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## **The Value of School-based Design and Technology Professional Work**

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### **Biographical notes**

The three co-authors all work at the Centre for Research in Primary Technology based in the School of Education of the University of Central England in Birmingham. The Centre holds a bi-annual conference on primary design and technology and is an important provider of INSET provision in the subject. **Professor Clare Benson** has an international reputation for her expertise in primary design and technology and has written extensively. **Mike Martin** has particular interest in product evaluation and is known for his work on values issues in design and technology. **Wesley Till** has considerable experience as a teacher, adviser and author of support materials for teachers.

### **Abstract**

School experience is recognised as an important part of courses leading to qualified teacher status. For those training to be specialists in design and technology, the opportunity to teach the subject is essential. This can, however, prove difficult and the provision of modules specifically aimed to provide the experience has become important. This paper describes a small-scale research project to evaluate such a module from the perspective of all involved. It illustrates that, with careful planning, it is possible to provide a period of reflective practice for students whilst at the same time raising the profile of the subject in school and give children an enhanced design and technology experience.

**Keywords:** School-based work, primary, ITT, evaluation, partnership, staff development

### **Introduction**

This paper describes research into school-based work undertaken by primary design and technology specialist students at UCE. The aim of the research was to evaluate the extent to which the module met needs of students, tutors, teachers and their pupils in delivering a quality design and technology experience. Although very localised and small in scale, it shows what can be achieved and highlights the crucial role of this kind of experience for both students and the future of design and technology as a whole.

### **The course at UCE**

Since the creation of the Design and Technology Subject Specialist course in 1986, it has undergone many changes brought about by a variety of factors. The course needs to reflect content of the National Curriculum as it is taught in primary schools and it has had to keep pace with the many changes to the curriculum since 1987.

Despite changes in government policy related to teacher training, one module has remained as an important element of the course. This is school-based work, where students work together in teams to teach design and technology in school. The class teacher and a tutor have always been involved but their roles have changed yearly, depending on a number of factors including time allocation, personal commitment, the school's priorities and effective three-way communication.

The school-based module which the students undertook in the autumn term 1999 had a number of features which were new, mainly to address the points raised in previous evaluations and the requirements of Circular 4/98. (DfEE, 1998) Following the need for specialist students to have experience of teaching their own subject at both key stages, it was decided to split the time allocation in half so that students spent five half-day sessions teaching in each key stage, rather than just that of their chosen key stage.

It was the intention that the teacher would be an active team member, rather than an observer, who could offer information about the past experiences of the children and who could work together with the students and tutor to develop his/her own knowledge and skills of the subject. There was additional tutor support to give extra help with planning, delivery and evaluation of the sessions. Whilst the students would obviously gain in many ways from the experience, they had to focus in particular on teaching and learning strategies. They took it turns to observe, writing up their notes and sharing their findings with the whole team. This active/reflective role was a distinctive element to the module.

### **National context**

Few would argue that school-based work does not provide students, teachers and tutors with a very positive and necessary experience. There is, however, little research into the value of school-based work in design and technology teacher education.

The DES circular 24/89 (1989) was a major building block in the development of partnership and included statements relating to the contributions which teachers could make to lectures and other course activities. Further support for this notion came in Circular 9/92 (DFE, 1992), Circular 14/93 (DFE, 1993), Circular 10/97 (DfEE, 1997) and Circular 4/98 (DfEE, 1998a). This final document included details of the standards which trainees have to meet, including those in design and technology, but it is proving difficult for some students to gain experience of planning, teaching and class management and assessment, recording and reporting in design and technology during teaching practice.

Because of the relaxing of National Curriculum requirements in 1998, (DfEE, 1998b) some schools have curtailed the delivery of the subject and students have been unable to teach the subject on teaching practice. Whilst the situation should change from September 2000 with the introduction of the new National Curriculum requirements, school-based work focusing on design and technology, and indeed other foundation subjects, is even more crucial.

The DfEE is not the only body to identify the need for students to gain classroom experience of the delivery of the curriculum, including design and technology. The TTA (June 1997) detailed requirements for primary courses which included the need for student teachers to prove their ability in effective teaching methods, classroom management and subject knowledge. The Design and Technology Association (DATA) has provided a comprehensive list of competencies (DATA 1996) which all primary design and technology subject specialist students should gain during their training. School based work is essential in order that some of these competencies can be achieved.

It can be argued that design and technology specialist students face a different situation to those of other subject specialisms. No teacher has experienced design and technology during his/her own primary schooling; few studied it at secondary school; and few studied it to degree level in their own training. Therefore there are still a number of teachers who do not feel confident in delivering the subject in their own classrooms and schools that are still developing a successful whole school approach to design and technology (OFSTED, 1999). It is therefore very important that students are well supported in these situations by a co-ordinator or a tutor who has expertise not only in subject knowledge (Alexander, 1992) but in the organisation and management of the subject (Schulman, 1986 and Ellis, 1995). Consequently it is important to have a team which includes a teacher and/or a tutor with specialist knowledge not only in content but pedagogy.

### **Research methodology**

The research for this paper was gathered using a combination of semi-structured interview and questionnaire techniques.

A dedicated questionnaire was devised to gather the children's responses. Each of the class teachers administered these within one week of the last visit by the UCE team. The Key Stage 1 questions were asked verbally by their class teachers who then noted the children's collective responses down. However, the Key Stage 2 children were asked to complete individual questionnaires.

The UCE trainees were asked to complete individual questionnaires during their last lecture of the autumn term. The responses from the five teachers were gathered during interviews by the UCE tutors at the conclusion of the project. One advantage of doing this face to face, rather than by questionnaire, was that responses could be explored in depth.

The two headteachers were interviewed by telephone one week after the last visit by the UCE team. It was felt that this time interval would allow an opportunity for the headteachers to discuss the outcomes of the project with the relevant members of staff, who in turn would have had a few days to reflect on the entire project.

A series of key questions were prepared for the interviews with teachers. These covered such areas as organisation of the school experience and anticipated outcomes. The open-ended nature of the questions was aimed to stimulate discussion. Responses to the key questions, along with other comments related to the module, were recorded by interviewers. Finally, a questionnaire was completed by each of the three UCE tutors involved with the project.

### **Data summary**

The data collected was small in quantity with two schools, five classes, five teachers, 14 students and three tutors. The variety within the sample was, however, quite considerable with different types of schools, year groups and key stages. The teachers involved all had different design and technology experiences as did the students and tutors. The following paragraphs summarise the data collected.

#### *Children*

The children enjoyed working with the visitors who came and the project as a whole. From the practical and written outcomes produced and comments made, they had clearly learnt a great deal of information and found the activities interesting.

“Making our own logos was really good...”

“We learned a lot about boxes and packaging. I didn’t know that before...”

All children enjoyed the making aspects of the work and the Key Stage 1 children particularly enjoyed those elements where stories were involved. The investigation and evaluation was seen as less enjoyable work when groups were carrying this out at the same time.

#### *Teachers*

Five teachers were directly involved in the work and represented both Key Stage 1 (two) and Key Stage 2 (three). There was a unanimously positive response to the experience. Teachers felt it was particularly useful to have additional adults in the classroom and agreed that the children achieved more as a result of the project.

The work with students had provided insights into the QCA Scheme of Work and reinforced their existing views about design and technology as a subject. One teacher commented that the project had given him opportunities to see how design and technology can strongly enhance language work.

When asked about how things might be improved, several teachers commented that more planning time beforehand would have been useful. In addition one teacher said that it would have been useful if the students had covered areas of design and technology that she was unfamiliar with.

#### *Head teachers*

The head teachers involved were favourable about the work and saw the project as an opportunity to increase staff expertise and to broaden the experiences of the children. In response to a question about anticipated outcomes for school they both felt that it had provided intensive focused work for groups of children. All of their expectations had been met and they went as far as saying they had been ‘surpassed’ and that ‘children got more than just design and technology’.

With reference to the general state of design and technology in school at the present time, both head teachers believed the subject to be important and that the project had raised the profile of design and technology.

Aspects of the work were to be continued in both schools and word had spread ‘in corridors, by word of mouth and children been talking in the playground’. On a formal basis both co-ordinators had organised feedback to disseminate outcomes of the work at staff meetings. This was particularly interesting, as it was not a planned feature of the project.

#### *Students*

There were a total of 14 responses from students. Almost exclusively there were increased levels of personal confidence (12), and they felt more aware of possibilities within design and technology. When asked for factors that had helped increase understanding of how children learn, all students said

that the opportunity to observe was most valuable. To support preparation for design and technology, important factors were resources (eight), subject knowledge and knowledge of children's prior learning experiences (six).

The key advantages of collaborative working were seen as planning together, feedback from peers and finding out how others teach. Disadvantages included the allocation of tasks, teaching in front of peers (not so much in front of tutors) and having to rely on others.

Advantages of peer observation were seen to be the opportunity to view different approaches and being able to observe others teaching:

*Opportunities to see learning rather than just from the teaching perspective*

Disadvantages of peer observation included increased nervousness, embarrassment, the fact that trainees are not teachers, difficulty in assessing friends and that comments could be taken personally.

Working in both key stages enabled them to see progression, to experience how children respond and learn, to provide an opportunity to try a range of activities. Difficulties included working in the opposite key stage to their chosen one.

Generally the students found the experience enjoyable and useful. Increased time for preparation and the opportunity to spend more time with the school co-ordinator, to discuss their work, would have been beneficial.

#### *Tutors*

Tutors found the project rewarding as it provided a good opportunity to get into schools and work closely with students in a team teaching situation. In that sense it was a valuable opportunity to practise what we preach: to write lesson plans to UCE's format using units from the QCA scheme of work and to teach example lessons. The experience also provided an opportunity to highlight to students the importance of observation and illustrate techniques for doing so.

#### **Conclusions**

Overall this was a valuable project for all concerned, providing a positive experience from which everybody benefited. Children had an enhanced design and technology experience and achieved more than in conventional lessons. The profile of design and technology in the schools was raised and provided co-ordinators opportunity to talk to staff about the project.

A significant effect was to increase students' confidence in teaching design and technology and providing opportunities for students to observe children's learning. This was only possible through working in teams.

Further investigation is needed into why the children did not find the investigation and evaluating elements interesting and try strategies to increase their enjoyment and to help them see how valuable these elements are.

It is quite clear that such modules are an essential part of any specialist students' experience as they ensure that students have the chance to teach design and technology and reflect upon it. Providing such an experience needs careful planning, co-operation between institutions and enthusiasm from all involved.

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