements in the quality of students' understanding than those that can be achieved through 'Lesson Study'.

Variation theory addresses the problem of separation between students' everyday and school knowledge by providing teachers with a strategy for addressing transition from one to the other. However, as a basis for curriculum development it is a long-term project. Variation in understanding of each phenomenon requires in-depth analysis of students' thinking. Can the Learning Study approach promote teacher development in a way that leads to better curriculum planning when the prior analysis of variation in students' learning is less rigorous? The answer from our current project on the use of

Learning Study in Initial Teacher Education is a cautious yes. We have incorporated three cycles of Learning Study within our one year initial teacher education programme with a view to developing trainee teachers' focus on learning and variation in learning outcomes in a way that is more rapid and more productive than we have achieved through our previous training. However, the outcomes of learning are not restricted to ways of understanding particular phenomena. In the language of the Enhancing Teaching and Learning Environments (ETL)[4] Project, students should acquire 'ways of thinking and practising' that they can bring to bear on all circumstances and phenomena that they experience. The next two projects address this broad agenda.

4.2 Threshold Concepts

Several phrases have been used to describe 'ways of thinking and practising (WTP)' that characterise the approaches to understanding the world that have been developed within disciplines of knowledge. Sheeran and Barnes (1991) refer to 'ground rules' and Perkins (1999) suggests 'rules of the game'. The idea is that there are deep level ideas that guide the analysis of experienced practitioners in a field and that these deep level ideas are typically so taken for granted that they are not made explicit to learners. Able and successful learners detect these ideas through inference and attention to the ways that experts construct their analysis. Meyer and Land (2003) have identified five characteristics that are typical of these ideas which they refer to as threshold concepts[5]. First, a threshold concept is transformative in that it changes a learners' conception of other academic ideas they have acquired and may also transform their sense of identity insofar as they reposition themselves in relation to the discipline community that has developed the threshold concept. Second, threshold concepts are irreversible in that it is inconceivable that learners would return to viewing the world around them, the subject community and themselves in the way they did before. Third, these ideas are integrate substantial elements of the learner's prior understanding. When an individual acquires a threshold concept the ideas and procedures of a subject make sense to them when before they seemed alien. It is the threshold concept that provides coherence. Fourth, a threshold concept necessarily helps to define the boundaries of a subject area because it clarifies the scope of a subject community. Finally, a threshold concept is very likely to be troublesome (Perkins 1999) because it not only operates at a deep integrating way in a subject, but it is also taken for granted by practitioners in a subject and therefore rarely made explicit.

Whereas the focus of variation theory is on the transformation of students' everyday thinking the focus of threshold concepts is on the transformation of academic ways of understanding discrete phenomena in a way that creates a more integrated way of thinking and practising. This kind of conceptual change for the individual may reflect paradigm shifts in the development of a discipline. For example, Carey (1991) compares conceptual change for an individual with the development of scientific thought from phlogiston to oxygen theories of burning. This association between profound conceptual change for the learner and the development of a body of thought can be seen in phenomenographic studies of students' understanding of science and economics. More advanced conceptions of force are associated with Newtonian physics and more advanced conceptions of price with Marshallian supply and demand analysis. These developments in academic thought have not occurred simply through supplanting naïve, common-sense, notions by more powerful explanatory frameworks. New developments within subjects change the way that members of academic communities think about other ideas that have been developed within the discipline. In the case of the replacement of the Phlogiston theory, component ideas may fall away into disuse. However, in other cases old ideas are re-worked and subsumed within new theories. In these cases the acquisition of a new concept is transformative insofar as it integrates and reworks other disciplinary ideas that the learner has previously acquired and we will refer to this as a 'discipline' conceptual change.

Table 1[6] presents a classification that has been developed through a project 'Embedding threshold concepts in undergraduates'. It divides conceptual change into three types. In the previous section on

[4] The Enhancing Teaching and Learning Project was based at the University of Edinburgh, Scotland, and formed part of ESRC funded Teaching Learning Research Programme. Further information may be found at:

[5] The idea of threshold concepts was developed within the ETL Project and it is the subject of forthcoming book (Meyer, Land 2006) to be published by Routledge.

[6] The representation of economic thought in Table 1 can be compared with other ways of seeking to relate discipline knowledge to students' learning. One approach with an extensive lineage derives from Bruner's early work on concepts. The difference between the threshold concept approach and the 'building block' approach to economic concepts is discussed in Davies (2006). The Brunerian approach (as exemplified for example in Lumsden, Attiyeh 1971 and Scottish Education Department 1978) has tended to be used in a manner that is limited to neoclassical economics. Given the uniformity in the mainstream economics taught in first year undergraduate degrees in the UK (Reimann 2004) this is largely reflected in Table 1 as well since this is working from the learning that students in which are currently engaged. However, Table 1 does not see economics as simply a constrained maximisation, rational choice, approach to decision-making. In fact, it does not restrict

variation theory we focused on the first row of Table 1 which describes replacement of everyday constructs of phenomena by ways of understanding developed by a discipline, in this case economics. Rows 2 and 3 we refer to types of conceptual change that are associated with development of an integrated view of a discipline. Row 2 focuses on 'ways of thinking' and Row 3 focuses on 'ways of practising. In Table 1 these 'ways of practising' are referred to as modelling. For example, economists make considerable use of the notion of 'ceteris paribus' (all other things being equal) in their reasoning. Economists use this idea in lieu of being able to conduct closed experiments so it is employed as a 'what if' assumption in deductive reasoning. A student who has not learned how to use this device appropriately will have great difficulty in constructing narratives that appear appropriate to an economist. Learning how to select, amend and test economic models is a central part of undergraduate education in economics and we will refer to this as a 'modelling' conceptual change.

5. Table 1 about here

Table 1 Definition and exemplification of three types of conceptual change

Type of conceptual change	*Type of transformation and integration*	*Example in economics*
Personal	Understanding of everyday experience transformed through integration of personal experience with ideas from discipline.	Distinctions between price/cost; income/wealth (stocks/flows); nominal/real values; investment/saving. Opportunity cost. Elasticity
Discipline	Understanding of other subject discipline ideas transformed through acquisition of theoretical perspective	Partial equilibrium. General equilibrium. Comparative advantage.
Modelling	Ability to construct discipline specific narratives and arguments transformed through acquisition of organising idea	Ceteris paribus, time (short-term, long-term, expectations)

Whilst Table 1 presents conceptual change within a discipline that has a strong body of integrated knowledge it is equally applicable to disciplines with a more heterogeneous approach to knowledge and indeed to the development of understanding which takes perspectives from different disciplines into account. That is, it suggests that the acquisition of certain key organising ideas leads to a transformed view of other ideas that have already been acquired. This does not presume that the new idea is consistent with previous understanding. It does suggest that it makes sense to organise curricula in a way that introduces students to ideas from particular paradigms in a discrete fashion, focusing first on the transition from everyday to academic knowledge. Only once students have acquired a set of ways of understanding phenomena does it make sense to introduce them to ideas that can help them to develop an overarching view of these ideas, their limitations and their assumptions. Teaching that introduces these powerful integrating ideas at the outset, perhaps on the basis that they are 'key concepts' is likely to lead to students acquiring a rote-learned version of the idea that remains 'inert knowledge' in their thinking, contributing to the alienation of academic knowledge from experience.

5.1 Qualities of argument

We turn now to a final project which focuses on an aspect of 'ways of practising' (Row 3, Table 1). Studies of informal arguments (e.g. Baron 1988; Perkins et al. 1991; Andrews 1997) have identified some key differences between 'everyday arguments' and arguments that are considered to be

economics to a decision-making framework. Economists working with different decision-making frameworks (be that rational choice, bounded rationality or some other) share ways of representing the world that make economic analysis contrast with that undertaken for example, by sociologists, including those who use a rational choice framework. Economists of all persuasion do not assume that the interaction between individual and institutional choices and outcomes is a zero-sum game and use variations on equilibrium (and disequilibrium) models to try to convey knock-on effects. Consequently, Table 1 is also suggesting a different approach to the relationship between disciplinary knowledge and students' learning than the approach developed by Hedtke (2005).

appropriate for an academic context: the former suffer from 'confirmatory bias' and 'weak situational modelling'. That is, informal arguments stress points in support of a proposition and pay scant attention to contesting evidence and reasoning. Informal arguments also construct inadequate accounts of the web of relationships and perceptions of those relationships that might be considered relevant to a judgement. Some of the critical ideas used to develop models in undergraduate economics are presented in Row 3 in Table 1. At school level, particularly when students are below age 16, the required level of 'situational modelling' is less abstract. Working with groups of teachers of Geography and Citizenship in secondary schools we have developed two frameworks (Tables 2 and 3) that can be used with students to help them to develop the quality of their arguments.

6. Tables 2 and 3 about here

Table 2 Making my economic arguments better in Citizenship Education

	To counteract 'confirmatory bias'		*To counteract 'weak situational modelling'*
	Stakeholders	**Reasons**	**Interdependence**
1	Only presents view of one stakeholder	There is a point of view, but no argument to back it up	Costs or benefits are not connected *(like a list)*
2	Presents the views of more than one stakeholder	Gives only one reason to support a point of view	The balance between costs and benefits is considered (*weighing up)*
3	Suggests how the interests of different stakeholders can be brought together	The argument has more than one reason but the reasons contradict each other (don't add up)	The effects of everyone's behaviour on the future balance of costs and benefits is considered *(knock-on effects)*
4	Considers the advantages and disadvantages of any one way of getting stakeholders to work for the same outcome	The argument has more than one reason but the reasons do not support each other (like a list)	

Table 3 Making my arguments better in Geography

	To counteract 'confirmatory bias'			*To counteract 'weak situational modelling'*
	Reasons	**Interests**	**Viewpoints**	**Evidence**
1	I give my own opinion with a reason for that view	My judgement assumes that everyone will benefit in the same way.	My judgement refers to a wider viewpoint	My judgement includes a relevant piece of evidence
2	I make a judgement and back it up with more than one reason	My judgement recognises that people want different things or will be affected in different ways	My judgement recognises that there may be more than one wider viewpoint on a problem	My judgement includes more than one piece of evidence
3	I can see problems in a reason, because it does not work out the same in all cases.	My judgement assumes that what some people want will be the opposite of what others want. If some people are better off others are bound to be worse off.	My judgement shows how a criterion is linked to a wider viewpoint.	My judgement includes pieces of evidence that do not all support the same argument
4	I can describe how the reasons used in a judgement are related to each other	My judgement recognises that what different groups of people want may sometimes be in conflict but sometimes can be achieved together	My judgement makes clear how different interests are valued by a wider viewpoint	My judgement recognises weaknesses in the evidence
5		My judgement recognises *when and how* what different groups of people want may sometimes be in conflict but sometimes can be achieved together		My judgement weighs up the strength of the evidence.

The columns in these tables are divided to identify how they aim to address the problems in students' everyday arguments. Looking first at the 'interdependence' column in Table 2 row 3 identifies a level of argument in which the situational modelling is approaching a threshold concept of equilibrium in the terms defined in Table 1. This perspective on situational modelling is not valued in the development of arguments in geography as identified in Table 3. However, there is much more similarity in the ways in which the two subject areas are addressing the problem of confirmatory bias. The economics and business teachers who were contributing to Citizenship Education (Table 2) made more use of the term 'stakeholder' and the geography teachers (Table 3) made more use of the idea of 'perspectives'. However, there seems to be more common ground in the way these teachers are working in developing this aspect of students' arguments.

The intention in developing the frameworks in Tables 2 and 3 is to explicitly share with students the criteria by which the quality of their work is being judged. Instead of 'ways of thinking and practising' remaining implicit in the teachers' thinking these frameworks help to make them explicit and, thereby, the subject of dialogue between teachers and students and between groups of students. We are not suggesting that these frameworks present definitive statements of the ways of thinking and practising

that are shared by all geography teachers or all teachers aiming to develop the economic aspects of citizenship education. There are many communities within these wider communities of practice and the frameworks must be imperfect even in representing the qualitative distinctions that have been observed by the teachers involved in these projects. However, by making the criteria explicit they can become the object of critical scrutiny by students and teachers and our experience thus far has been that this has sharpened teachers' thinking and helped students to become focused on differences in quality that really make a difference in their progress as learners. More detailed accounts of how these frameworks have been used with students can be found in Davies et al. (2004) and Davies (2005).

7. Conclusion

The enduring power of academic communities in sustaining the character of school subjects in the curriculum has been carefully described and theorised by Goodson (1985) and others. The dominance of these traditions was enshrined in England through the introduction of a National Curriculum in 1988. However, the limitations of academic curricula are well known. In particular, school knowledge and everyday knowledge tend to tread separate paths such that formal schooling seems to have a disappointing impact on the way that young people interpret their social experience. There have been periodic attempts in England to address this problem through curriculum reform. However, whether this reform has been initiated by teachers or government the results have been very disappointing. It is tempting to attribute this failure to the power of vested interests: Teachers with deep commitment to their own subject expertise and politicians wary of the conservatism that follows from voters recollections of their own schooling.

In this paper we have described some projects that attempt to address the problem of dislocation of school and everyday knowledge from a different perspective: the analysis of the outcomes of learning. Variation theory provides a basis for focusing teaching on the transformation from everyday understanding to more sophisticated, academic understanding of particular phenomena. Threshold concepts provide a basis for helping students to develop a more integrated understanding of school knowledge. Assessment for learning, focused for example, on the quality of students' arguments provides a way of helping subject 'ways of thinking and practice' to made more apparent to learners, and the object of critical dialogue in teaching. These ideas and strategies have been presented as promising directions rather than a fully coherent development programme. There is much to be clarified within each project in terms of the relationship between theory and practice. There is plenty of room for argument about the relationship between the theoretical ideas that underpin each project. Nevertheless, our judgement so far is that these projects are stimulating valuable professional development for teachers and academics and improvements in learning for students.

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