

PAGE FORTY

CHAPTER FOUR
SOME CURRICULUM PROBLEMS

Dalin (1978) sees a major problem for education in the rate at which the society it has to serve is changing;

"... so rapidly that we are not able to cope with its dynamics, particularly on a long term basis. The very nature of education assumes that we will be able to prepare individuals for a future perhaps 20 or 50 years ahead."

and senses the likely occurrence in the future of

"... rapid and unpredictable changes in the environment which are quite different from the types of changes the Western world experienced in the 1950s and 1960s."

Particular features, such as the ill-health of the world economy during the period since 1973, have had far reaching effects on education. Direct effects include the serious pressure on educational funding which now exists; this makes educational innovation generally harder to support. More long term effects concern the shift in patterns of work which we are seeing. Within the post 16 educational sector in the UK we are experiencing the introduction of extensive 'work experience' schemes designed to counter what was initially seen as a short-term unemployment problem for school leavers. Yet such schemes have acquired an aura of permanence as the problem has steadfastly refused to go away. The consolidation of this type of course in recent years adds weight to the belief that education is having to face a permanently changed employment structure. In a wider context, the observations of the Brandt Commission, as expressed in North-South: A Programme for Survival (Brandt, 1980), reinforce Dalin's assertion that the Western world finds itself in a very different situation now than in the 1950s and 1960s. Whilst the external controls on education and educational innovation are more restricting than ever (in

terms of finance, staffing, etc.), there is a far higher expectation of that which education provides than there was previously. According to Dalin

"Social scientists and academicians have scrutinised schools during the past two decades and reports on how schools function have been given more publicity than ever before. Increasingly the public is becoming aware of the shortcomings of education and as a result is demanding more effective educational provision."

The 'information explosion', that huge and accelerating expansion in collective human knowledge, is having a profound effect on the validity of much educational practice. The sheer impossibility of coping with any more than a small portion of available knowledge makes the role of education as the 'transmission' of knowledge untenable. Simultaneously, our view of how learning takes place has changed. Learning is now, more and more, seen as best promoted by an enquiry based approach in which the conventional emphasis on mastery of a well established body of knowledge is diminished. The emphasis shifts naturally to 'learning to learn' and onto the acquisition of transferable skills that can be applied to the learning of any body of knowledge. Recently, in the UK, school education's insulation from the 'world of work' has been identified as a cause for concern. Following the famous Ruskin College speech made in 1976 by the then Prime Minister, Mr. James Callaghan, the 'Great Debate' set in motion a process of self-examination that the educational world had not previously experienced. In the mountain of paper that the Great Debate resulted in (DES, 1981b; HMI, 1980), a consistent theme has been the need for schools, and their curricula, to be responsive to the changes going on in industrial and commercial life. Mr. Callaghan's unprecedented interest in educational affairs is reputed to have been prompted by a personal interest in the education of one of his grandchildren; a similar personal interest led to the

initiation of the government sponsored Microprocessor Applications Programme (MAP) - the interest in this case was initiated by his viewing of the now legendary BBC Horizon programme 'The Chips Are Down' which presented a vision of society in which the possession of microelectronics technology would be a key factor in deciding our productive efficiency and hence our ability to compete in the world marketplace. The coincidence of these two issues, the isolation of the school curriculum and the growing importance of microelectronics is neither unimportant nor irrelevant to our interest in curriculum change.

Having analysed the impact of the 'new technology' on the structure of the UK labour force, Jones (1980b) discusses possible effects on lifestyle and on production methods. Whilst convinced that the effects will be considerable, Jones is uncertain of the rate at which the changes are likely to occur. The CET statement, 'Microelectronics: Their Implications for Education & Training' (CET, 1978), reminds us that

"The time scale of change ... shortens rapidly with the advance of technology; if indeed we are on the threshold of a new industrial revolution, it may come upon us in decades rather than centuries."

In view of this possible timescale for change, Dalin's observation, that the present system of education assumes its preparation to be that for life 20 to 50 years ahead, appears doubly ominous. Again, the CET observes

"The immediate consequence of these developments is likely to be a sharp decline in the demand for labour, particularly in manufacturing industry and in the service industries (such as banking and insurance) which depend heavily on clerical skills. Microelectronics itself will be a new industry, and many other

new or reshaped industries will emerge depending on microelectronics, but their requirements will be for investment capital and for limited numbers of highly qualified staff."

A host of implications stem from this if the educational system is to respond adequately to the changes - and the implications are NOT just related to questions of manpower. What of education for leisure or education for social responsibility in a world whose work ethic and resultant social structure are changed ?

The education system will have to face the following questions (CET, 1978)

1.
What can we do to help people to prepare themselves for a rapidly changing society ?
2.
What can we do to help people fit themselves for employment in new and technologically advanced occupations ?
3.
What can we do to help people to fill their leisure hours - whether the result of a reduced working week or the enforced leisure of unemployment ?
4.
What can we do to help people to maintain their self-esteem when there are no jobs for them ?

Sledge (1979) maintains that

"Throughout the coming years, education in the UK desperately needs to undergo a phase of adjustment to the new high technology (of which microcomputers are a part) that is sweeping the world at large, and this implies a significant amount of change. But without the wholehearted support of all the people concerned - education officers, advisers, examiners, administrators, and especially the teaching profession - these changes will only be frustrated in one way or another."

and, since we appear to be at a special point in the history of technological

development, Sledge urges the educational system to take an untypically proactive role by attempting, through innovation, to catalyse necessary change in society rather than simply reacting to pressures from outside

"In theory, education need not be a mere response but could instead be a catalyst. Massive and immediate investment and restructuring in appropriate areas of education could force the issue and help to ensure that radical change took place in industry. Education in this sense would be the determinant of destiny rather than its whipping boy."

What kinds of innovation should be taking place? Albury & Allen (1980), in a discussion paper produced within the BBC, make an observation of particular interest to those involved in the FE sector.

"In Further Education there is a very great need for more technician education in microelectronics and for the study of computer applications in many vocational disciplines from building technology to business studies.

Besides the use of the technology (for applications) ... there are new techniques for using the computer for forecasting (modelling) and for decision making ..."

and, in general,

"Education involving, or about, computing needs to be broadly based and not associated exclusively with mathematics or physics. Children and students in all disciplines need experience of computer-based machines from an early age. Keyboarding should be in the secondary school curriculum, together with a study of the applications and implications of the technology. This means a crash programme of teacher training."

Here we see the huge range of potential curriculum innovation that stems from the arrival of the microelectronics age. Clearly, there will be an expanded need for

the provision of trained manpower, equipped with the new skills appropriate to the needs in computer science, systems design, information sciences and engineering and production design. The vocational training services are already responding to this need through specialist training and retraining schemes organised by the Manpower Services Commission, but a far wider need is recognised by the CET,

"Young people will need to be helped towards views that will sustain THEIR lives ... so that their attitude to these developments is ... realistic ..."

This can probably be best encouraged by a combination of studies concerned with microelectronics and their applications, and by the USE of microelectronic devices and systems in appropriate educational roles."

Three main areas can be recognised as 'appropriate educational roles' for the application of microelectronics :-

1. Application to existing equipment and systems such as audio and video equipment which can be used in multi-media resource systems by students
2. Information provision through the videotext systems (CEEFAX and ORACLE) and the Post Office PRESTEL system; and through home 'games'.
3. Computer assisted and computer managed learning.

This study concentrates on the last of these in recognition of its being the one most in need of a curriculum development strategy to aid its implementation. It is also the one most directly capable of use in attacking the two fundamental problems already identified in this chapter :-

... the general problem of rapid change in society, for

which methods of teaching/learning have to prepare students.

... the specific problem of the need to familiarise the whole of the student population with the employment and other implications of the new technology, and to prepare them in order to make maximum advantage of it.

It will be argued that computer assisted learning can, when used sensitively, have the effect of enhancing the 'enquiry' component of the curriculum by providing unique learning experiences. A great deal of work needs to be done yet to fully realise this potential, but both the technical and the educational development required is already in hand, and the lessons of the mistakes made in the early development of computer use have been learned. Familiarity with computers is likely to become recognised as one of the essential basic skills, alongside literacy and numeracy, as the information explosion extends our knowledge base and makes it ever more difficult for us to use it efficiently without their help. And finally, the opportunity students have to use computers and develop familiarity with them is more likely than any other single thing to build balanced and objective attitudes to the technological change that seems certain to have a lasting effect on our society.