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# A small-scale preliminary pilot to explore the use of Mode 2 research to develop a possible solution to the problem of introducing one-year PGCE design and technology trainees to design methods that are relevant to the teaching of designing in the secondary school

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## Abstract

*David Hargreaves (1998) noted that, in the world outside education, knowledge is not created in a university by researchers and then applied somewhere in the real world by practising professionals: it is developed where it will be used. It will be developed in order to get something done, a form of research called Mode 2 (Gibbons et al, 1994). He proposed that 'knowledge creation and dissemination in education must now move into Mode 2: teacher-centred knowledge creation through partnerships'. In this paper we identify two problems by means of a literature survey and through a partnership between a curriculum developer and a university-based researcher, clarify its local manifestation and explore a possible solution that might be further informed by an extension of this research method. The problems identified by the literature survey are (a) the wide variation in designing experience within one-year post-graduate certificate of education (PGCE) design and technology students and (b) the poor development of designing skills in secondary school pupils within the subject design and technology. The partnership developed and implemented a piece of work new to the PGCE design and technology curriculum at a university in the south of England to give trainees experience relevant to their own development as a designer and to show how this might be related to developing design skills in school pupils. This was in addition to the design-based projects trainees had been required to develop and present in previous years. The trainees' response to the work and its relevance to the Key Stage 3 work they undertook on teaching experience were then identified by a short interview with a selection of the students. The implications of this feedback for an extension of this work are discussed within the intention of improving the design teaching expertise of PGCE students at this particular university.*

## Keywords

*design and technology, designing, PGCE (Post-Graduate Certificate in Education), Initial Teacher Education*

## Introduction

Traditionally, new knowledge in education has been created by those involved in educational research, who are usually university-based. They investigate classroom practice with the co-operation of schools and classroom practitioners, but it is invariably the researchers who set the agenda, carry out the research and report it in peer reviewed journals that teachers seldom, if ever, read. This kind of knowledge creation was, until relatively recently, the one by which new knowledge was created in science and technology. But this form of knowledge creation has evolved into another kind. Here knowledge is not created in a university by researchers and then applied somewhere in the real world by practising professionals: it is developed where it will be used. It will be developed in order to get something done. Its worth will be judged by how useful it is in practice. It will be disseminated mainly through informal communication networks and over time as those involved in its creation move to new locations. It may never appear in books or academic journals. These two kinds of knowledge generation have been labelled Mode 1 and Mode 2 (Gibbons et al, 1994). David Hargreaves, Chief Executive of the Qualification and Curriculum Authority (1999–2002) in England, has argued that '...knowledge creation and dissemination in education must now move into Mode 2: teacher centred knowledge creation through partnerships' (Hargreaves, 1998). It can be maintained that Mode 2 research is an extension of action research.

The work described in this paper uses a Mode 2 research model to engage with the problem of introducing one-year PGCE students to design methods that are relevant to the teaching of designing in the secondary school, an area of acknowledged difficulty. The partnership in this research is between a curriculum developer and a university-based researcher. The aim of the research is not to develop a solution to the problem that is transferable to a wide range of institutions, rather it is to develop the new

professional knowledge that is required by those working within a single institution to address that problem within that institution.

There has been a range of initiatives in England that have radically influenced the training of design and technology (D&T) teachers. These include the introduction in schools of the National Curriculum for design and technology (1990) with the traditional subjects of craft, design technology (CDT) and home economics under a common umbrella. In 1995 the Design and Technology Association (DATA) published the research paper 'Minimum competences for trainees to teach Design and Technology in Secondary Schools' (DATA, 1995) as guidance for teacher educators. During the same period there was a government requirement to move towards a school-based training model for trainee teachers and the development of partnership arrangements between initial teacher education (ITE) and schools (Department of Education and Science, 1989). In addition there has been a movement from four-year undergraduate teacher education courses towards one or two-year PGCE courses for trainees from a wide range of career and degree backgrounds. A change accelerated by the introduction in 2002 of training salaries for trainees on PGCE courses. ITE is no longer to be the only route into teaching with the introduction of school-based models for graduates such as school-centred initial teacher training (SCITT) and graduate teacher routes (GTR). A major initiative of Circular 9/98 (Teacher Training Agency, 1998) introduced the concept that all trainee teachers would achieve a set of professional standards for Qualified Teacher Status (QTS). These government directives and initiatives have all had a noticeable impact on the training of PGCE Secondary D&T teachers.

Feedback from the 1999–2002 Design and Technology Secondary Initial Teacher Training Subject Inspections by the Office for Standards for Education (Office for Standards in Education, 2003) showed that there were 34 postgraduate and six undergraduate design and technology courses. Of the postgraduate courses, 28 were based in higher education and 12 were in school-centred initial teacher training (SCITT). The increased emphasis on the PGCE as a route into teaching, the majority of which are one year, and the requirement that trainees spend 24 weeks of that year training in schools (Teacher Training Agency, 2002) has led to considerable informal debate on course content and method of delivery, although little of this debate has become public in the sense that it is reported in relevant academic journals. A survey of the International Design and Technology Education Research Conference proceedings from 1991 to 2002 and issues

of *The Journal of Design and Technology Education* since 1996 revealed only five relevant articles (Lewis, 1995, 1996; Rutland 1996, 1997, 1999).

### **The problems identified**

Lewis (1995) used the term 'alignment' to describe the appropriateness of a prospective student's qualifications and experience to teach D&T. He suggested that a product design student would be in reasonable 'alignment' but a fine arts degree would be out of alignment. Similarly, a qualification in engineering is in reasonable 'alignment' but a computer science qualification is 'out of alignment', though he notes that some applicants may have other experiences, which brings them more into 'alignment'. Tufnell (1997) commented on the varied backgrounds of PGCE trainees when he addressed a conference on the issue of teacher supply in D&T. Degree background included furniture production, knitted and woven textiles, three-dimensional design, electronics, mechanical and electrical engineering, design and technology, architecture, graphic designer and interior design. This concurs with findings by Rutland (1996) in an analysis of three PGCE student cohorts of 1992–1995. Trainee backgrounds included those already mentioned plus technology and consumer science, building, hotel catering and textiles and fashion.

The overarching nature of D&T in English schools since the introduction of the National Curriculum has resulted in a reassessment of the specialist areas or 'fields' found in courses preparing future D&T teachers. Guidance from 'The Minimum Competences for Students to teach Design and Technology in Secondary Schools' (DATA, 1995) divides subject-specific knowledge into core and specialist 'fields' – resistant materials, food technology, textiles technology and control and systems. Each section includes designing and making, communicating skills, products and applications, technological concepts and information technology-related skills. These competences are in the process of revision to include 'modern' materials, processes and terminology but the core and the four fields remain essentially the same.

Office for Standards in Education (2003) commented that most, but not all, PGCE Secondary D&T trainees showed a clear understanding of designing. Similarly, Lewis noted in 1995 that students had different levels of 'alignment' and there was a need to design courses to fill in the gaps in their D&T subject knowledge, skills and understanding, as well as train them to teach. He found that only 25% of the engineering students were aware of design processes and only 23% with technological backgrounds had done courses which covered designing, frequently in a very

restricted manner. In a study of 27 higher education institutions and over 600 mature students, Lewis (1996) found that many students lack practical skills and their designing expertise was variable. The majority of 'design' students had a sound base for teaching design, but graduates of other D&T degrees appeared less well equipped, with over half (58%) of the engineers with no follow-up design activities in their previous course. Design students were well equipped to teach drawing but most of the others had been on courses with minimal practical drawing, a skill considered by many D&T teachers to be essential to communicate ideas and help make design decisions.

Office for Standards in Education (1998, 2000) has reported consistently since the introduction of D&T into the National Curriculum in England that designing skills lag behind making skills. Office for Standards in Education (2003) reported that in 'some schools, there is insufficient attention to the processes of designing, particularly in Key Stage 3 where pupils' experience of design and technology is merely a sequence of short focused practical tasks with no opportunity to apply their own ideas in a longer design task'. Denton (1993) commented that in his experience designing had become a stylised ritual encouraging children to follow an apparent fixed design line. He noted that the initial phases of the design process in many schools had become producing sheets of over-decorated artwork rather than efficient or effective design.

It is arguable that an alignment that includes high level design drawing skills may not necessarily dispose a trainee to appreciate the difficulties experienced by pupils or the alternative strategies available to them. Banks and Barlex (1999) in their work on the DEPTH Project (Developing Professional Thinking for Technology Teachers) have indicated the need for pedagogic knowledge in conjunction with subject knowledge to ensure that high levels of teacher expertise can be mediated to pupils. Furthermore, they argue that these two components do not necessarily guarantee success as a third component. 'School' knowledge governs to a large extent the sort of pedagogy that can be employed and the effectiveness of this pedagogy. Murphy (in Barlex, 2003) has argued that the prevailing mode of teaching in secondary schools is hegemonic and that this is largely inimical to pupils' designing. Hence the potential for success in teaching pupils to design for a trainee or newly qualified teacher is likely to be limited by several factors – their own subject expertise, their pedagogic repertoire and the prevailing orthodoxy in most of the school curriculum.

It can be argued that it is a legitimate expectation that both ITE and professional development programmes should have as one of their intentions addressing this shortfall in designing and while these are not the only influences on the Key Stage 3 D&T curriculum their impact over recent years has not made a significant difference. This presents a challenge to those involved in initial teacher training in D&T – how to introduce PGCE trainees to design methods that are relevant to the teaching of designing in the secondary school.

### **The problems in their local context**

The PGCE course at this university takes trainees from all four 'fields' of D&T as outlined by the DATA Competences (DATA, 1995). The course has evolved to address the essential core for all the trainees and the knowledge, understanding and skills specific to the individual trainee's first and second field through specialist sessions. The range of tutors required is a key issue and this is addressed through the use of teacher tutors from partner schools and recruiting visiting lecturers with specific expertise. Trainees are required to develop a 'training plan' for each of the three block practices, which is shared with their mentor. There is a strong partnership arrangement with schools with many experienced subject mentors providing support and guidance for the trainees on school experience (Rutland, 1997,1999).

The need to address 'designing' alongside other issues of subject knowledge and skills was highlighted in the trainees' initial subject audit based on the DATA Competences (DATA, 1995) carried out at the beginning of the course. It had been noted in previous years that some trainees when developing their specialist 'field' design-based assignments lacked an understanding of the processes and techniques of generating, developing and communicating design ideas and making design decisions. This was more common with mature trainees whose school education pre-dated the National Curriculum and ones without design-based degrees, for example, engineering or food science. In previous years core sessions for all trainees at the beginning of the course, before they concentrated on their chosen 'fields', had focused on subject knowledge and skills, health and safety considerations, the use of information technology and the theory associated with the processes of designing. It was considered important that all trainees, regardless of their specialist 'fields', should have an experience early in their course that would emphasise the designing competences and prepare them for teaching D&T projects in their placement schools without compromising health and safety issues.

### **Curriculum development to address the problems**

The trainees worked in small groups to tackle the

following designing and making assignment (DMA) that had not been used in the course programme before:

- produce a collection of body adornment items that can be sold in a retail outlet of your choosing to an identified customer group
- consider the learning possibilities and difficulties associated with such a designing and making assignment

To develop insight into the preferences of the customer and the style of the retail outlet, each group produced an image board, a mood board and a stimulus board. An image board was defined as a collection of images chosen to provide some understanding of the visual values and life style of a particular consumer group. A mood board was defined as a collection of images which shows shapes, colours, patterns and textures to establish the underlying visual 'feel' of design proposals. It is usual to produce a mood board in response to a pair of opposites. For example: fiery/cool, soft/hard, wet/dry, masculine/feminine. It does not show objects or people. A stimulus board was defined as a collection of images which a designer can use to provide inspiration for design ideas. In this case the images could be taken from one of the following groups: natural forms, geometric forms or the art/design forms or others.

To develop or revisit practical knowledge and skill likely to be useful for the group DMA, individual trainees were able to tackle a selection of focused practical tasks (FPTs) from those listed in Table 1. The entire activity – DMA and supporting FPTs plus feedback discussion – took four days.

The group composition, individual trainee's qualifications and previous experience, plus the group's identified customer are summarised in Table 2. Inspection reveals the wide diversity across the cohort and within each group indicating different levels of 'alignment' with regard to design skills. 14 out of the 23 trainees would have experienced little in the way of designing during their secondary school education as this took place before the introduction of the National Curriculum. If the trainee had followed D&T courses in schools in the early 1990s, the quality of their designing experience might be suspect (Denton, 1993).

The course tutor who developed this new element of the curriculum identified five important features that contributed to its worth in its overall intention of providing an approach to designing that would be useful for trainees in teaching D&T at Key Stage 3.

1. It enabled him to model good practice at two levels – engaging with trainee teachers in terms of their own learning and relating this to equivalent teaching activities with Key Stage 3 pupils.
2. It introduced the group to most of the hand tools and simple machine tools that pupils are likely to use at Key Stage 3.
3. It introduced a wide range of materials, simple cutting, shaping and joining techniques and a few simple forming techniques; all relevant to designing and making with resistant materials at Key Stage 3.
- 2 and 3 are important as they give trainee teachers confidence and allowed the tutor to deal with understanding how to use tools correctly and safely.
4. It enabled him to discuss with the group the different management and pedagogic issues that arise in the FPT work and the DMA work. In the former, the activities have been designed to develop specific knowledge and skill, hence there is only limited variation possible in pupil (and trainee) response. The pupil is in 'response' mode; using the tools materials and equipment prescribed by the teacher to design and make the product prescribed by the teacher. In the latter wide variation is possible as the pupil (and trainee) is choosing which tools, materials and equipment to use to realise a design, which is being developed for a customer of the pupil's choice to be sold in a retail outlet of the pupil's choice.
5. It enabled the tutor to model how to manage collaborative learning and to discuss in feedback sessions reasons why he did or did not intervene on certain occasions.

#### **Research to explore the efficacy of the solution**

To assess the impact of this curriculum intervention, one trainee from each of the working groups was interviewed. These were chosen because of their range of previous design experiences and hence alignment with regard to design skills together with their reflective and mature approach to their studies.

Each of these trainees was interviewed separately and asked a series of questions to comment on their personal response to the DMA plus associated FPTs (see Table 3).

Their answers were recorded through field notes. Several interesting features emerged. Without exception, all those interviewed agreed that it was an appropriate activity as an introduction to a PGCE course for several different reasons:

- the group work acted as an icebreaker
- the DMA was flexible and the range of FPTs gave

- them choice according to previous experience
- it introduced some course members to design strategies that were new and which, importantly, did not rely on a high level of drawing skill (the various image boards)
  - for some it enabled them to revisit basic activities they had encountered at university but had forgotten
  - it introduced collaborative working as an important part of D&T.

Each of the chosen trainees were asked about the relevance of the DMA and associated FPTs to the Key Stage 3 work they carried out in teaching experience six months into their one year course and the work that they observed in the teaching experience schools. Their answers were recorded through field notes. All agreed that it was an appropriate project for Key Stage 3 citing the wide range of techniques taught across a variety of materials, the forgiving nature of the design activity (high levels of accuracy and skill were not absolutely essential) and the encouragement for pupils to be creative and original. But a sorry picture emerged concerning the practice in the experience schools. Only one trainee was able to report that he had seen, and taken part in, similar resistant material work in his teaching experience school. One trainee noted that in her school this approach was used in textile-based work but thought this was probably because those teaching textiles D&T had art and design backgrounds.

With only one exception, all the trainees interviewed found that the projects set at Key Stage 3 were not in fact DMAs but skill acquisition FPTs, with little if any room for design decisions by pupils. One trainee observed that ‘unfortunately my Key Stage 3 experience in school did not relate at all to what we did...the pupils went straight into drawing designs onto a paper divided into four sections...pupils were not given the opportunity or encouraged to come up with ideas. I thought I would use mood boards and have a theme – Aztecs – but I was short of time and I was hesitant to, with the very traditional approach of the head of department...some of the staff were quite frustrated by this.’ Another trainee suggested that ‘while I wanted to adopt such an approach, which I had seen in another school, I felt that it would be inappropriate, given the practice I had observed in the placement schools’.

This raises a serious cause for concern and can be articulated in terms of ‘school’ knowledge in the subject construct model (Banks and Barlex, 1999). If the prevailing orthodoxy in schools (as defined by school knowledge) severely limits teaching design skills, then it is very difficult for trainees to develop

expertise in this area either during their initial training or in the early stages of their career. Trainees’ priority is, understandably, to pass the course and not confront prevailing orthodoxy which might alienate their teacher mentor who assesses their progress. The long-term danger could be that they will conform and lose the will and interest to be innovative.

### Conclusion

The impact of the curriculum development designed to provide experience and acquisition of designing skills that can subsequently be used in teaching designing as part of D&T at Key Stage 3 cannot be adequately assessed through this small pilot study as the trainee teachers concerned had little if any opportunity to use these skills in their D&T teaching at Key Stage 3.

The response of the trainee teachers to this intervention is encouraging in the sense that they react positively to it both at a personal and a professional level. It is, however, very disappointing to note the lack of opportunities available to capitalise on this reaction in teaching experience schools.

The key piece of new professional knowledge emerging from this intervention is the importance of an additional collaboration into the activity. The active involvement and participation of teaching experience schools is needed from the outset.

Next academic year the researchers hope to repeat the intervention but negotiate with teaching experience schools the opportunity for more trainees to try out this approach in school. In addition, the researchers hope to monitor the development of design skills over the PGCE course in those trainees that have had limited experience before coming onto the course. The impact of this attempt to introduce design methods and influence the nature of teaching experience will be further explored.

### References

- Banks, F. and Barlex, D. (1999) ‘No one forgets a good teacher: What do ‘good’ technology teachers know?’, in R. Kimbell (Ed) *The Journal of Design and Technology Education*, 4 (3): 223-230
- Barlex, D. (2003) *Creativity in Crisis*, England: Design and Technology Association and The Nuffield Foundation
- Denton, H. (1993) ‘The Design and Make Task (DMT): some reflections on designing in schools’, in J. Smith (Ed), *International Conference on Design and Technology Educational Research and Curriculum Development IDATER 1993*, Loughborough University of Technology: 170-73

Department of Education and Science (1989) *Initial Teacher Training Approval of Courses, Circular No 24/89 and Circular No59/89*, London: Department of Education and Science

Department of Education and Science (1990) *Technology in the National Curriculum*, London: HMSO

Design and Technology Association (1995) *Minimum Competences for Students to Teach Design and Technology in Secondary Schools*, Wellesbourne, England: DATA

Gibbons, M., Limoges, C., Nowotny, H., Schwatzman, S., Scott, P., and Trow, M. (1994) *The new production of knowledge*, London: Sage

Hargreaves, D. (1998) *Creative professionalism the role of teachers in the knowledge society*, London: Demos

Lewis, T. (1995) 'Partnership Schools, Universities and the Shortage of D&T Skills', *Design and Technology Teaching*, 27 (2): 47-52

Lewis, T. (1996) 'The skills and quantities of students entering design and technology initial teacher education', in J. Smith (Ed), *International Conference on Design and Technology Educational Research and Curriculum Development IDATER 1996*, Loughborough University of Technology: 147-152

Office for Standards in Education (1998) *Secondary Education 1993-97: A Review of Secondary Schools in England*, London: The Stationary Office

Office for Standards in Education (2000) *OFSTED Subject Reports Secondary Design and Technology, 1999-2000*, London: The Stationary Office

Office for Standards in Education (2002) *Design and technology in secondary schools, OFSTED Subject Reports Series 2001/02*, London: The Stationary Office

Office for Standards in Education (2003) *Secondary ITT Subject Inspections Conference: Design and Technology SSI Review 1999-2002*, London: The Stationary Office

Rutland, M. (1996) 'An analysis of a developing partnership between ITE and schools in the training of secondary D&T teachers', in J. Smith (Ed), *International Conference on Design and Technology Educational Research and Curriculum Development IDATER 1996*, Loughborough University of Technology: 153-160

Rutland, M. (1997) *Partnership in Initial Teacher education and beyond in Primary and Secondary Education*, Wellesbourne: DATA

Rutland, M. (1999) 'An investigation of the Concept of Partnership in Design and Technology Initial Teacher Education', in R. Kimbell (Ed), *The Journal of Design and Technology Education*, 4 (2): 116-123

Teacher Training Agency (1998) *Circular 9/98: Requirements for all courses of Initial Teacher Training*, London: Teacher Training Agency

Teaching Training Agency (2002) *Qualifying to teach: Professional Standards for Qualified Teacher Status and Requirements for Initial Teacher Training*, London: Teacher Training Agency

Tufnell, R. (1998) 'University Perspective', in *An Invitation Conference on Teacher Supply in Design and Technology: Report and Findings*, Wellesbourne: DATA

## Appendix

*Table 1: Focused practical tasks to develop knowledge and skill likely to be useful in designing and making a body adornment collection*

Focused practical task	Material	Techniques explored
Design and make an artificial flower	Card and paper	<ul style="list-style-type: none"> <li>creasing and folding,</li> <li>cutting (with both scissors and craft knife)</li> <li>joining (with pva adhesive, double sided adhesive tape, staples and fasteners).</li> </ul>
Design and make a two colour badge	Thermoplastic sheet	<ul style="list-style-type: none"> <li>cutting, shaping, and finishing single pieces of thermoplastic sheet</li> <li>joining pieces of thermoplastic with adhesives</li> </ul>
Design and make a photo frame	Acrylic sheet	<ul style="list-style-type: none"> <li>cutting a hole in a sheet of acrylic sheet</li> <li>line bending an acrylic sheet by using a strip heater.</li> </ul>
Design and make a book mark	Thermoplastic sheet (polystyrene)	<ul style="list-style-type: none"> <li>low relief vacuum forming</li> </ul>
Design and make a wooden pendant	Plywood and mahogany	<ul style="list-style-type: none"> <li>cutting, shaping, and finishing single pieces of timber</li> <li>joining pieces of timber (using pva adhesive or double sided adhesive tape)</li> </ul>
Design and make an artificial flower	Copper and aluminium	<ul style="list-style-type: none"> <li>cutting, shaping, and finishing a single piece of metal (copper)</li> <li>colouring metal by enamelling (copper)</li> <li>forming metal by dishing (aluminium)</li> <li>joining pieces of metal mechanically (using pop rivets)</li> <li>colouring a metal by painting with 'enamel' paints</li> </ul>

*Table 2: Composition, qualifications/previous experience and Identified customer for body adornment DMA for each design group*

Group composition	Qualifications/previous experience	Identified customer for body adornment DMA
Female	BEng plus engineering	Teenage girls
Female	BA Textiles (woven) straight from university	
Female	BSc Food Science, Nutrition Diploma plus catering	
Male	BA Packaging Design, BTec Art and Design, plus commercial design	Tourist/surfing holiday merchandise
Male	BA 3D Design, Art and Design Foundation Course plus commercial and industrial experience	
Male	BSc Technology (OU), BTec and HNC Electrical Engineering plus 22 years in Royal Navy	
Female	BA Graphic Design, BTec Art and Design, plus software industry experience	
Female	BA Interior Design plus commercial experience as project manager	
Male	BSc Industrial Design, plus engineering design for 4 years and educational trainer for ProDesktop for 4 1/2 years	20–30 year old males with hi tech focus
Male	MA Advanced Japanese Studies, Cert Ed Ceramics, HND Ceramic 3D Design, plus 10 years experience as school technician	
Female	BA Costume Production, straight from university	
Female	BA Theatre Design straight from university	
Male	B Eng Electrical and Electronic Engineering, M Eng, M Sc Information Systems	25 year plus males understated design
Female	BA Design and Technology straight from university	
Male	BA Computer Visualisation and Animation, HND Art and Design	
Male	BA Architecture plus 4 years professional experience	
Female	BSc Psychology, MSc Computing, C&G pattern cutting and furniture craft plus own glass making business	Woven leather and metal collection for alternative market
Male	BA Moving Images, TA Vehicle mechanic, Master Farrier (metal) for 15 years	
Female	BA Architecture plus several years professional practice	
Female	BA Theatre Design, Fine Art Foundation Course plus 6 years experience as model maker in theatre, films and museums	

*Table 3: Interview questions for trainees*

1. Who else was in your group?
2. What was the target market for the groups collection?
3. What was your personal response to the activity?
4. What did you think, in hindsight, was the relevance of the activity to the Key Stage 3 experience in your two placement schools?