

From Teaching to Learning: Technological Potential and Sustainable, Supported Open Learning

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The central theme of this paper is the current interest in most educational institutions in moving from teaching to learning as their main system model and the implications which technology media have for unravelling the debate and influencing the resulting practice (for example see *Active Learning: Using the Internet for Teaching*, Number 2, July, 1995). Our chosen strategy for dealing with the central theme is to consider how we use language, metaphor and models to describe systems for teaching and learning and what is the role of technology in these systems. In particular we describe how the Open University is moving from an analysis of individual technologies to a synthesis of the educational ideas into a sustainable system that conforms to the University's policy of supported open learning. This includes focusing on open and equal access to courses, considerable attention to staff development and training (specifically in core teaching areas such as face to face tuition, correspondence tuition, student support, telephone and other media supported communication) as well as the necessity and value of reflection on practice (e.g. see Baker, Tomlinson et al., 1996). In this first section, taking as our starting point the traditional linear view of educational structures, we build upon the notion of the learning system and describe this as an approach with a somewhat long and surprising history originating in the Socratic method. An eductive, cyclic learning model is introduced, and the historical impact of technology on this model is briefly reviewed in a global context by addressing the specific issue of access from the developing countries. Following from this, in sections two and three two types of teaching are described, under the labels of 'conventional' and 'distance'. It is argued that each has strengths and tendencies towards the eductive learning system introduced in section one. However, it is also argued that each has flaws which provide problems for the development of a learning system which can be sustained at distance. An analysis based upon metaphor is applied. In section four, it is then argued that in the conventional model there is a system with excellent learning potential but with an organisational structure which often does not encourage it whereas in the distance model there is the potential organisation for providing feedback but often little effective use made of it. That lack of use includes the new technologies which are now being focused on by the Open University, both in terms of the INSTILL initiative (Integrate New Systems and Technologies Into Lifelong Learning) and the 'Technology Strategy for Academic Advantage' (Laurillard, Christmas et al., 1996). These technologies are

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argued, in section five, to be capable of being tactically effective in stimulating and supporting the strategic aim of learning. Technology mediation is discussed both in terms of course-based teaching and in terms of research opportunities. In section six a range of problem/opportunity areas of immediate concern for the extension of this technologically mediated system to the developing countries are discussed, while policy implications for the extension of supported open learning are drawn out in section seven. These include policies toward co-learning, access to learning, quality standards and the authorship of educational material.

KEY WORDS: learning; education; systems approaches; development; metaphors.

1. INTRODUCTION—TEACHING AND LEARNING

To help us understand what is meant by a change of focus from teaching to learning we will start with language and look at some definitions. Definitions can be drawn from a good etymological dictionary (in this case the 1924 edition of Websters New International) which provides some interesting ones:

Teaching: 'the act or business of instructing'

Learning: 'to make progress in acquiring knowledge or skill'.

Now, it might be argued that the difference between these two words is a difference of semantics and has little to offer the current debate. However, we argue that there is a considerable difference in the relationships between the participants in the system and in the resulting process of education behind the interpretation of the words.

So what is a 'traditional teaching system'? Teaching (or instructing as we define it here) implies a conventional linear educational system linked to hierarchical organisational relationships. The resulting education generally makes use of inductive and deductive scientific models. Figures 1a and 1b describe this teaching-based model.

By contrast it is interesting to look at what has been described as a 'learning system'. The value of learning and a system of learning was influentially described by Kolb (1984) and subsequently used for analysis of organisational structures by a range of business and management academics (e.g., Pedler, Bur-

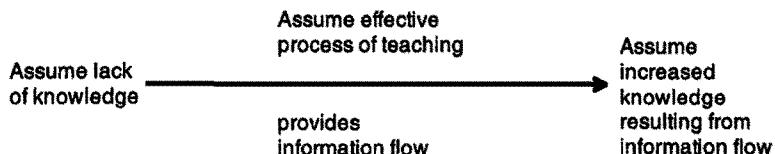


Fig. 1a. Linear teaching process.

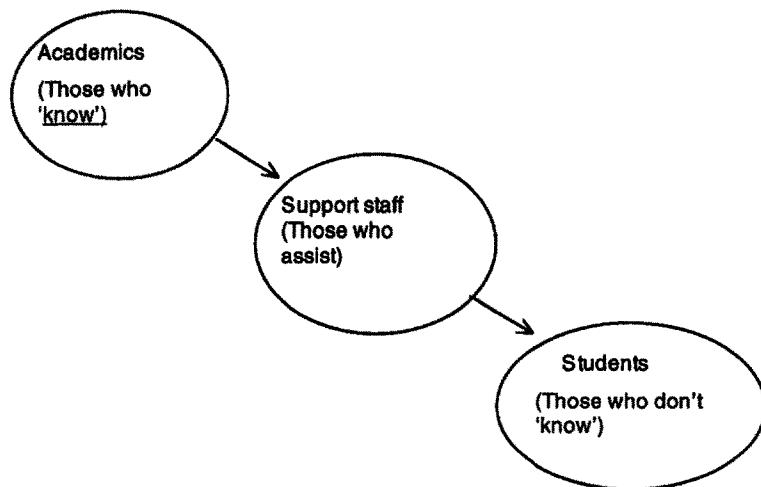


Fig. 1b. Hierarchical teaching relationships.

goyne et al., 1991). Kolb's learning cycle (see Figure 2a) has also been variously adapted by others and applied to a variety of learning contexts (e.g., see Boud, 1985; Honey and Mumford, 1986; Senge, Ross et al., 1994).

In Kolb's model, learning is a process of abstract and concrete activity, building on reflection, making mental connections to related topics, making deci-

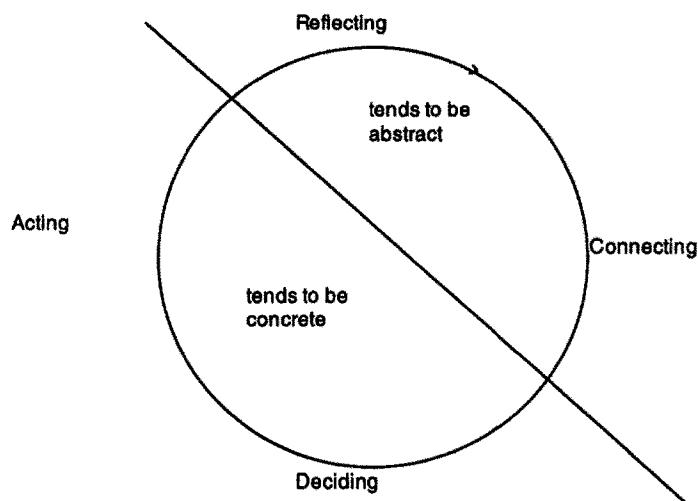


Fig. 2a. Kolb's learning cycle.

sions, acting and then reflecting upon the consequences of action again. The relationships between the learning cycles of the various participants can be contrasted to the relationships in the conventional teaching model (see Figure 2b).

A learning cycle also assumes that there is something within the learner which has the potential to learn. This is not a new idea and is evident in the language of education itself. Education comes from *educe* which in turn is derived from the Latin word *educere* which means 'to draw forth'. Socrates demonstrates the educational method in *The First Alcibiades* and *The Meno* (Taylor, 1996).

In *educing* we recognise that people contain the elements of the answer to the problems which confront them. Socrates believed that we all contain the essential Ideas (innate ideas) which in turn answer all the problems of the Universe. Socrates, as an exponent of education, was dedicated to waking people up to this essential nature, which necessitates a very positive view of people and problems/dramas. This view does not indicate a domineering and austere image of learning; rather it depicts learning as a vital human activity, innately part of us and more likely to be thought of in terms of creative and joyful activity. Perhaps, in this sense, we can think of the Internet facilitated forms of learning as means by which new playrooms for creative activity can be opened up to learners.

Eduction does not work on inductive or deductive methods, it complements and contains them but is centred on the idea that we do not need to stuff ideas

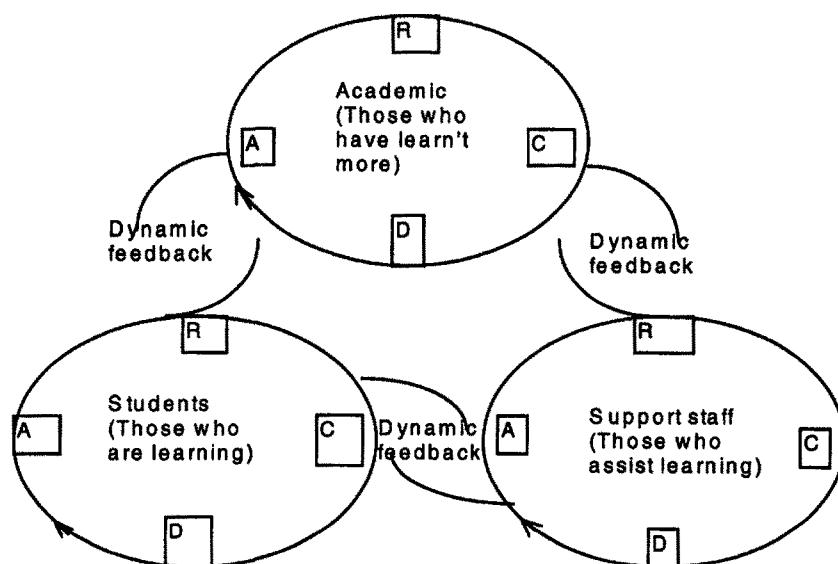


Fig. 2b. Kolb and relationships in learning.

into people, rather we need to draw them out. Flew (1979, p. 330) says, 'The crux is that the teacher should be patiently questioning the pupil to recognise some true conclusion without the teacher telling the pupil that the conclusion is true.'

A twofold lack of understanding is also indicated by this view of learning. There are those who lack understanding but who are aware of this and therefore are positive about learning (hopefully most people are like this). However, there are also those who lack understanding of their own lack of understanding! These people (anecdotally—like a lot of the 'experts' we meet) think they know it all already and therefore cannot learn! This is an ironic factor which is recognised in the Socratic dialogues and strengthens the argument made in this paper that all participants in the learning process are learners, indeed co-learners. Thinking about this symbolically we argue that as any circle of knowledge increases in size it is matched by a corresponding increase in the frontier surface area of ignorance (see Figure 3).

So, to learn effectively, we need to recognise:

- our potential for learning, and that we have it in us to learn and to know because this capacity is a basic part of us and links us to all the ideas of the universe; and
- that learning can be aided by our relationships with other learners.

This discussion has been developed more recently in the work of Piaget and

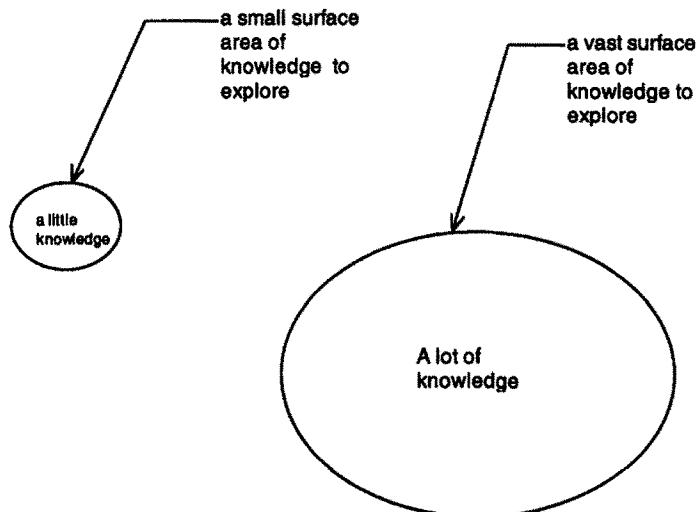


Fig. 3. Circles of knowledge and frontiers of ignorance.

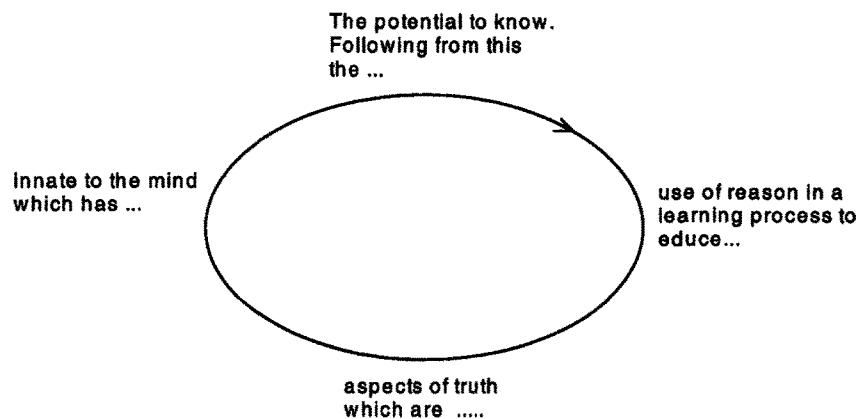


Fig. 4. The Socratic method.

added to by Koplowitz (see the discussion of the six stage learning model from sensory understanding to systems and unitive thinking set out on pages 78 to 82 in McArthur, 1990).

Furthermore, a Socratic view of the education process might be drawn as shown in Figure 4. And an attempt to link this with Kolb's approach is shown in Figure 5.

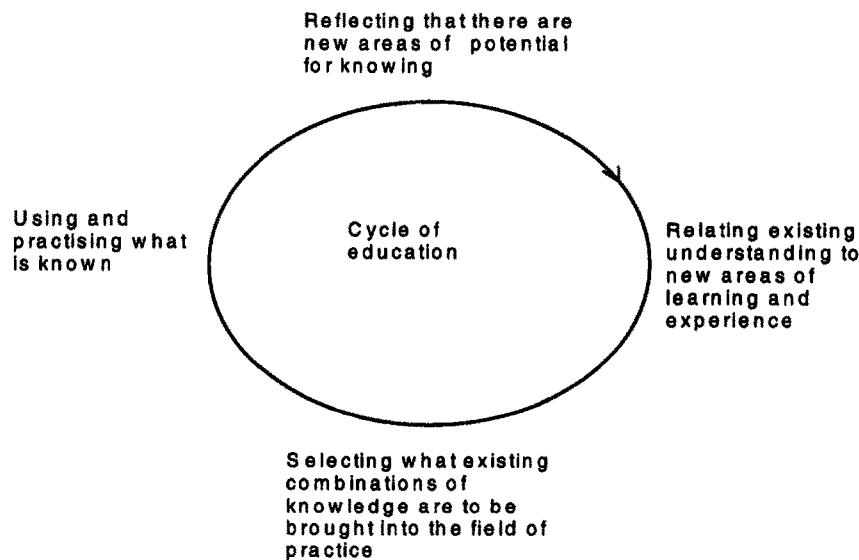


Fig. 5. Education—the Socratic method and Kolb.

The main point which we wish to draw out is that in selecting a movement of emphasis from teaching to learning we move from a linear process assuming relatively passive students with assumed lack of awareness/understanding being given information that results in assumed knowledge to a dynamic cyclic process of assumed potential constantly being realised. In the latter case the student is required to be active in the process of understanding themselves, keen to seek ideas, willing to set the agenda for learning and determining the learning process alongside the co-learners.

In summary, the movement towards learning and away from teaching is consistent with the tradition of education and the supported open learning approach at the UK Open University. Interestingly, this educational model should be conducive for the needs of students who are largely self-motivating and self-selecting in their absorption of educational products—a potential definition of an Open University student.

The models set out in this section will be used as points of reference and comparison in the sections which follow. We will also develop our analysis in the light of ‘virtuous goals for education’—connectivity, co-operation, and creativity. These three Cs are goals for the learning system which the Open University Systems Discipline has set itself as a response to the University’s INSTILL (Integrate New Systems and Technologies Into Lifelong Learning) initiative.

Of specific interest to the authors is the manner in which the educational model can be facilitated by technology and what implications this model has in the current global context. Most specifically, what are the implications for geographically challenged students in developing countries wishing to undertake Open University courses?

First we will review the process and development of the conventional teaching model.

2. CONVENTIONAL TEACHING MODEL

By the conventional model for teaching we mean the traditional face to face teaching system. In terms of a systems view, conventional teaching can be seen as a series of discrete, hierarchically arranged sub-systems (see Figure 6).

This is, of course, a generalisation but it is instructive in typifying the benefits and problems arising in terms of student participation, teaching techniques, learning results, students’ and lecturers’ levels of satisfaction and institutional responses to identified problems:

2.1. Core Benefits

The system can be seen as being ‘humanised’ with potential for close co-operation between teacher and student, support staff and student, student and

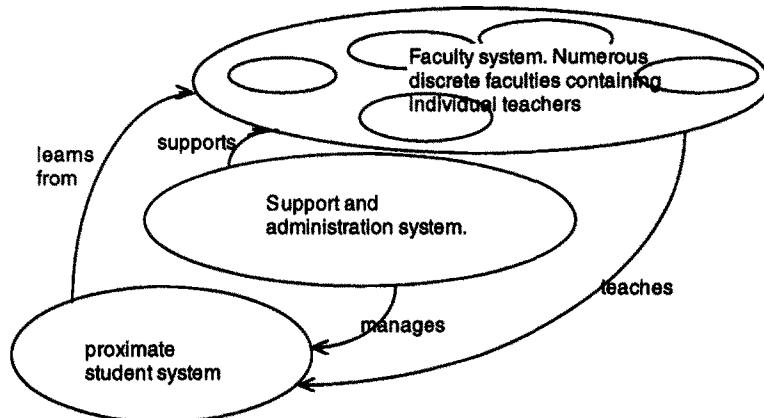


Fig. 6. Conventional teaching—a systems view.

student, etc. If designed, this multiple relationship or *multiplex* system provides an excellent environment for effective feedback and support through monitoring, evaluation and assessment.

2.2. Core Problems

The system is idiosyncratic, being highly dependent upon individual 'style'. This extends to such issues as variability and quality of content, preparation time, annual changes dependent upon the vagaries of individual lecturer's preferences (although the Higher Education Teaching Quality exercise in the UK and elsewhere is a move to reduce the severity of this problem), and the ephemeral aspects of some courseware.

Most University academics are a product of the conventional University system and numerous anecdotes could be found to express this system. From the authors' experience three examples of the variability of the quality of this system come to mind as instructive caricatures (although not entirely representative, the authors leave that judgement to the reader):

1. A new lecturer in a multi-disciplinary Faculty teaching first year undergraduates. The lecturer is 'research focused' and not interested in teaching and certainly not teaching first years. Set the task of co-ordinating the statistics course he quickly becomes frustrated. Following a series of problems he tells the students he has trouble 'thinking down to their level'. The students complain first to the School and then to the Union. The lecturer is given a Dean's warning.

2. A seasoned Professor provides copious references, few of which are in the library. The Professor is rarely in his office. Students become very angry and frustrated because they cannot get the information they need for assignments.
3. Two lecturers teaching one course see the course content in totally different ways and are quite aggressive towards each other as well as being dismissive of the other's point of view. This results in the students having to learn two courses and to balance their assignments and presentations in terms of which lecturer they are dealing with.

To finish this section we would like to suggest some metaphors to help express the nature of the conventional teaching model. We make use of metaphors here in order to provide images which offer humour and insight. The main value for them in the context of this paper is to make comparison with other educational systems later on. The conventional education system as we experience it is often cranky and of very variable quality but with potential for the development of closely linked colleges of excellence. In the following development of metaphoric comparison we consider the conventional teaching model against the authors' three 'virtuous goals for education'—connectivity, co-operation, and creativity (Table I).

The metaphors can be related to the three examples set out previously. In the first example, the lecturer not interested in teaching, we have a pink panther. Chaos follows from a breakdown in co-operation between teacher and those being taught. In the second example the rich Dorset countryside is symbolic of the professor. The only problem is that the idiosyncratic nature of his teaching means that the landscape of learning is opaque to the student—no connectivity between teacher and taught. The third example, lecturers at war, includes all three metaphors, chaos, lack of connectivity but vitally problems with creativity. The student must 'pick and mix' ideas and influences. Although this can be fun

Table I. Three Cs and Metaphors in Conventional Teaching

Three Cs	Metaphor for the conventional teaching system
Connectivity	The Dorset countryside of patchwork fields (Variable, sustainable and interesting but lacking the machine efficiencies of the level landscapes of, for example, East Anglia)
Co-operation	The Pink Panther (A loner, brilliant but by good fortune, constantly on the verge of chaos)
Creativity	The 'art and crafts' movement in architecture. Middle class, middle England. Lots of styles and influences, horned and based upon a long-standing tradition

for the academic it is disjointed and confusing for the student. These metaphors will be further developed in section 4.

3. THE DISTANCE TEACHING MODEL

The distance teaching model is characterised by the production and delivery of specially designed courseware, particularly print materials. This material encapsulates the knowledge of the teacher into a (hopefully) accessible format for the learner. A systems view of this distance teaching model also shows a series of discrete sub-systems, but arranged sequentially rather than hierarchically (see Figure 7). As with the previous section we will develop our view of the model in terms of the benefits and problems of teaching techniques, student

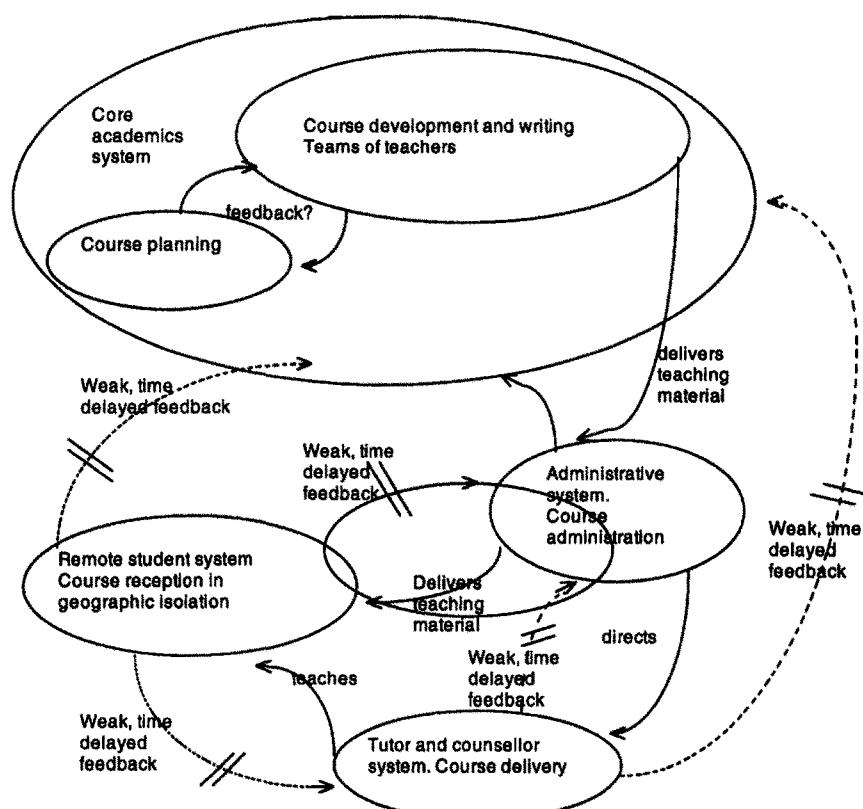


Fig. 7. Distance teaching—a systems view.

participation, learning results, students' and lecturers' levels of satisfaction and institutional responses to problems:

3.1. Core Benefits

The system is not dependent upon individual style. There is non-variability of content and reduced problems of ephemeral materials as courses are produced to an 'industrial standard' and open to wider scrutiny and 'market testing'.

3.2. Core Problems

Sometimes distance can be de-humanising in this system, with little room for cooperation between teacher and student, the two sides of the learning system, or between student and student in a collegiate or community sense, with the relationship between the greater number of participants being largely single interest ones; and there is a poor environment for feedback and joint learning due to severe time delays.

The distance teaching model has a much shorter history than the conventional model and has developed an industrial psyche resonant with the times in which it flourished, and amply exemplified by the UK Open University (and other Open Universities around the World). As in section 2, three caricatures can help to typify the nature of the system:

1. A course team of seven academic staff from three different disciplines begin work on a 'ground-breaking' course in a newly developing subject area. After eighteen months of planning and discussion to thrash out an integrated structure and content, the team spent another two years writing all the necessary courseware, missing some deadlines and being threatened with having the course postponed. The course is finally presented to some acclaim but all seven members of the team disappear to do other things leaving another member of staff to keep the course on the road for the next three years.
2. A course is being presented in its eighth year but nearly all the courseware was written and devised ten years earlier. Students complain to their tutors that the texts are dated and the software used anachronistic, and the tutor complains in turn to the course team. The external examiner is also critical of the courseware's age. The Faculty concerned does not have enough available staff nor productive resource to remake the course for at least another two years.
3. A tutor for a low population, level three course travels forty miles to give a tutorial but only two of her students turn up. She has also had telephone contact with only three more of her initial group of nineteen

Table II. Three Cs and Metaphors in Distance Teaching

Three Cs	Metaphors for the distance teaching system
Connectivity	Kansas wheat prairie. Highly connected in terms of technologies and ownership but lacking diversity and ecological richness
Co-operation	Chinese cultural revolution. Massive and obvious co-operation but enforced by systems of control which were too inflexible to allow individuality
Creativity	Model T Ford. Creative inspiration in design but trapped in a treadmill production process

students. She sent a welcoming letter to them all but she has now been informed that four of them have dropped out of the course. This is the first indication she has of their having problems, if indeed they do have problems, as other people have responsibility for counselling advice.

Again, we have suggested some metaphors to describe the distance teaching model of education set against our 3C's (Table II). In the first example, the 'deserted' course, we see the Model T Ford and the cultural revolution. The inflexibility of the approach means that teams have a tendency to 'bail out' when the task in hand is completed—lack of co-operation and problems of on-going creativity. The second example shows the long-term monotony of an approach which is too expensive to change, the Kansas prairie is the appropriate metaphor. In the third example the cultural revolution again appears appropriate. There should be adequate cooperation within the system but this is lost in the rigour of work on the ground where individuals and personalities are more important than systems or approaches.

4. NEED FOR SUPPORTED OPEN LEARNING

The Open University has always tried to maximise the support to its students and prefers to use the term 'supported open learning' rather than 'distance teaching' (for a review of the distance teaching/open learning debate see Rumble, 1989). Even so, as described by the systems shown in Figure 7, the scope for direct support between participants is limited and even then it is usually a single interest relationship. The Open University is therefore seeking to develop this supported open learning and so move the distance teaching model into a new era. Indeed we are seeking to make technologies the media whereby we can move on the educational debate and draw out the strengths of the two models we have discussed in overview so far. It is possibly ironic that in section 2, in describing the conventional higher education system, there is a system with excellent learning potential but with an organisational structure which often

does not encourage it (the potential intimacy of learners enjoying multiple relationships in a personal and friendly environment) whereas in section 3 there is described a scenario of a distance organisation designed to obtain feedback but with little effective use being made of it due to time delays and a multiplicity of people involved dominated by single interest, faceless and bureaucratic relationships.

The authors believe that in the convergence of the two models we will find the emergence of themes for a new paradigm of supported open learning. Such a convergence, facilitated by technology, might provide higher education with advantages through linked benefits whilst avoiding the potential for the two sets of problems.

To return to the analysis using metaphors that we developed in sections 2 and 3, in this section we want to move on to synthesis. In sections 2 and 3 we set up extremes for the sake of comparison. We developed these extremes from anecdote and common experience. The purpose of the current section is to develop the notions of combined virtues and achievable educational benefits. To recap, Table III depicts the twin sets of metaphors.

Taken in this format the two sets of metaphors can be seen as depicting extremes and generally un-likeable views if related to the process of higher education. Table IV attempts to find the point of synthesis by drawing out the evident conundrums if we try to put the two models together. For the purposes of this paper, we will take these questions/conundrums, keep them as points to inform

Table III. Metaphors and the 3 Cs

3 Cs	The conventional model	The distance model
Connectivity	The Dorset countryside of patchwork fields. Variable sustainable and interesting but lacking the machine efficiencies of the level landscapes	Kansas wheat prairie. Highly connected in terms of technologies and ownership but lacking diversity and ecological richness
Co-operation	The Pink Panther. A loner, brilliant but by good fortune, constantly on the verge of chaos	Chinese cultural revolution. Massive and obvious co-operation but enforced by systems of control which were too inflexible to allow individuality
Creativity	The 'art and crafts' movement. Middle class, middle England. Lots of styles and influences, homely and based upon a long-standing tradition	Model T Ford. Creative inspiration in design but trapped in a treadmill production process

Table IV. A Model of Convergence?

3 Cs	The convergence model
Connectivity	Sustainable via diversity of participants and use of technology to increase relationships?
Co-operation	Industrial levels of material of a quality standard delivered in an individualistic and personal manner?
Creativity	Familiar but challenging, unthreatening but dynamic?

our thinking, and try to develop the discussion relating to them towards the end of the next section.

5. TECHNOLOGY AND SUPPORTED OPEN LEARNING

In this section we would like to put some of the technological flesh on the theoretic bones for supported open learning set out in section 4. Our focus is both on the word 'supported' (in fact possibly the best phrase is 'media-supported') and on learning rather than teaching. In discussing media we refer to at least three forms:

- Connective, electronic media working over a distance (phones, fax, modems, Internet and e-mail).
- Co-operative, work-share media (groupware such as Lotus notes but also linked suites of software such as Microsoft Word running via Microsoft Mail on Internet).
- Creative media (multi-media tools such as Director).

The most vital of the three is the electronic, distance media. It is via this media that the others come into effective use. We focus on this media in what follows. When addressing the issue of distance media, the current centre of interest in Internet products is the World Wide Web (WWW). Sangster (1995, p. 7) has argued, 'WWW has the potential to alter permanently the way in which academics teach and students learn'.

Although Sangster adds little to demonstrate how this is possible, Pickering (1995) has added a useful critique. Relating his thinking primarily to Illich's (1970) notions concerning the need to deschool society,² he develops two models of learning which conform in a generalisable manner to those which we have

²Pickering sets this out as meaning 'In Deschooling Society Ivan Illich sought to expose the oppressive side of formal education and it had come to function in the context of the developed nations of the west around the 1960s. He felt that with the technological resources education could become learning rather than teaching. The resources he required but could not find at that time were very much like what the Internet either does or may very soon come to offer' (p. 9).

set out as being 'conventional' and 'supported open learning'. In conventional terms Pickering reviews the learning process as having four features.

1. Those to be educated—generally speaking—the young.
2. Those who educate—generally speaking older people.
3. Skills and knowledge itself.
4. Practices that facilitate learning and the achievement of educational objectives.

In the educational paradigm Pickering offers, these fourfold principles can be reformulated as follows:

- (i) Who are to be educated? This question envisages a response which is broadening from the young to the old.
- (ii) Who will educate? The response which Pickering comes up with is the 'Internetauls' (p. 10). These are informal groups of teachers/learners 'fellow browsers in the cybernetic library', (p. 10) i.e., the co-learners.
- (iii) Skills and knowledge. Pickering argues that the 'net-base' will be the curriculum to be organised by the learner.
- (iv) Practices that facilitate learning and the achievement of educational objectives. With distance learning media there is no going to school—the net is the library and the classroom, and to refer back to section 1 of this paper—it is also the playground.

In de-schooling society great freedoms are possible and Pickering does go on to set a counter argument in which it can be argued that this utopian model might only apply to white, male individuals in the West. Of course we are only in the early stages of understanding the barriers involved in the use of the Internet—from getting lost to cultural, geographic and economic boundaries to learning. In the next section we will develop this point further.

Building on the positive aspects of Pickering's thinking, the single feature of greatest importance to the authors is the potential empowerment of the learner to develop multiple relationships between co-learners (students, tutors and academics) beyond individual courses, programmes, faculties and disciplines.

In the USA the CAADE project (Consortium for the Advancement of Affordable Distance Education) is seeking to develop distance open learning which combines some of the advantages of both conventional and distance media. The launch document indicated:

'The CAADE project opens up opportunities for increased feedback and collaborative learning within a distance education program that can be deployed, is relatively inexpensive, is easy to *use and promotes collaborative work*' (CAADE, 1995, p. 2, emphasis added).

Like the work of Pickering, this has clear implications for the developing world (see next section).

Thinking back to section 1, we might move on to adapt the models presented here (most specifically in Figure 2b, and 4) to reflect the potential for the three Cs and related technology in Figure 8.

The latter aspect of the cycle in Figure 8 provides further insight into the value of this learning approach to further research processes. Others (e.g. Envisage, 1995) have discussed the potential for technology to provide orders of magnitude benefits to institutions and agencies making use of the 'distance knowledge worker'. With so much of the World's information already in a digital format and with access to distance media, technology invites research collaboration and 'the nomadic workplace', where place of work is not of importance but, critically, working relationships are. This is a point also made strongly by Brown and Duguid (1996), where they argue that a University environment should:

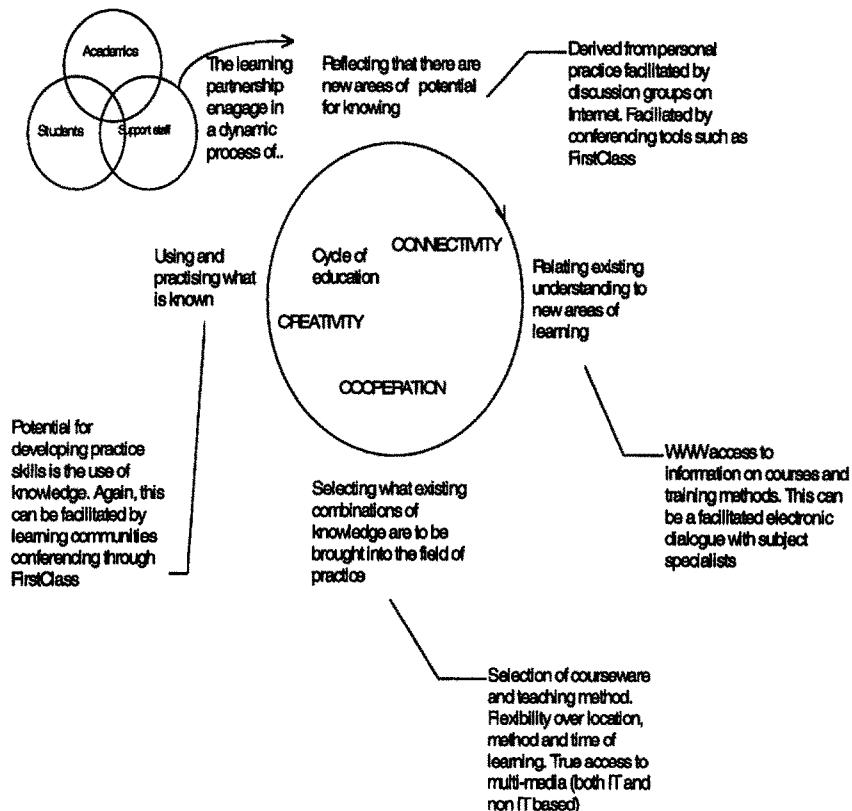


Fig. 8. Open, supported learning on a Socratic theme.

- 'Enable students to engage in open learning, exploration and knowledge creation.'
- 'Simultaneously, to provide the resources to help them work in both distant and local communities.'
- 'Offer them the means to earn exchangeable, equivalent credentials for work done in class, on-line, or through hands-on experience'

The spirit of much of this is echoed by Rimmington (1996). Home working/tele-working and access to global information resources provides the potential for research to be rapid (in terms of data access), collaborative (in terms of access to the research community globally rather than locally) and reflective (in terms of rapid dispersal of research results and gaining of feedback).

How does the challenge of the Brown and Duguid vision and the model depicted in Figure 8 relate to the questions set out in the model of convergence in Table IV?

The first question was: Sustainable via diversity and technology?

This was specifically related to the matter of *connectivity*. In our supported open learning model we are seeking to make effective use of the Internet facilities to bring learners and courses and teachers together. Current experience at the Open University is reflected in the development of the level 1 courses T102 *Living with Technology* and S103 *Discovering Science* where the FirstClass mail system is being used by over 4,000 students on each course (a further 16,000 students use the system on higher level courses).

The second question was: Industrial levels of quality standard delivered in an individualistic and personal manner?

Related to *co-operation*, this question is approached in terms of the responsiveness of the learning system to provide a high quality educational product where (location), when (time of study) and in (the media format) which is most accessible to the learner. These have been long-term policy goals of the Open University since its foundation. Technology facilitation means that the University is trying to improve the 'personal' approach via a range of strategies, e.g., providing students with modem access to asynchronous conferencing and mail systems for discussion and the electronic submission and marking of assignments; providing CD ROMs of library material and self-guided tutorials; providing synchronous electronic 'virtual' summer schools as alternatives to face-to-face activities; and providing access to essential courseware and communal discussions through password-protected websites. All these items help the student to enter the multiple interest relationships evident within a conventional University atmosphere and collegiate culture whilst remaining in their homes.

The third question was: Familiar and challenging, unthreatening and dynamic?

This was a question which arose most specifically in the context of *creativity*. True multimedia in terms of learning material delivery is linked here to effective student practice with emphasis on a community of learners supporting each other. In this sense the individual creativity of the teacher is rapidly and directly involved with students rather than being once or twice removed and delayed. Developments in the use of electronic conferencing systems again provide opportunities for this question to be responded to effectively (Taylor and Jeffs, 1995; Jennison, 1996).

All three questions also find responses, although not with specific reference, within the University's 'Technology Strategy for Academic Advantage' (Laurillard, Christmas et al., 1996).

An aspect of the system which we have not yet discussed is that of contemplative reflection (the fourth C?). The Open University aims to review current practice involving technology in learning and to develop a toolkit of best practice in terms of media application to learning. Contemplative reflection of the impact of learning processes provides the authors with an interesting comparison with the consumerism (a negative C?) or commodification of educational products with little thought of impact on learning which characterises much of educational publishing.

So far this paper has focused on the development of a learning process consistent with high educational ideals and developed in the context of the changing technologies available to learners. We wish to briefly consider the implications which this model has for the wider world, and most specifically the people of the developing world.

6. SUPPORTED OPEN LEARNING AND THE DEVELOPING COUNTRIES

From the above we can take two points for discussion in the context of the developing countries:

- the relevance of the new learning systems and the technology they require, based upon the Socratic method and,
- the availability of the technology for delivery of the new mediated learning.

Media technology *is* used for education purposes in developing countries. For example TV is used extensively in China and India, but this is not an interactive medium as yet. Supported open learning requires learning to be two way. What about the technology needed for interactive learning?

Taking the second point first, Litherland (1995), quoting the Panos Institute (Panos, 1995), indicates a number of problems in the technology:

Of around five million 'host' computers connected to the Internet world-wide, 70 percent are in the United States. By contrast, this year (1995) Vietnam made its first 12 connections, while fewer than 10 African countries are linked up. (p. 18)

The Panos report goes on, 'There is a danger of a new information elitism which excludes the majority of the world population'.

Bell (1996), in discussing three case studies concerning access to the Internet in China, Pakistan and Nigeria, argued:

Perhaps the most surprising observation arising from the case studies is that at the time of writing none of the agencies described is actually using or has access to the Internet directly. The main reasons appear to be:

- Difficulties in gaining the technical access (includes problems with local telecommunications).
- Problems with the politics of access. Includes dealing with—who has access to this form of communication and what freedom do they have to communicate on potentially sensitive areas. This political dimension then feeds into the third item.
- Problems with funding the link—initial funding is often available but the budget for re-current, year on year costs is not forthcoming. (p. 12)

Litherland also argues that it is possible for the developing countries to gain jobs and investment through the Internet, but this is provisional:

A bank in New York may find it cuts costs to fly all its customers' cheques to the Caribbean, where details can cheaply be keyed into computers and transmitted back to the bank, but only those with low wage rates, high literacy levels and network access stand to gain. (p. 19)

This constitutes a catch 22. Gains of investment require prior investment in education and technology. Education arising from investment will only follow when there has been investment in education. So, given the apparent difficulty of the core distance media to operate in the developing country context what of the first issue: 'The relevance of the new learning systems, based upon Socratic method'? There are two immediate problems, the conventional teaching model and access to technology. Access to technology has been argued in the first part of this section to be a major problem in some parts of the industrialised and many parts of the developing world but this compounds with problems in learning systems. In general terms, the Western model of higher education, described in this paper in section 2 as hierarchical and divided into specialist faculties, has been copied and extended into the developing world. From personal fieldwork undertaken by one of the authors in Nigeria from 1986–95 it is apparent that this approach is cracking at the seams as it attempts to deliver first class teaching and research within the limiting confines of an impoverished economy. Global issues prevail but there is some progress in terms of small-scale projects (e.g., the transfer of

Open University systems to other countries in Africa, eastern Europe and south-east Asia). Our experience in the unravelling of the new learning paradigm at the Open University is in its infancy. Perhaps the most interesting venture in this respect under way is the scheduled delivery of a *Development management* Masters programme in South Africa, via South African intermediaries. This is an opportunity for both capacity building and for the supported open learning approach to be applied and considered in review at an early date.

The developing country context poses a number of challenges and opportunities for any learning approach. The accelerating development of technology and the social forces which are causing us to reconsider the nature of higher education come together to provide developing countries with a deeper malaise than that which is being experienced in industrialised economies. The following section tries to draw the threads of the paper together and set out some implications for policy.

7. SUMMARY AND POLICY IMPLICATIONS ARISING FROM THE SUPPORTED OPEN LEARNING MODEL

This paper has set out a view of the conventional face to face and distance teaching systems and a vision of the potential for media-supported open learning systems. Our twin aims are to improve the basic learning structure of the higher educational system and to make effective use of technologies and media to facilitate this improvement. Under the headings of connectivity, co-operation and creativity,³ we have set out how distance, group and multi media can be adopted as learning tools. We have looked at the problems with conventional and traditional distance teaching and have come to a 'convergence view' where the benefits of each have the potential to be realised. We have looked at the current experience at the Open University in achieving these aims and briefly discussed the problem of extending this system to developing countries. From the issues which we derived from the comparison of metaphors, there are two core areas of policy implication; access and standards. We set these out here as comments which we hope to unravel in other fora.

1. Policy towards access to co-learners. This is a huge challenge. The supported open learning model encourages us to break down the walls between university and society and between the various learners in the higher education system. Can such an hierarchical model as that described in section 2 fully embrace the devolution of power?
2. Policy towards access to learning. Access to information is now a global concern. The education model which we provide a view of here implicitly requires open access (or as open as possible). At the same time cost

³Now add 'contemplative reflection'?

- of telephone calls, ownership of information domains in cyberspace and antiquated copyright laws are making access more difficult.
3. Policy towards quality standards in educational materials. One of the questions raised earlier in this paper related to 'industrial' standards in education. An industrial standard requires that educational products (e.g., multimedia software) conform to a standard which is replaceable time and time again. This is not just a matter of setting house styles, it is an issue of global quality in educational software.
 4. Policy towards authorship of educational material. Is this still the preserve of the team or can individuals develop courses? Similarly, does so much effort have to go into front end production of 'high quality' courseware or can courses be regularly up-dated and changed through the efforts of the team? What is the role of other participants (tutors, etc.) in the learning system concerning the design of course structures and contents?

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