

application of the principles. The Senate debate was a rather interesting reflection on the class consciousness present in the UK education establishment!

The concept of "professional training" coincided with the trend away from time-serving towards the ideas of reflective learning rather than the more passive reception of teaching and experience. There was therefore a move in PTC towards identifying objectives for students during their placement. These objectives were of course related to the course of study but departments in their regulations for the AUS were required to specify them in relation to some generic ones. At this time the PTC was encouraging all departments to adopt the AUS many and adopted it but some with reluctance and others with rather special views upon it.

It was not long before modularisation and semesters became an issue. It was unfortunate that these two concepts were implemented at the same time because it confused the issues. Some departments had implemented a modular system of delivery before semesters appeared as an issue. Biological Sciences had been the subject of a major review and had adopted a modular delivery as a means of reducing the staff loading. Some engineering departments had also implemented a modular delivery as a means of improving the efficiency of their teaching and utilisation of staff and offering a more digestible learning programme for their students. These departments were able to move to semesters with little disruption other than to their emotional attachment to the three term academic year designed for the Victorian farming community. It was a logical step to incorporate the concepts of modules, module descriptions and credits in professional training placements.

Regulations for the modular delivery of professional training and the award of the AUS were submitted to Senate after a long consultation with tutors and approved with 120 P credits allocated to the year. (As a humorous and personal aside, I was advised that it was maintained in SoBS that the P credits were Pollards) The resulting review of the professional training provisions in every department through their submission of modular descriptions of the professional training was major exercise for PTC but a timely one because of the Institutional and Subject Reviews by the QAA. On each occasion that QAA reviewed our provisions they expressed considerable admiration for them.

The establishment of SCEPTRE is therefore a sound recognition of many years of educational development in our departments by practising academics relating it to their own discipline. I hope that it will continue with that emphasis and the ready support of the professional training tutors.

Conclusions

When I retired as Chairman of PTC (August 2000) and from the University in October 2001, I had been associated with the institution since September 1957 and professional training had been a significant influence on my career. The concept of the integration of learning on campus and learning in the work place is one which inevitably leads to a more rounded view of life and I hope will be retained as one of the major selling points of the University of Surrey.

I have enjoyed my association with Battersea/Surrey and retain a distinct element of pride in the achievements of them both and the transition from one to the other. It is only the calendar and decreasing physical flexibility that tells me that it is nearly fifty years!

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Personal reflections on the history of Professional Training

from Battersea to the University of Surrey

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After graduating as one of the first students to be awarded a Dip.Tech.(Eng) from Battersea College (College of Advanced Technology - CAT) in 1959 David returned to the aircraft industry. In 1961 he returned to Battersea as a member of staff and progressed through the ranks of a conventional academic career with the University. His subject specialisations were in fluid mechanics and design in which he undertook both teaching and research and published in both areas. The interaction between industry and the University has always been a major interest both with undergraduate placements and with Teaching Company Schemes.



In 1981 he was appointed Senior Tutor for Professional Training in the then Department of Mechanical Engineering and this began an era of various responsibilities in that area. He progressed from Chairman of the Tutors Forum to Chairman of the Industrial Training Committee(now PTC) holding the latter post for ten years until he retired. During that time he was active nationally with professional training with the Universities Committee for Integrated Sandwich Courses and then the merged Universities Committee for Sandwich Course serving as Chairman of each of them. In his own specific field he was the founding chairman of the IMechE Standing Committee for Training Accreditation and served on its Academic Standards Committee until very recently. He remains the Chairman of the IMechE Further Learning

Committee. In more recent times his publications, generally as conference presentations, have been related to the design of undergraduate courses, integrated professional training and assessment within them.

In 1995 he was promoted to the personal appointment of University Director in Engineering Education and Training. He was active in the Engineering Professors Conference and the chairman of the QAA Benchmark Group for Engineering. Also on the national front for the engineering profession he was a member and then chairman of the Quality Assurance Committee of the Engineering Council. He was Deputy Head of the Department of Mechanical Engineering and then Director of Undergraduate Studies in the School of Engineering and served on many University Committees and Council.

David retired from his full-time appointment at the University in September 2001 but he remained active in the University with visiting students in industry and is still the Lead Observer for the PGCAP. He retains a substantial involvement with the Institution of Mechanical Engineers.

Introduction

The history of professional training, as we call it now, is inseparable from the history of the courses delivered by Battersea College and the University of Surrey, so these recollections deal with both aspects.

Many of the features of the development of the courses were incorporated to meet the needs of preparing our students for and monitoring them during their periods in "industry".

Much of this is from personal recollection and therefore many dates are approximate. The very early ones can be checked against Arrowsmith's book "Pioneering in Education for the Technologies" but that does not give many details of the actual course content and principles. As one of the very first students from Battersea to gain a Diploma in Technology in June 1959 I remember many of the innovations and differences between the Dip Tech courses and the London Internal degrees offered at Battersea, these are noted in only very general terms by Arrowsmith. (Note; The first Dip Techs in the country were awarded to about 12 students from Battersea in June 1959,

Another significant development was the appointment of a joint Surrey/Industrial Society chair for John Adair. John had been a member of staff at RMA Sandhurst as a military historian and arising from his work he had developed his concepts of Leadership and his three circles. He had been with the Industrial Society for a while and developed his thoughts into programmes of courses for industry to promote leadership skills; these had proved very successful. He moved to Surrey with the aim of incorporating such concepts into degree programmes. The concepts that John was promoting fitted very well with many of the existing provision within the courses. Communication Skills had been a formal part of the engineering programmes and the earlier grouping called PEMS from the very early days at Battersea. His leadership concepts fitted very well on to these programmes and were adopted readily but in various forms. The civil engineers, initially under Peter Gardner later Mike Huxley, adopted practices that emphasised the outdoor activities, the mechanical engineers retained the approach of the Industrial Society (not surprising because several of the staff had been trained as Industrial Society Tutors) while Chemical Engineering adopted an Outward Bound approach similar to that of the forces, again not surprising because the Ron Schultz was a notable member of the TA. These features gained further impetus during the 90's with programmes supported by the Enterprise in Higher Education scheme and two special programmes funded by HEFCE for Chemical Engineers undertaken jointly with Loughborough.

From 1981 onwards, industrial training as part of courses became very political and it was almost an annual event for a government minister or notable politician to visit the campus and receive presentations by our students and staff. Funding was a regular topic and the chairman of ITC and the VC made regular visits to the UGC and the Ministry to promote our case.

Towards the end of the 80's another review of what was now called Industrial/Professional Training was initiated by VC Kelly under the chairman ship of PVC Beynon. In his usual way Prof Beynon as a starting point advocated the discontinuation of sandwich courses at Surrey so that we could concentrate on high quality education to compete with the Imperial College and other similar establishments. It was felt that we were not getting high quality students because we

insisted that they had to do four years instead of three. The final recommendations of the committee rejected Prof Beynon's proposal but did accept that we should also offer three year degree courses to avoid cutting ourselves off from a significant part of the 18 plus cohort. This was a sound publicity move, but in fact not terribly significant, because the grounds for exemption for the placement periods had become quite extensive. Previous experience had always been a formal ground but the nature of the experience had extended into many fields other than ones particularly related to the course of study. Overseas students had also become a special case for two reasons, the first one that of cost to them, overseas fees by this time had become quite high, the second reason less acceptable to staff but enforced by the market place was the lack of opportunity for placements for students who would be unlikely to remain in the UK after graduation. The latter reason was the excuse offered by many prospective employers although it was always recognised that this was not necessarily the real reason.

Associated with the outcomes of this review were further lobbying exercises to retain the funding for sandwich courses and regular presentations by students to the University Council.

Professional Training

Following the Beynon review there were some significant changes to the approaches to the periods in industry, these coincided with notable national reviews such as the Finniston report -Engineering our Future- and later the Dearing Report. Each of the authors of these notable reports had visited Surrey and received presentations from students about their professional training experiences. With the inclusion for example of dance placements under the umbrella of the industrial training activity as well as social scientists working in local authorities the concept of industrial training was becoming an inappropriate description for the activity. Also some areas within the university were not keen on the association with industry or the use of the word training. After some consideration Senate eventually agreed to the change to the term Professional Training, "professional" was quite acceptable and "training" was reluctantly agreed when suggestions were made that instead of being associated with Pavlov's dogs it was a proper completion of education through the

would be awarded substandard degrees. The report did acknowledge some areas of good practice and success but of course by this time the majority of sandwich courses were delivered in the Polytechnics under the auspices of CNAA and the practices of the UCISC universities were submerged under the numbers elsewhere. (That trend has continued even to current times).

After this report (RISE) there seemed to be a continual battle for proper funding for sandwich courses, i.e. beyond that granted for the normal three years of study. Initially the UCISC universities were funded by the Universities Grants Committee and the Polytechnics by the Ministry together with the Local Education Authorities. Our battles were therefore with the UGC and each University at that time negotiated separately with the UGC. At about the time of the 1981 cuts Surrey using the experiences of the ITC conducted a study of costing (Bath undertook a similar exercise) and demonstrated that a sandwich course student on a one year placement cost the University at least the same as one on the campus. The UGC were persuaded by our study and for some time we received full funding for our placement students (i.e. four years of funding). It is notable that at that time funding was related to costs and not vice versa. I believe that Bath were not as successful because they tried to establish that each of their six month placements cost the same as a year on campus and some of the other ex-CATs achieved lesser amounts because they could not justify their cases as we had done.

During this period UCISC and locally our ITC had been working away steadily to establish high quality provision within sandwich course and in spite of the conclusions of RISE things were looking sound and some confidence was present.

After the 1981 cuts

The 1981 cuts took the wind out of the sails of almost all of the UCISC universities with Bath (especially), Surrey and Loughborough being dealt with less severely than most but it did not feel that way. In spite of that, some of the developments that were in train continued. ASET was formed mostly as a Polytechnic response to RISE and the first World Conference was held at Brunel, addressed rather aggressively by VC Kelly. UCISC continued its activities which comprised two annual meetings that progressed around the

university members with the host university acting as secretary and convenor for their year. The two meetings were different one being a two day residential one with a dinner with speeches by the host VC and a key note speech either by someone we were impressed by or more often whom we wished to impress. The other was a one day business meeting to plan the activities for the year. UCISC was a subscription activity and funds were secured for some research work, this later was subsumed into ASET as indeed was UCISC which firstly became a joint committee with the Polytechnics committee Universities Committee for Sandwich courses(note the omission of the significant word “integrated”) and then that also was subsumed into ASET. Throughout my association with professional training, Surrey was an active contributor to the work of UCISC, UCSC and ASET and Surrey members, including myself, chaired UCISC and UCSC on several occasions.

During this period a notable change was the allocation to ITC/IPTC/PTC of a budget for the visits made by tutors to students in industry. This protected the tutors from pressures from Heads of Department to reduce the number of visits on the basis of costs. Also there was a need to justify placements outside the UK. For some time the Civil engineers had placed students in South Africa, one of the most significant places where mineral extraction was taking place. Similarly the foreign language placements needed funding. Also the emphasis in the tutor’s visits changed for that of pastoral care to more formal assessment of professional progress and academic advice/counselling.

Several international developments began in this time. The Engineers Employers Federation initiated a programme for engineers to learn a foreign language (usually French or German) alongside their engineering and to undertake placements in France or Germany. Special funding was given by the EEF for the language preparation but finding the placement and making the visits were the responsibility of the course industrial tutors. Hotel Management had consolidated their programmes for students to work in the international hospitality chains often in North America and, initially on a personal basis, the chemistry exchanges with Australia/New Zealand began eventually to incorporate Africa and North America and extend to chemical engineering students when Ron Schultz moved to Chemical Engineering.

some were Mechanical and others were Metallurgy. I was one of the mechanicals and among the metallurgists was Brian Eyre later to become the Head of UKAEA and I seem to recall that we awarded an honorary degree to him.)

Battersea days

For many years from just before the Second World War it became common for prospective students of engineering to undertake a period in industry before proceeding to University. This was deemed to be good for their soul to get their hands dirty and to rub shoulders with the “workers” on the workshop floor. This along with the well established practices in the church, architecture and medicine might well be thought of as the beginnings of professional training. The formal introduction of a requirement for industrial placements within courses arose from the publication of a Government white paper in 1956 that resulted from a committee of enquiry (I think that it was called the Hives committee). Later in 1956/early 1957 the national Council for Technological Awards was established and then the first nine Colleges of Advanced Technology were designated (Battersea-Surrey, Bristol-Bath, Chelsea-part of UL, Northampton-City, Aston, Loughborough, Bradford, and Salford with Acton tech-Brunel being added later). In due course Cardiff was added for Wales and then Strathclyde and Herriot watt for Scotland. These colleges were designated as special colleges and invited to make proposals to the NCTA for courses to be considered for the award of DipTech or Dip Tech(Eng).(n.b. the title chosen by Battersea was of course Battersea College of Technology a designated College of Advanced Technology)

Battersea was selected for this designation because for several years it had been concentrating on degree level work and allowing its lower level work such as HNCs to pass to other London institutions. For quite a while it had been offering courses for its Associate Diploma alongside its internal University of London degree courses. This accommodated students, often from the Commonwealth, who had quite respectable qualifications but did not meet the rather pedantic requirements of London University (e.g. Latin for several courses!).

At the invitation of the NCTA Battersea therefore submitted proposals rapidly. The new features of

these were several and were designed to produce “graduates” with greater understanding of the needs of industry and to be more readily able to transfer their knowledge into productive endeavours. The new features included a requirement for a period in industry as a compulsory part of the course, a study of management, some extra mural study and a final year individual project preferably associated with industry or industrial research. The extra mural study was a compulsory element and in the early days was fulfilled by weekly College lectures by notable individuals from industry and the general community.(I recall Sir John Hunt of Everest, Alec Issigonis, Sir Alfred Pugsley, the latter two with close associations with Battersea). In later times this lead to the Liberal Studies programme. These elements were intended to produce a more rounded individual than the rather narrow science courses typical of University of London and other degrees although some of the subjects in all years were taught together. The courses for the Associate Diploma were changed in advance of formal recognition by NCTA to incorporate these features and some students were admitted to these courses. Several of these students were students who had completed apprenticeships and gained Higher National Certificates, they therefore undertook a particularly intensive course adding some first subjects to those of their second year in one year (1957-8) and it was these students who graduated in 1959. Apart from students exempted from the requirements for industrial training on the basis of previous experience those who followed the complete courses did so in a variety of patterns all of which extended their courses beyond the normal three years. Initially in some cases this meant five years but this rapidly became four because the NCTA soon approved four year courses and Battersea conformed. At this stage there were thin sandwiches, with six months periods in industry with the timings tailored to the needs of various industries and thick sandwiches with a single one year period with two timings, one matching the conventional academic year and the other with the year in industry running from Easter to Easter. This latter pattern was particularly useful for the hospitality industry because it matched the trading pattern of increased summer activity.

This was a period of great variety in course patterns and consequently some difficulties for staffing to meet the demands of varying student numbers. Many of the

students in those days were sponsored by large companies which were able to dictate to the college when they would release their students for study. However Battersea was not content to cater solely to these large companies and began to look to place students who were unencumbered by sponsorship and who could provide other companies with the new type of "graduate". To promote this the Principal Dr Ralph West made two significant decisions. Firstly he decided that he needed to promote these new courses and act as an advocate for them. To do this he initiated the so-called Headmasters' Dinners. These dinners, eventually held twice a year I believe, were staged in the teaching restaurant of the then Hotel Catering and Management Department. They were invitation dinners for notable public school or grammar school Headmasters at which he gave a speech promoting the new courses and setting out to persuade the audience that they should send their students to these new Diploma courses instead of the conventional degree courses because they were designed to produce the top managers of tomorrow. These dinners continued at Battersea and I recall at least one in Guildford but had served their purpose by the time of the move. The second decision made by Dr West has served us well and continues in UniS today. He believed that if places for students in industry were to be found that gave meaningful experiences there needed to be a single person for each course that was responsible for finding and monitoring the places thus began the "Industrial Tutor".

The concept of the industrial tutor initiated the clear association of academic staff with our placements and the responsibility being seen as an academic one rather than an administrative one. In those early days the prime movers were in a modest number of departments and these were Don Marter for mechanical engineering, Don Murchison (later R M Davies) for civil engineering, Jim Moore (J P Moore later formed the Bureau of Industrial Liaison) for metallurgy later joined by Jim Reed (J V Reed also later transferred to the BIL), and Ken Ginsburg for Chemistry. Hotel catering were also very active but I do not recall the names of any industrial tutors, Fortin and Fuller are names I recall but I do not think they were industrial tutors, Ric Medlik was of course the HoD when we moved to Guildford. (Sue -surname forgotten until recently senior technician in Management will be able to give you details because

she was a student in about 1960) The earliest tutor that I recall is Michael Kipps. I think that the industrial training in HC was a little different because, as I recall, most of the students were the sons and daughters of hoteliers and they seemed to work for each others hotels, they were also the students with cars!

In the early '60s the NCTA became CNAA and with the Robbins Report of 1963 Battersea commenced the transition to the University of Surrey and the other CATs also changed their status. For a while the NCTA had been giving approval for individual courses in establishments other than the CATs and of course Crossland soon designated some as Polytechnics. With the development of the courses and the extension into most departments at Surrey there soon became a need to establish a smaller number of course patterns and the thick sandwich pattern became the norm and for a while it was the Easter to Easter year that was the most common. This change was not only to meet the needs of staffing but also those of the students. Many of the early students who were sponsored were very keen on sport and the thin sandwich pattern which brought them back to College in January denied them the opportunity to establish positions in the rugby, hockey and soccer teams. The change to an Easter to Easter period was therefore very welcome to them.

This change was completed as we moved from Battersea to Guildford and the final mixed pattern students completed their courses for Surrey degrees in December 1968. (n.b Unlike some of the other ex-Cats Surrey did not retrospectively convert its Dip Tech awards to Surrey degrees but this was offered by the CNAA.)

Early days at Guildford

As we became established in Guildford we began to feel the competition for industrial placements from other institutions notably the new Polytechnics. The staff in the ex-CATs had always had informal contacts and exchanged experiences. To make this more formal the Universities Committee for Integrated Sandwich Courses (UCISC) was established. The members of this group were all of the ex-CATS including the ones from Wales and Scotland and they were joined soon by the then New University of Ulster. Another early member was the National College of Food Technology that soon became part of Reading University. One of the main activities of this group was the establishment

of a quality standard for integrated sandwich courses. The courses that were approved by CNAA still had a requirement for industrial placements but the establishments were often leaving the students to their own devices, giving little or no assistance with finding the placements and not really monitoring them on placement. UCISC therefore established a Code of Practice for Integrated Sandwich Courses the main criteria of which were:-

- the placement was a compulsory part of the course (although exemptions on the basis of previous experience were allowed)
- the students had to be paid employees of the host establishment and accorded full employment rights
- the university was responsible for
- securing and approving the placement
- students must keep a formal record of the placement
- students must be visited at least three times on a full year placement and twice on a six month placement
- the performance in the placement must be assessed
- at least 50% of the assessment must arise from an assessment by the employer
- the assessment must be recognised either by inclusion in the final overall assessment of the degree or by an separate award.

(I think that there was a ninth criterion but I cannot remember it.)

These criteria remain familiar to most of us now but were innovative at the time and perceived as an excessive burden by many establishments outside UCISC. The Polytechnics soon formed their own committee and they did not subscribe to many of the criteria.

At Surrey the final criteria was fulfilled by the establishment of the AUS. Loughborough did a similar thing with their Diploma of Industrial Studies but most of the other members incorporated the assessment rather loosely into their degree assessment. Within Surrey the industrial tutors had formed an informal group to discuss industrial training matters, later called the Tutors Forum that continued until very recently, but with the establishment of a university award there needed to be a Senate committee to oversee it. The Industrial Training Committee was then formed with the express remit to monitor the arrangements for Industrial Training across the University and to oversee

the award of the AUS. At about this time there was another review of the patterns of placements (I think this coincided with the arrival of VC Kelly). The conclusion of this review was that it would be sensible to align the placement with the academic year. This was implemented in many departments but Hotel and Catering Management retained the Easter to Easter placement and the language courses wished to have two separate periods in different countries because of their requirement for two foreign languages. This latter requirement was implemented with two six month placements for the summer term and summer vacation, a pattern retained until very recently. The earliest Chairman of ITC that I remember is John Bailey from Materials who was succeeded by Ken Stephens (1982? to 1991), then myself and now Michael Kipps. In that time it changed its name from Industrial Training Committee to Industrial/Professional training Committee and now Professional training Committee.

The need for formal committees both at local and national level was demonstrated very clearly during the late 70s and thereafter when the principles of sandwich education and the topic of funding for the placement periods received considerable scrutiny by the Ministry of Education and its successors. During the 70s the CNAA had been promoting sandwich courses very actively (incidentally implying that they were only delivered in the Polytechnics) and seeking additional funding for them. The Ministry responded by retaining an economist to conduct a study of the benefits of sandwich courses. UCISC and the individual universities submitted evidence to this study which eventually was published under the acronym of RISE (Research into Sandwich Education). One of the pieces of evidence prepared and submitted by UCISC in addition to its code of practice was a bibliography of publications on sandwich course education prepared by the Librarian at Surrey, (there was an attempt to revive this in the middle 80s but no resources were available for it and I believe that it was lost). It was not a surprise that the report did not advocate any expansion of sandwich courses but the vehemence of the criticism was not so expected although it was acknowledged immediately that an Oxbridge economist would be unlikely to be supportive of courses outside the golden triangle. The conclusion evoking most reaction was the one which suggested that sandwich course were for substandard students most of who