

Initial Teacher Training at Loughborough: Principles and Practice

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We live in times when great demands are being placed on the teaching profession. If we also consider the expansion of TVEI and the Baker Technology proposals we can see that Design and Technology has a very special and important role to play. The two main problem areas limiting that role are teacher numbers, via initial teaching training (ITT) and quality. Many of the teachers presently in schools represent good, professional practice but require INSET if they are to be able to translate this practice into the areas of Design and Technology required. The aim of this article, however, is to look at some of the principles which guide thinking in ITT at Loughborough and then briefly to use the PGCE course as an illustration.

Key purposes

The key purpose of ITT courses at Loughborough is to develop the professional skills, concepts, knowledge and attitudes needed to teach Design and Technology as we go forward into the next century. As the PGCE course information sheet states:

'The course focusses on the concept of Design and Technology in schools today. This concept could be described as the development of skills in the manipulation of ideas and materials in order to develop products and systems; that is designing and making for a purpose. In order to do this effectively the teacher must be capable of generating schemes of work designed to develop pupil's skills, knowledge, concepts and attitudes'.
'This is an important and rapidly developing area of the school curriculum. It has a significant part to play in giving pupils insights into and experience of new technologies and the confidence and capability to make informed choices about the kind of technological environment in which they wish to live'. (Jim Flood, previous course tutor).

It is made clear to students that Design and Technology is certainly one of the most, if not the most, important area of the curriculum. It's potential for generating an effective and relevant learning environment, which also is able to bring together many aspects of the broader curriculum, is very high and

this brings out one of the most basic principles of the course:

Maximising the motivational potential.

Students are encouraged to generate work schemes that will excite and motivate. The DES¹ in 'CDT 5-16' mention (p.8) 'the pleasure and excitement to be gained from coming to grips with practical problems'. We are working in a subject area which has the advantages of offering concrete learning experiences and also a high perception of relevance to the child via links to the outside world of industry. These motivational factors, however, do not simply come into play naturally, the teacher must be sensitive to their potential and power and also be able to manipulate them.

On a practical level students are introduced to exemplar schemes in such a manner which demonstrates how the 'magic' can be built. The personality, presentation and enthusiasm of the teacher count as much as thorough preparation and resourcing. Links should be constantly identified with the outside world and as many opportunities seized as possible to take work beyond the classroom into the outside world.

Students are encouraged to use these exemplars whilst on TP, so maximising their chances of success. Positive feedback is vital in order to build student confidence. In addition they also develop their own schemes. This has the advantage of fulfilling two other principles:

- a. *The student learns the techniques of developing and managing work schemes.*
- b. *A wide range of materials are produced which the group can tap into. This means that rather than producing a series of 'Loughborough clones' each student can develop a personal philosophy and yet be supported on entry to the profession by a great number of sample work schemes — a 'kit bag of tricks' which will greatly increase their effectiveness in the profession and also minimize the stress of generating new work schemes in that all important first job.*

Design and Technology within the whole curriculum.

A further basic principle is that we are teachers first and foremost, we teach via the medium of Design and Technology but should always be ready to seize the opportunities offered by the work to show children the broader links within the curriculum.

Anita Cross² correctly justifies Design and Technology's broader applications in that it

'provides instruction in concepts and methods of enquiry appropriate to life long learning' and that it 'fosters an understanding and appreciation of the contribution that design activities and specialisms make to the individuals life and the lives of others'.

Clearly very few children will be working as designers or directly in manufacturing, but nevertheless, all children can benefit from the broader concepts and activities of a design course. Nevertheless, it is still very easy to teach in a manner which fails to build on these points and only operates within the confines of a workshop both literally and metaphorically. Again by providing exemplars and incorporating these principles into work schemes we go a long way to ensuring that students understand and are able to use them.

The relationships with schools

This is a further important principle in our thinking. Schools and practising teachers play an absolutely central role in the training of students. This operates at several levels:

Teachers are involved in the selection of students as much as is possible under the constraints in schools today. Teachers contribute to the courses in terms of lectures and seminar work. This goes from talks on the organisation and operation of CDT in their particular school to assisting in simulated interviews in order to add realism to interview practice. Schools are used for teaching practices of various lengths. It is made very clear to students that they must make the most from each TP, constantly observing, questioning and learning from the teachers in that school. There are so many factors

which, if dealt with at the university, might appear dry and out of place, that are seen as important within a school context. Examples may be basic matters of how tools and materials are stored, ordered or paid for. In addition aspects such as pastoral work and questions of pupil control are brought very much to the fore in a school situation. Provided it is approached correctly the TP should be the most intense, rewarding and exhausting period of any ITT course, indeed many students remark that they have learnt more from it than any amount of time in the university. This is not a criticism of the coursework at the university as much as an appreciation of what can be learnt with teachers, in school.

Linked to this factor of the central nature of teachers in schools to our work we must appreciate that the university staff are getting further and further away from first hand classroom experience. The Committee for the Accreditation of Teacher Education (CATE) insists that staff do have 'recent and relevant classroom experience'. At Loughborough, in Design and Technology, any member of staff further than 3 years from a teaching job works half a day a week in a local school. Whilst this certainly goes some way to maintaining our understanding of life 'at the chalk face' any teacher will recognise that there is far more to the job than surviving with one group for an afternoon. We hope to establish a system, with local LEA help, to support an experienced teacher to assist on ITT courses on, perhaps, a one or two year secondment. In this way we will be able to maintain direct and recent experience within the work done in the university in addition to the links described above.

ITT and the relationship with INSET

A further guiding factor in ITT courses is one of developing in students minds an attitude that the course is only the beginning of their professional training. It is important that they actively seek development in the profession. This process starts on the course by encouraging students to see teachers, in TP schools, as colleagues and providers of further knowledge and skills. Whilst on TP students should constantly discuss broad educational matters and

attempt to learn new skills that have not been covered on the course, (particularly the short PGCE). This principle should also be applied in schools, teachers should freely discuss all matters and not fear appearing ignorant. We should consider ourselves teams and learn from each other.

ITT routes at Loughborough

There are three basic routes for ITT for Design and Technology teachers at Loughborough:

4 year BA Design and Technology with Education.

1 year PGCE.

1 year 'special' course. Candidates from industry with at least 5 years relevant experience and a minimum of City and Guilds full technological certificate (+ maths and English 'O' level or equivalent) are able to enter the profession in this shortage area. We do not know how long the DES will maintain this route. The course is run in parallel with the PGCE, no distinction is made between individuals.

Factors in the selection of ITT route.

In the past the 4 year route was by far the most popular. There are several clear advantages to the 4 year course, notably the steady introduction of teaching skills over the 4 years and also the clear recognition of eventual purpose ie teaching in schools. Nevertheless the numbers of students applying to the department for the 4 year course who have met the entrance requirements of the University has dropped considerably and has even reached the situation where they no longer represent a viable course in terms of numbers.

The reasons behind this apparently deplorable situation are probably as follows:

The constant troubles over teachers pay and conditions has resulted in a situation where many teachers are actively recommending children to do anything but teach. Salaries had become uncompetitive. Design, as a subject, at 'A' level has been so successful that many children who would have followed the old craft 'A' level — teacher training — school route now recognise the potential of Design as a profession

and train in this area. Witness the rise in number of applicants and quality of students on the Loughborough 3 year BA in Design and Technology. (As of 1 March respectively for 1986/7/88 they were 132, 156, 201. Final numbers were above this but taking a view of the same time each year enables this year's current figures to be considered). In parallel to this the average 'A' level points score of each year's 3 year degree intake has also been increasing.

The entry standards have risen due to subtle but positive pressure within the university. This is unfortunate in that within this area there is evidence of a poor correlation between entry standard and eventual degree level, particularly in the more social science orientated courses such as teaching. Roes³ found that 'A' level grades were of little value in predicting final degree grade, whereas King,⁴ looking specifically at physics found the correlation good, especially at the higher grades. As teaching is primarily a social science the findings of Roe are more applicable. Many of the factors that make up a good teacher are those that are least measurable.

Having pointed out the drop in entry for the 4 year route it is clear that many people are now entering the profession via the PGCE route after having done a degree in an appropriate subject and in many cases also having industrial experience. Many would agree that this experience, provided it is reflected in teaching, should make better teachers for the modern world than the more traditional school-college-back to school route. From a trickle of PGCEs in the past Loughborough is averaging 20+ per year with plans for a considerable expansion. This has been supported by a recent University Grants Committee Education sub Committee inspection of teacher education at Loughborough which described the Department of Design and Technology as 'a jewel in the University's crown' and recommended expansion in its teacher training activities. At the same time this committee also recognised the advantages of a 3+1 route over the 4 year route. These advantages could be summed up as follows:

Options are kept open. A student may be interested in teaching at 18, but at 22 opinions may have changed. This has certainly been the case over the last few years with a substantial proportion of the 4 year graduates using their degree to enter industry rather than education. If, however, a degree such as engineering, industrial design, or Design and Technology here, in this Department are followed the student has a qualification that carries more weight in industry. If the student subsequently decides to enter education and a PGCE year is followed the student has, nevertheless still only spent 4 years in training. Currently PGCE students are offered a bursary of £1250 in addition to a mandatory grant during the PGCE year, 4 year students are not. Note, therefore, that we can have a situation where two students start at Loughborough together, one on a 4 year 'with education' course and one on a 3 year course. If the 3 year graduate then follows with a PGCE he or she is £1250 better off. This factor has been a powerful influence in effectively closing down the 4 year route and opening up the 3 + 1. The DES has recently (1 March 1988) announced a £200 equipment and materials allowance for CDT ITT courses. This will only apply to 1 and 2 year courses, not to the 4 year course. The advantage in following the 3 + 1 route over 4 years is further developed.

We have, therefore, a situation where a number of external factors are influencing the primary routes for teacher training. It should be pointed out that whilst the 3 + 1 route offers the individual student certain advantages this is not to say that the route is able to turn out better teachers. The one year PGCE has severe limitations in helping develop appropriate attitudes towards education and Design and Technology in particular. Attitudes develop slowly and the 4 year route offers the better route in this particular respect. In addition the skills and knowledge required to be effective within Design and Technology in schools are very broad and graduates tend to have deep, but narrow experience. The limited time available on a PGCE course gives virtually no time for expansion of

student skills and knowledge, the majority of time is given to basic teaching skills.

It should be made clear, however, that the three routes are still open at Loughborough, we are very much in the business of ITT and are attempting to expand our intakes in both PGCE and the 4 year route. If one talks to students on the 3 year degree it becomes clear that many intend to teach but have taken advantage of a degree which enables them to keep their options open and yet offer a first class course with which to enter the PGCE.

At this stage it is intended to illuminate some of the principles

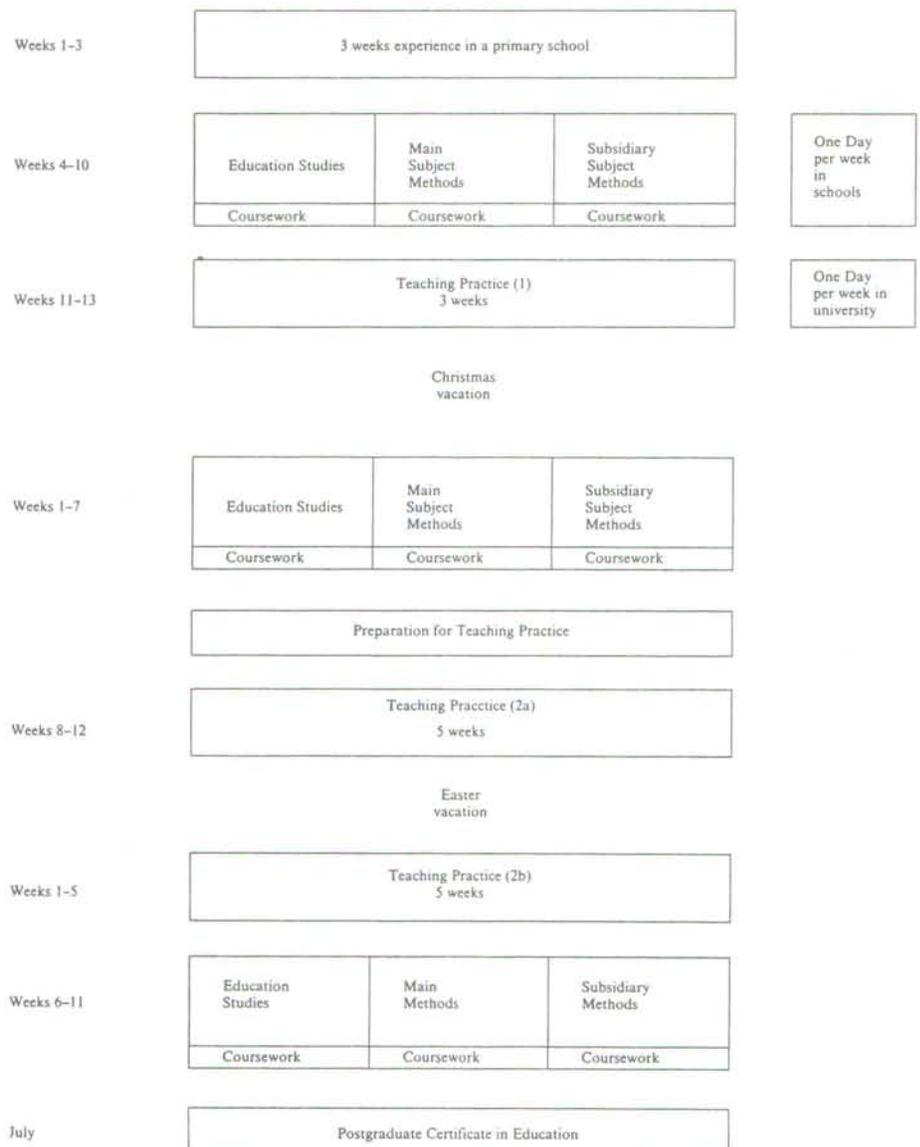
discussed above by looking more closely at the PGCE route. It should be remembered that the PGCE and 1 year 'special' courses are run as one. The only difference being that most 1 year 'special' students take further Design and Technology as a subsidiary subject (3 hours per week).

Key activities

As we can see from the diagram the course divides into 3 basic elements: education studies; main method and subsidiary. In addition to this we have the teaching practices.

The education studies element is followed in the Education department

PGCE SECONDARY COURSE STRUCTURE



and is intended to develop that all important overview of the school and the curriculum. A series of lectures, seminars and essays look at various theories of society, personality, cognitive development and the organisation and assessment of learning. Approximately 9 hours per week are allocated to this area.

The subsidiary subject is usually maths or physics, though other subjects are available. Students must possess at least 'A' level in that subject. Many choose to follow extra Design and Technology. 3 hours are allocated per week.

The main method, in this case Design and Technology, is taught within the Design and Technology department and could best be differentiated from education studies by saying it is orientated at the more direct teaching skills of working with children: in demonstrations; lesson planning; work scheme development etc. 9 hours are allocated to this area per week.

Teaching practice takes the following pattern. Prior to joining the course the student undertakes a 3 week practice in a junior school in his or her own locality. It is intended that this will offer the student a better perspective of the developmental nature of education whilst concentrating on a course aimed at secondary children.

In term 1 students spend one day a week in a local school working with teachers in classrooms. As they and their teacher mentors feel confident the student takes on more and more work.

In the last three weeks of term one students work full time in the school they have been operating for a day per week. This ensures that they are led gently into the broader aspects of teaching and are, therefore, capable of getting more from the experience.

The main TP lasts 10 weeks and is placed at the end of term 2 and the start of term 3. A different school is used and the student must get experience of the whole age range. A number of preliminary visits are made by students prior to the practice in order that we may be sure that school and student 'fit' and also to prepare timetables and preliminary lesson planning.

If we now turn back to the 'main method' course, lasting 9 hours per week, (when not on TP), we can see that

there is very little time to develop students' skills and knowledge. The course relies very much on prior experience in this respect.

The 9 hours are broken down into 3 hours of updating of knowledge, primarily in the areas of electronics, micro computing and mechanics. The remaining 6 hours are spent on 'professional studies'. This time is used flexibly, early in the course much of the work is aimed at the development of basic teaching skills via the 'micro teaching' of small groups. Students learn from each others performances and video playback is used in order to develop competence and confidence in such situations in schools.

In parallel with the micro teaching students are engaged in develop an understanding of lesson planning and longer term work schemes aimed, initially, at the foundation years. Later in the course professional studies focuses on GCSE and 'A' level work.

Rather than divide the work down into aspects such as design skills, teaching skills etc, a wholistic approach is adopted. The technique is basically to provide and quickly work through, examples of schemes which have been proven to be successful and meet the criteria covered above in terms of providing a high motivational potential. Students can then attempt these exercises in schools whilst on the day a week TP. In addition to this the exemplars are used, as mentioned previously, to act as models for students to generate their own work schemes. In this way rather than producing a series of Loughborough 'clones' the students see and can benefit from a series of work schemes, so producing a large base of ideas to take into schools in their first year of teaching.

This procedure is followed during terms 2 and 3 when not on TP. As they plan and prepare work schemes they are developing design and materials skills and also learn about the importance of, and preparation of visual aids. In all cases it is expected that students will produce examples, done by themselves, of work which children would generate with their materials in schools. In this way it is expected that students will not see the elements of the course as 'little boxes', but can apply the principles wholistically.

Assessment is continual and there are no examinations for PGCE. Students must pass in all areas, including TP. Considerable importance is placed on teachers reports of TP in subsequent references.

The future?

In the final analysis, however, we must all recognise that initial teacher training is only the beginning of one's professional training. We need to be looking towards different routes which will probably incorporate an initial phase in the University, together with the usual teaching practices, and an extension into schools where the recently 'qualified' teacher is supported by advisory in conjunction with local teacher training institutions over a period of one or two years. This should then naturally grow into a system of ongoing INSET. The sharp division between initial teaching training and the profession is harsh, inappropriate and inefficient.

References

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