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Design and Technology: A Methodology for Exploring 'Elite' Beliefs

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Abstract

This paper describes the approach taken and techniques used in a pilot MRes research project. It aims to be of practical interest, particularly to new researchers. The study was undertaken in 2005-2006 in context, which still pertains, of the ambiguous nature of D&T in England and thereby vulnerability to policy change threats to its continuing existence. The project explored literature concerning the development of D&T, the changing policy context and investigated the views of D&T policy influencers. However, although this paper refers to aspects of this, in seeking to offer an example of how deeply held views may be uncovered and thereby compared, it focuses on the methodology developed, including dealing with central issues related to 'researching-up' ('elites') and of confidentiality. The study took a qualitative practice approach, privileging the voices of individuals, and techniques included interview-conversations. Difficulties in informing policy-making through such research emerged and the paper discusses aspects of this issue. It is proposed that a collaborative policy-forming review should be taken forward.

Key words

D&T, policy, methodology, elites, ethics, beliefs

Introduction

The context of this paper is Design and Technology (D&T) as it manifests itself in England. For a discussion of English D&T within an international perspective on Technology education/training see, for example, Black (1998).

Imagine a scenario much as Ministers' speech writers utilise, but this one is in a possible present. In 1990 Design and Technology (D&T) was introduced as a mandatory subject – for all children in all State schools in England and Wales to age 16.

In 2008 a replacement was introduced, STEM.

STEM had been simply an acronym for representing Science, Technology, Engineering and Mathematics. There were no school subjects to speak of called Technology or Engineering. No-one discussed why these STEM areas should be thrown together (and not others, for example, Design) and few were consulted (cf DCSF 2007; Barlex 2008a/b).

Two Government Departments set up an ages 5-19 STEM Programme Board (DfES & DTI 2006) and Departmental target indicators included improvement in STEM, although the targets were about Science (BERR 2006:10). The Departments established the STEM Forum – with a High Level Strategy Group - (DCSF 2007) and the Qualifications and Curriculum Authority (QCA), a STEM curriculum Division. Whilst Departmental interest was chiefly in the 'supply line' for economic competitiveness in Science, QCA was, with learning in mind, attempting to shift the subject based curriculum, particularly in the early years of Secondary education, towards a more joined-up interpretation. However, QCA itself was under reformation. In February 2008 Government launched a major media campaign to promote "(STEM) subjects – specifically physics, chemistry and maths A-levels" (COI, 2008, unpagged) and introduced the notion of 'science technology' as a Post-16 subject.

In parallel, the comprehensive ideal (Benn & Millar 2006; Allen & Ainley, 2008) had been abandoned and employer-designed occupation-sector diplomas were introduced for 40% of learners aged 14-16, and at Post-16. These replaced nearly all other than the core curriculum¹ for these 14-16 learners, and by 2009 were on offer to pupils in two thirds of secondary schools (Hansard 2008).

¹ All ages 14-16 pupils must study: citizenship, English, information and communication technology, mathematics, physical education, science, careers education, sex education, work-related learning and religious education. 'Extended Diplomas' were announced in March 2008 which open opportunity to include the 'entitlement' subjects at ages 14-16 – which include D&T; some progress in broadening the 'STEM' concept was also made (Barlex 2008a/b) but fell again on stony ground at a 'STEM' Programme seminar in May 2008 (e.g. DIUS 2008). However, meanwhile a review of the Primary curriculum has been announced (February 2008), with terms of reference that fail to mention D&T (DCSF 2008).

But D&T practitioners, as they did their best to make STEM, science-technology, and diplomas worthwhile learning for their pupils, passingly wondered where D&T had gone.

Background to a pilot study

It seemed to me in 2004/5, as this possible scenario re-raised its head, that D&T's existence might easily be challenged if key policy-influencers held disparate beliefs about the purpose and nature of D&T. However it also seemed unlikely that they would all agree (cf Barlex 2007).

I wanted to explore how deeply held views might be elicited and compared in order to inform a policy position, so I investigated the views of seven influential D&T people (Wright 2006). This pilot study (2005-2006) also explored literature concerning the often ad hoc and contested development of D&T and the rapidly changing policy context. Although this paper refers to aspects of this, in seeking to offer a practical example of how beliefs may be uncovered and compared, it focuses on the methodology developed. In concluding, difficulties in this approach if purposed for policy-informing are highlighted, but a way forward proposed.

I concluded from literature explorations for the pilot study that incremental changes had been made in D&T since 1988 but that none of these fundamentally questioned the underlying premises of D&T or of what it might become. Many aspects of what D&T was suggested (by some) to 'be' were established before the late 1980s. These included D&T as a unitary concept, a notion of capability as an outcome of D&T learning, and that capability included being able to handle uncertainty and value conflict. However, clarity about perspective of knowledge, or of the nature of design and of technology, in D&T remained elusive. An emphasis in design on processes and interaction of mind and physical modelling in developing ideas, was suggested by some authors as cohesive with a processes-led curriculum and a view of knowledge in design as, for example, 'knowledge-in-action'. This perspective sometimes mapped onto views that design, and possibly technology, is seen as an activity or language that appears across the curriculum (a process model) rather than as a bounded subject - and with a notion of holistic assessment not directly linked to content taught. Technology, however, tended to be emphasised in content / body of knowledge terms which reflected linear, subject-centred, atomised assessment, and received knowledge approaches of some forms of engineering and sciences education (Wright, 2006).

There is a growing body of literature around researching public policy and policy-making². 'Policy' holds multiple meanings, but public policy is always a political affair and always involves power. To many of these authors a "key question is not 'What is policy?' but rather, 'What do people do in the name of policy?'" (Wedel et al. 2005:35). Policy-making and its impacts are seen by such authors as multi stranded and non-linear involving unforeseen variables combining in unexpected ways, often with unimagined consequences (ibid. 38), and involving networks of people both 'inside' and 'outside' the formal policy machine. Thus, it is suggested, policy processes cannot be explored using pre-specified models of research whilst ethnography's focus on interactions is a crucial tool in disentangling the variables involved.

Methodology

There are differing views about what research methods should include but most agree that approach, or standpoint, is an intrinsic aspect of the methods adopted and that all should be explicit and cohesive (cf Walford 1991; Kvale 1996; Bryman 2004).

• Approach

In a Curriculum Studies perspective, the study of education is seen as "a practical activity... to get to grips with the realities of practice and to do so 'from the inside'" (Kelly, 1989:4, my italics). I adopted a practice approach – neither a theory or a method but a symbol under which a range of theories and methods have developed (Collier & Yanagisako 1989). As Sherry Ortner (1984:144) has outlined, such an approach is about "real people doing real things", including what real people really say (cf Bourdieu 1977; and Collier & Yanagisako 1989 for discussion). Such an approach also emphasises that "there is no such thing as neutral construction of knowledge" (Mickelson 1994:136) (cf Clifford 1983:134).

This exploration started with foreshadowed (hazy) ideas and sought to develop further questions. A localised, ethnographic-type, case study approach (Creswell, 1998) was taken, including a commitment to interplay of different voices/polyvocal reporting (Clifford 1983; Ball 1994b).

• Why interview?

I wanted to explore and examine patterns of nuances of individual meaning (such as experiences/hunches, 'what is' and 'what might be') – a survey, or group, approach was not appropriate.

² Cf Ball 1991, 1997; Power 1992; Walford 1994; Reinhold Footnote page 31994; Rist 1994; Hargreaves 1996; Shore and Wright 1997; Raggat & Williams 1999; Roberts 1999; Ozga 2000, 2005; Higham and Yeomans 2005, 2007; Hodgson and Spours 2004; Wedel 2005; Wedel et al. 2005; Whitty 2006; Raffe and Spours 2007. Also see, for example, the Nuffield 14-19 Review; The Primary Review (University of Cambridge); and Kings College London Centre for Public Policy Research.

• Interviewees

I drew up a shortlist of people in the D&T field based on levels of influence in strategic country-level groups. I asked seven if I might interview them, and all agreed. One interviewee was no longer directly involved in school level D&T practice but otherwise all were currently involved in informing D&T practice at an English (and in some cases, devolved UK administrations, and international) level. All interviewees had been, or were still, involved in both Primary and Secondary phase D&T work. The majority of those interviewed came from handicraft or science/engineering/technology traditions – with one from fine arts, one from humanities. None came from a design, textiles, or a home economics background. The majority experience therefore lay in the handicraft and Technology tradition – also traditionally the masculine side of D&T. All the interviewees were male (cf Bagilhole et al. 2007). I was therefore particularly aware that this pilot group formed a very partial representation of D&T practitioners and of D&T practice – a larger study would seek to be more inclusive.

• Elites

Whilst noting what constitutes 'the elite' is a problematic and contextual matter (Williams 1961; Fumanti 2004), the individuals I interviewed are both knowledgeable and influential and can be regarded as elites in their fields. Any interview situation involves power-relations (Denzin and Lincoln 2000) with a 'professional' questioning of a "more or less voluntary and naive subject" (Kvale 1996:20) but in interviews with 'elites' (or 'studying-up') the balance of power may be reversed (Kvale 1996; Welch et al. 1999) and the interviewer needs a strong grasp of the topic (Mickelson 1994; Kvale 1996). I am female and those I planned to interview were male. Gender-perspectives are discussed in the 'elites' literature as, in many respects, advantaging the female researcher³.

• Inter-views

Hammersley and Atkinson (1983) note that all interviews are structured in some way – by both researcher and interviewee. Qualitative interviews are seen as an "alternation between knowers and the known, between the constructors of knowledge and the knowledge constructed" (Kvale 1996:15) – involving both social interaction and knowledge construction. Research interviews can be viewed as professional conversations (Kvale 1996). There is some consensus (Hammersley and Atkinson 1983; Kvale 1996; Bryman 2004)

that un- or semi-structured interviewing requires an 'interview guide' (themes or issues). Kvale (1996) points to a guide of suggested questions but emphasises that probing questions cannot be predetermined.

• Ethics and risks

Interview conversations with influential people pose some particular ethical considerations and BERA (2004) guidelines were closely adhered to in this study. Consequences of breach of confidentiality and disrespect were very strong - not least compromising interviewees' reputations (also see Wedel et al. 2005: 42-3).

How roles are played out is influenced by participant constructed identities (Hammersley and Atkinson 1983). Although I do not consider myself 'elite', my employer is held in 'powerful' regard (Kimbell 2001 in 2006). In order to protect against any perception of playing an under-cover role for my organisation, I up-fronted that this study was not directly related to my paid-work role. However I was aware that this aspect of my identity might still impinge on frankness of conversation. 'Elite' interviewees may, anyway, be subject to work-related codes of disclosure and/or inclined towards telling a more than usually 'polished' story⁴. Although it felt risky – inviting brick-bats – to aid transparency I sent ahead a paper which set out my views – reflecting my journey of growing doubt about widespread agreement upon D&T's value-base.

Informed consent to audio-tape was sought before the interview and anonymity provided through use, throughout, of pseudonyms. I anticipated that disguising sources (ways of speaking, organisations, events and activities they refer to) of likely suspects would prove quite difficult. All audio-taped interviewees had opportunity to amend their transcripts, to provide further views, and to review all passages from conversations with them, in context, reported in the account of the study.

• Theme questions

Theme questions (Figure 1) were sent ahead to interviewees and used as a rudder in conversations (Kvale 1996). I hoped that through mirroring D&T practice the layout would help to underpin that all ideas were wanted. A personal aide memoir supported the interview.

³ Cf Gewirtz and Ozga 1994; Ozga and Gewirtz 1994; Mickelson 1994; Ozga and Walker 1999. Also see e.g. DeVault 1999.

⁴ Ball 1991, 1994a, 1994b; Bell and Raffe 1991; Mickelson 1994; Puwar 1997; Sikes 2000; Richards and Smith 2002.

Theme Sheet

"The role of ambiguous concepts in the initiation of educational reforms is, of course well known. ... Each in its different ways is capable of multiple interpretations. Indeed this is their strength... Different constituencies see in the proposed reform something which may serve their particular ends and hence they lend support to it. It is only when the innovation becomes operationalised in specific classroom or workshop practices that advocates turn into critics and devotees begin to transfer allegiances" (David Layton 1992:2).

"the questioning of the well-foundedness of policy" (Phil Roberts 1999:7).

- What D&T was intended to be is open to debate, what it has become, perhaps more so?
- As time passes it is likely that intentions will change with change in the societal/education/ policy contexts in which D&T is set and there will be iterative flows between hunches, practice, beliefs etc. over time.
- Putting aside whether D&T as currently formed is realised in practice, a question is whether D&T is what the D&T community want it to be, or whether (what is currently known as and exists as D&T) is **what should be**.

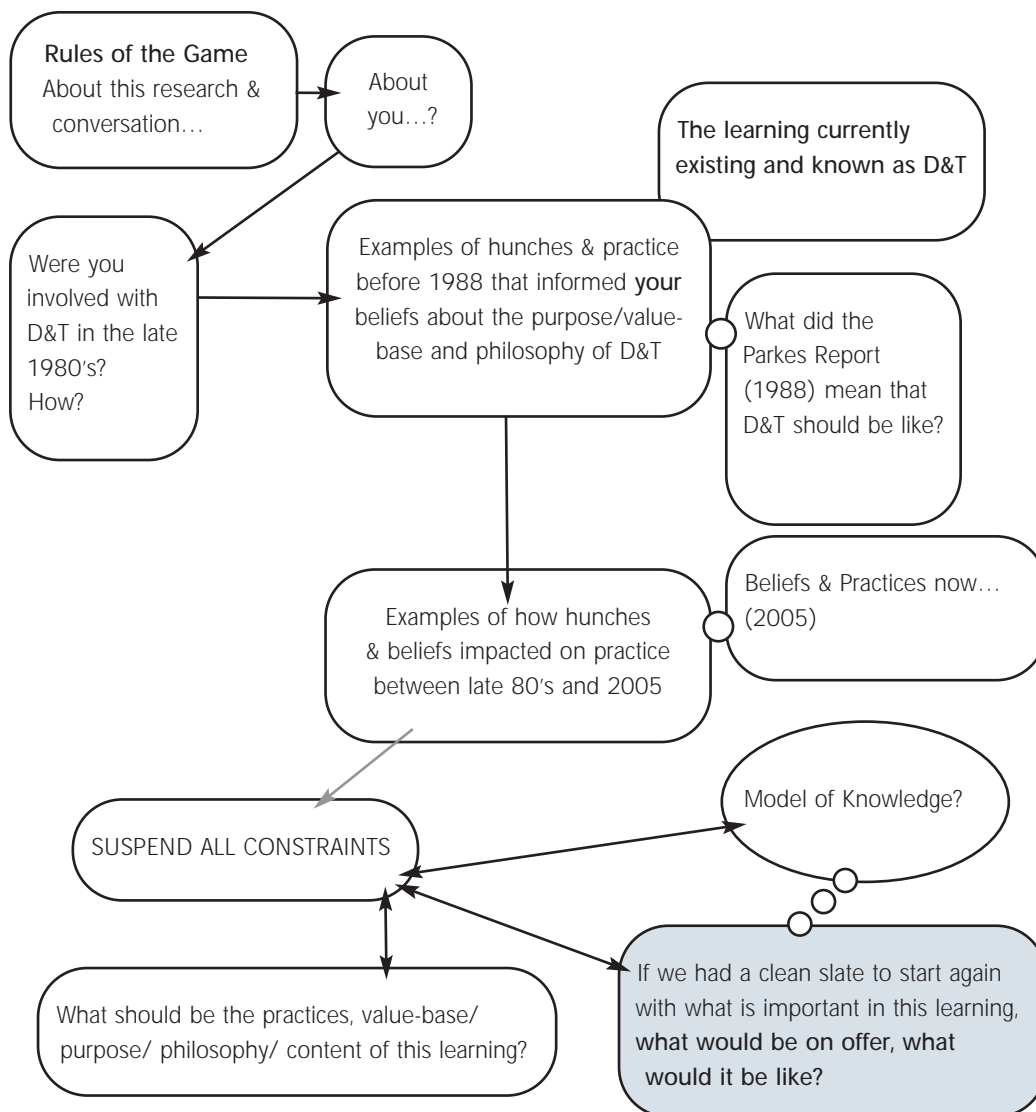


Figure 1: Is D&T what it was wanted/should be ?

• **Pilot interview**

The pre-paperwork to interviewees, aide memoir, interview record sheet and likelihood of anything relevant to my study emerging from the dialogue were piloted through conducting an audio-taped conversation with one of the proposed interviewees. He provided feedback on the research model and experience and I made adjustments. The pilot came out well so this conversation fed into the data pool.

• **The interview conversations**

Six interview-conversations were audio-taped and I transcribed them (a confidentiality requirement). One conversation was recorded through notes. Conversations ranged from 63 to 164 minutes, with most around an hour and a half, involving nearly twelve hours of discussion in total, and took place in locations that interviewees chose.

• **Data, reflexivity and analysis**

Data for this study comprised hard and virtual documents, books, papers, press articles, e-mails, digital audio-taped, transcribed discussions, notes contextualising the conversations, a process diary and record of emerging policy change over the period of the study. Interviewees tended to sketch as they talked so there was also visual data.

Through sending a paper ahead to interviewees, inviting follow-up, in seeking agreement to use passages from interviews in the project account, and in reviewing drafts of this account, a critique of my perspectives was invited and received – supporting reflexivity and multiple viewpoints.

The data-analysis techniques used were cohesive within the approach. Whilst acknowledging that no study can be entirely inductive, I used an inductive approach to data (theory-emerging, rather than theory-testing) and a ‘constant comparative’ method of comparing and contrasting data (cf Ball 1981, 1991, 1994b). The ‘constant induction’ aspect of such a method relates to analysis of data whilst continuing to collect it – a technique I also employed. This included continuing reviews of literature as fresh aspects emerged from the analysis or impinged on the project. In physical terms, my approach to analysing the transcriptions of conversation-interviews (some 59,000 words of data) was multifaceted. Processes included analysis by chronology and by theme and sub-theme using word-codings. A further technique was ‘pile-building’ of ideas (Harvey 1990; Creswell 1998) or ‘progressive focussing’ (Stake 1995) using multiple documents open at the same time. I built broad theme documents from the data and then moved aspects (tied to their owner) to-and-fro between documents – until I reached a point where no

fresh themes or ‘deviant’ cases seemed to emerge (indicating that the themes were probably ‘good enough’) and everything had a place. Six broad themes emerged (Table 1) encompassing clusters of sub-themes.

Themes
<i>1. Influences</i>
Personal histories/interconnection/influencing generally
Historical tensions: science/crafttrades/caring/engineering/handicraft/ design/TVEI/genderised
<i>2. Influencing</i>
Influencing the Parkes’ Working Group
Impact of the Parkes’ Report/National Curriculum
<i>3. ‘is’ (knowing)</i>
Knowing in D&T/capability (role of knowledge)
Assessment/capability
Vocational/practical/competence/capability
<i>4. ‘is’ (unitary/binary)</i>
D&T ‘is’ (unitary concept)
What is D&T?
What isn’t D&T?
<i>5. ‘is’ (further)</i>
Design – Technology (balance)
What do they mean by designing?
What is the role of ‘T/technology’?
‘Making’
Throughout curriculum or across-subject?
<i>6. ‘Might be’</i>
Imagining futures

Table 1: Thematic categories

Evaluation

Was the methodological approach taken in this pilot study fit-for-purpose? The methodology I developed worked in a range of testable senses: the approach, tools and techniques proved useful in eliciting a rich pool of data; the study remained ethically sound; various tensions that emerged in the literature were underscored through the interview-conversations; further tensions and other considerations that I did not anticipate did emerge from the data. The exploration was also successful in that it helped me to ground my views in relationship to those of others.

A further purpose of this pilot study was that its methodological approach should support benchmarking views that inform D&T education policy-making. This proved more problematic. Research that seeks to inform policy-making may be shifting its focus in tandem with the time-line of policy formation (Rist 1994; Hodgson and Spours 2004). Figure 2 illustrates how I found myself:

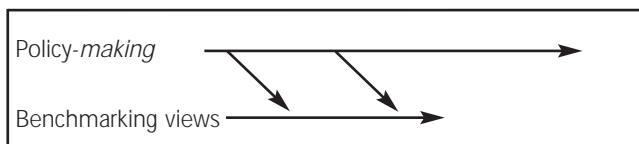


Figure 2: *shifting sands: views lag behind policy-making.*

This exemplified a difficulty in benchmarking positions against policy-formation and, thereby, difficulty in policy-informing. Benchmarking is possible as data offers up how individuals saw things at that time, but policy-making moves continuously and behind-the-scenes. Views may change as 'realities' impinge and for busy people engaged in their day-to-day endeavours horizons are not necessarily geared to wider, and hidden from public gaze, landscapes (Bryant 2000:514).

As this pilot project closed (July 2006) wider policy developments had moved forward and D&T's continuing mainstream existence – as a 'subject' – was challenged (see introduction). Most of the interviewees were engaged in a revised Secondary curriculum policy forming process but outside of that localised placement of influence a key window for influencing the nature of first phase diplomas and the STEM agenda had already opened and closed.

Concluding comments

It seems from my pilot study that those that I interviewed shared similar beliefs about, for example, the humanistic nature of D&T, although tensions remained. The methodology did not however take sufficiently into account that policy-making moves quickly and that much is confidential within

policyinfluencing clusters (steering groups and so forth).

Extending the methodology to a longitudinal study would support multiple conversations enabling reflexivity with shifting horizons. However, a researcher intervention aspect of a policy-informing purposed study where researcher and informants share information about forthcoming policy changes – which could provide a solution – poses an ethical barrier for researchers and interviewees in not proffering confidential policy-forming information to which they are privy (Mickelson 1994, discusses).

This, as well as that there is a real danger of not only loss of policy-memory/policy-learning but also of loss of a shared, and often implicit, understanding of the nature of D&T and why D&T is worth fighting for, has led me to suggest (Wright 2008) that D&T is inadequately prepared to defend its corner on the basis of agreed, and explicit, value and policy positions. A deep conversation such as that outlined in the National Curriculum D&T Working Group report (DES & WO 1988) urgently needs to happen again, with, this time, as wide as possible involvement of all D&T influencers and practitioners. Questions worth following through to such a strategic review include reflecting on the 'Ofsted assumptions' (Toft 2007: 270-271), revisiting some of the key questions discussed by the National Curriculum D&T Working Group, all our own implicit theories (Dow 2007), and re-establishing what D&T is or isn't in practice.

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