EVALUATION OF THE QUALITY AND PROMOTION OF OPEN LEARNING MATERIALS

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June 1992

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Thesis Summary

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In the UK, Open Learning has been used in industrial training for at least the last decade. Trainers and Open Learning practitioners have been concerned about the quality of the products and services being delivered.

The argument put forward in this thesis is that there is ambiguity amongst industrialists over the meanings of 'Open Learning' and 'Quality in Open Learning'.

For clarity, a new definition of Open Learning is proposed which challenges the traditional learner-centred approach favoured by educationalists. It introduces the concept that there are benefits afforded to the trainer/employer/teacher as well as to the learner. This enables a focussed view of what quality in Open Learning really means.

Having discussed these issues, a new quantitative method of evaluating Open Learning is proposed. This is based upon an assessment of the degree of compliance with which products meet Parts 1 & 2 of the Open Learning Code of Practice.

The vehicle for these research studies has been a commercial contract commissioned by the Training Agency for the Engineering Industry Training Board (EITB) to examine the quality of Open Learning products supplied to the engineering industry. A major part of this research has been the application of the evaluation technique to a range of 67 Open Learning products (in eight subject areas). The findings were that good quality products can be found right across the price range - so can average and poor quality ones. The study also shows quite convincingly that there are good quality products to be found at less than £50. Finally the majority (24 out of 34) of the good quality products were text based.

Key Words and Phrases: OPEN LEARNING; QUALITY; EVALUATION; INDUSTRIAL TRAINING; EDUCATION.

ACKNOWLEDGEMENTS

Sincere thanks are due to my internal supervisor, Professor Richard Booth, who provided constructive advice and support throughout the whole of this research project.

I am also grateful to my former colleague and friend from the Engineering Industry Training Board (EITB), Graham Wright, who until October 1990 was my external supervisor.

In negotiating the original collaborative research project between the University and the Board Dr Alaistar Cochran (Interdisciplinary Higher Degrees, Aston University), Dennis Denning (Midlands Regional Manager, EITB) and Geoff Foster (Training and Development Manager, EITB) were most helpful.

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1.1 Introduction

To introduce the concept of Open Learning and to establish the aims and objectives of this research project.

1.1.1 Background to the Research

This first section describes the background to my research and touches very briefly on the important issues that are to be raised later in the thesis.

The research is concerned with the evaluation of the quality of Open Learning materials. Open Learning is a particular method of delivering education and training, and my research concentrates on its usage in industrial training situations.

Open Learning is not a new concept. It has its origins in Australia, Canada and Scandanavia where it has been used to provide learning opportunities for a widely dispersed population (see Turnbill, 1987 and Calvert, 1986). In these situations the main characteristic is that the pupil learns at a distance from the teacher.

The major development of Open Learning in the UK was the establishment of the Open University in 1971. This resulted from the Robbins Report (HMSO, 1963) which introduced the idea of open access to higher education to enable those who did not have formal entry qualifications to study for degrees.

Open Learning started to be used in this country for industrial training in the early 1980's, mainly as a response to the changing patterns of employment (Tinsley, 1986). In particular, the shift from low to high technology in both products and manufacturing processes which meant that the country was suddenly perceived to be suffering from skill shortages at technician and supervisory levels.

The general context of industrial training at that time is relevant to the impact that Open Learning had. Several major studies (Coopers & Lybrand, 1985 and NEDO/MSC, 1985) showed that the quantity and quality of training in Britain

was inferior to that of our economic competitors. Attitudes to training were (and are) poor (HMSO, 1989).

The Government - through the Employment Department and the Manpower Services Commission (MSC) - reacted with a shift in focus from the young unemployed people to employed adults through the Adult Training Scheme. At that time, the scale of the training, retraining and updating of the workforce was thought to be such that conventional methods of training were seen as being too slow and too expensive (MSC, 1982). Open Learning offered a potential solution to these problems.

In 1981 the MSC issued a consultative document (MSC, 1981) which eventually resulted in the launch of a three year programme known as the Open Tech Programme (OTP). This attempted to provide a self-financing infrastructure for Open Learning. However, the project's concluding report (TIHR, 1987) and others (notably Temple, 1987) showed that it had not succeeded in achieving this aim.

A commonplace view amongst trainers and Open Learning practitioners was that the quality of the resource materials that were produced by the OTP were of an uneven quality. The problem arose because the OTP tried to measure its success in terms of the number of hours of training material produced (TIHR, 1987) - but the producers of those materials had very different ideas about what constituted an hour's worth of training. This led the MSC to introduce a voluntary Code of Practice for ensuring quality in Open Learning (MSC, 1987). Despite this the MSC (and its successor the Training Agency) continued to have to fund projects to further promote quality in Open Learning. A cynical view is that this was another attempt to capitalise on the original public investment of £45m made in Open Tech. The main point is that despite these various ventures, achieving quality in Open Learning has remained an area of concern.

One of these quality initiatives was directed at the engineering industry. At that time (December 1988) I was employed by the Engineering Industry Training Board (EITB) as a specialist Open Learning adviser based in the West Midlands. On behalf of the Board, I negotiated for this work and successfully secured a £65,000 contract to evaluate and promote quality Open Learning products to the engineering industry in the Midlands.

The original intention was for the contract to run for three years. However, structural changes within both the Training Agency and the EITB meant that the project came to an early conclusion in August 1990 (see section 1.6.2).

1.1.2 Research Aims and Objectives

The main purpose of the Training Agency's agreement with the EITB was to examine whether Open Learning could be a viable consultancy activity for the Board to be involved in. The Training Agency provided 'pump-priming' funds to allow the Board to investigate this proposition. The primary task was to select a range of 10 or 12 quality Open Learning products that could be added to the EITB's portfolio of products and services. It is important to state that there were a large array of products on the market at that time. For example, in excess of 1500 products were listed in the "*Open Learning Directory*" (Training Agency, 1989) alone.

Purpose of the Research

In parallel with its commercial contract with the Training Agency, the EITB entered into a collaborative research project with Aston University. The purpose of the research was to underpin the results of the commercial work with sound reasoning. An essential element to this was the need to question the basic assumptions that were being made by both the Training Agency and the Board. I identified four areas of uncertainty:

1. What is Open Learning?
2. What is meant be quality in the context of Open Learning?
3. How can this quality be assessed?
4. How can a suitable range of products be identified and then evaluated?

These questions led to the derivation of the following research aims and objectives, which formed the basis of the original research plan (Cooper, 1989):

Research Aims

To research into the evaluation of the quality of Open Learning materials.

Research Objectives

1. To select (or construct) a definition which gives boundaries within which the research project can operate, and to review the history of Open Learning in the UK.

2. To review existing methods of evaluating Open Learning materials, and to analyse the strengths and weaknesses of each technique.

3. To propose and test a new quantitative method for evaluating the quality of Open Learning materials.

4. To select a range of Open Learning packages and to examine their differing degrees of quality.

5. To carry out studies to examine whether providing sales and consultancy services in the area of Open Learning can be a commercial success.

6. To provide industry with the results of the research studies and to promote methods of 'Best Practice' arising from the project work and to act as an exemplar or model scheme for other organizations.

The early termination of the Training Agency contract put the future of the research project in jeopardy. After negotiations between the EITB, the University and the Science and Engineering Research Council, I took voluntary *redundancy in* October 1990 and returned to the University as an internal student in order to be able to continue with these studies.

At that point a review of the research objectives was necessary. It was clear that the majority of the plan could be left intact - apart from some specific work relating to the commercial viability of Open Learning consultancy within the EITB (research objective five). An important consideration here was the fact that the Board did not wish to hinder the project in any way. It allowed the retention of all relevant research records and documents.

Leaving the EITB's employment brought about two unexpected benefits to the research. Firstly, a more objective view of the project's achievements could be

taken. Secondly, the scope of the research was no longer restricted to the range of the EITB's activities.

This led to the broadening of the research objectives (particularly objectives two and three) to include **QUALITY** in conventional training. This was a natural progression from looking at quality in Open Learning - since it can be argued that Open Learning is just a specific form of industrial training. Within the thesis a review of the application of quality assurance systems to the producers and deliverers of Open Learning materials is given. In addition a more general discussion is given of the application of the British Standard (BS 5750: Quality Assurance Systems, BSI, 1987) to training and education.

1.1.3 Structure of the Thesis

In section 1.6.4 the argument is put forward that this research is training rather than education. It will be shown that training aims and objectives can be written for this research which, in line with good practice, state performance, standards and conditions (Mager, 1963). This training theme is extended to the main body of the thesis which is laid out in the following manner:

Chapter 1:	Introducing Open Learning (Research/Training Objective 1)
Chapter 2:	Evaluating Open Learning Materials (Research/Training Objective 2)
Chapter 3:	A New Evaluation Technique (Research/Training Objective 3)
Chapter 4:	Selecting Materials for Evaluation (Research/Training Objective 4)
Chapter 5:	Testing the Evaluation Technique (Continuation of Research/Training Objective 4)
Chapter 6:	Analysis and Discussion of Results (Research/Training Objective 6)
Chapter 7:	Main Conclusions to the Research (Continuation of Research/Training Objective 6)

Sub-sections are devoted to discussing those enabling objectives that contribute to the research/training objective of that particular chapter.

For clarity it is worth remembering that objective five was abandoned as a result of the termination of the EITB / Training Agency contract and that objective six is concerned with the dissemination of the results of the research studies.

1.2 Defining Open Learning

To establish a definitive statement of what is meant by Open Learning that can be used as a benchmark throughout the rest of this research project.

1.2.1 Introduction

It is important at the beginning of any research work to define clearly the terminology to be used. The subject of this project is Open Learning and it is commonplace to find a number of differing views about its precise meaning. Providing we assign a meaning to the term and are consistent about the way we use it we can adopt Humpty Dumpty's philosophy:

> *'There's glory for you!' 'I don't know what you mean by "glory",' Alice said. 'I meant, "there's a nice knock-down argument for you!"' 'But "glory" doesn't mean "a nice knock-down argument",' Alice objected. 'When I use a word,' Humpty Dumpty said in a rather scornful tone, 'it means just what I choose it to mean - neither more nor less.'*
>
> *Lewis Carrol, Through the Looking-Glass.*

1.2.2 Open Learning

To define Open Learning we will examine both the formal definitions as well as the opinions of leading practitioners. The latter will be of a more qualitative nature but are arguably of greater importance than the formal definitions. The formal definitions are trying to describe and put boundaries around a particular method of education and training that the practitioners actually operate.

Those with first-hand experience of Open Learning are the producers and deliverers. By taking account of their views and opinions we can arrive at a practical, and usable, definition of Open Learning.

1.2.3 Formal Definitions

There are several definitions of Open Learning in common usage. One is that Open Learning is '...a term used to describe education and training schemes which are designed to meet the varied requirements of individuals - for example as to what, where, when and how they learn. Organisations make these freedoms of time, place and method possible by providing a carefully planned, flexible learning package. This enables the learner to study for much of the time away from the direct supervision of the trainer' (NEC, 1985).

I keep six honest serving men
(They taught me all I knew);
Their names are What and Why and When
And How and Where and Who.
I send them over land and sea,
I send them east and west;
But after they have worked for me,
I give them all a rest.

Rudyard Kipling,
The Elephant's Child.

The main observation is that one of Kipling's fighting men is missing. The fundamental question that has to be asked is WHY is the training or education being carried out? (The WHO? is the individual).

My definition of training (section 1.3) requires that there be an identified training need. This would answer the WHY? question. Another definition is that 'Open Learning is a term used to describe courses flexibly designed to meet individual requirements. It is often applied to provision which tries to remove barriers that prevent attendance at more traditional courses, but it also suggests a learner-centred philosophy. Open Learning courses may be offered in a learning centre of some kind or most of the activity may be carried out away from such a centre (eg. at home). In nearly every case specially prepared or adapted materials are necessary' (CET, 1986).

This definition is a useful one in that it states what is meant by flexible and distance. It clarifies the point that Open Learning embraces both flexible and distance methods.

Another commonly used definition is 'learning that is at a time, place and pace to suit the learner'. This empirical definition has been given some credence by a reference in the White Paper "*Employment for the 1990's*" (HMSO, 1988) in which it says '...the Government will continue to play their part in pump-priming new and significant approaches to training and development throughout their working lives. The most significant of these developments has been the introduction of open, distance and flexible learning. These enable individuals to learn at a time, place and pace of their choosing [my emphasis] and can ensure that teaching and training of high quality are available to all. After the original investment, the unit cost of training by these means can be very considerably reduced'.

From this statement we can draw the conclusion that the Government sees these methods as; applying to adult training, being cost-effective, and available at a time, place and pace to suit the learner.

The time place and pace definition is the least satisfactory in that it implies unstructured, uncontrolled patterns of learning. Experience dictates that this is not how successful Open Learning takes place. For example, at Carneau Metal Box (CMB) Engineering in Worcester they introduced Open Learning in 1988 - starting with supervisory training. The elements of training were the NEBSM SuperSeries (Pergammon, 1987). These are a series of training modules on supervisory management. They consist of 49 small discrete units of training, each of about 16 hours duration. A nationally recognized qualification (a NEBSM certificate) can be gained by the satisfactory completion of six of these modules. The supervisory grade was chosen as the vehicle for implementing Open Learning for two reasons. Firstly, because this was the area in which they had their greatest training need. Secondly, the units of training were sufficiently small to enable the first cohort of trainees to have a realistic chance of completing the course quickly and successfully.

This was an important consideration for the senior management at CMB. They felt that it was vital for the Open Learning centre to be recognized as a success amongst their shop-floor employees. This would then help to persuade the bulk of the workforce to accept the impending changes in the company's training practices. As the scheme expanded into other categories of employees, the company noticed that they were losing control over their Open Learning programmes. This was identified by a drop in the utilization rate of the Open

Learning centre, and a falling completion rate for training. They attributed this to their being **too** flexible with their training arrangements. This is how they solved that problem:

> *'...we now arrange for trainees to be booked-in to the Open Learning Centre to do their studying...'*
>
> Bob Peters,
> Open Learning Centre Manager.

Another, and well publicized, example comes from Ferranti Computer Systems at their sites in Bracknell and Cwmbran (*"Personnel Today"*, 1990). In mid 1989, Ferranti piloted its own Open Learning course to develop management skills. The scheme used four modules from a foundation course for an MBA from Henley Distance Learning.

> *'If we had just handed everyone the material and let them do their own thing it would have been doomed to failure from the start. We had to get internal support, an overall commitment that would enable delegates to integrate what they learned into the workplace.'*
>
> Jean Hopkins,
> Recruitment and Training Manager,

These are examples of the employer needing to exercise control over the learning process. None of the definitions of Open Learning that have been examined address this important issue.

1.2.4 The Opinions of Practitioners

An important aspect of this part of the research *is to arrive at a usable definition* of Open Learning that takes account of the opinions of practitioners. We have gathered anecdotal evidence suggesting that the main benefit to employers is the flexibility for key personnel to be trained with a minimum amount of disruption in the workplace. A comment from a leading trainer in the Midlands was particularly memorable. In March 1990, at a steering committee meeting for this project, he said:

> *'I've never had a request for training turned down on the basis of cost - but I've had it rejected on the grounds that key personnel can't be released'.*
>
> Harry Robinson,
> Group Training Manager,
> Concentric plc.

More evidence to support this view is found in "*Open Learning in Industry*" (MSC, 1988). For instance, the Trust House Forte Group has over 55,000 employees, including 20,000 employed in hotels scattered throughout the UK, Europe and the USA. One of their major training problems is that the shift system, and the pressure of work, means that employees can't be spared for training:

> *'We have two problems. One is the geographical spread both in the UK and overseas. And the other is releasing key personnel - as supervisors are - to attend courses...we think that Open Learning is a good answer to these problems because we don't have to ask staff to leave the hotel to attend training courses...they can do the studying in their own times and places - whenever they want to; they can do it at home or in slack times during their working day...'*
>
> Phillip Hamilton,
> Training Director, THF.

And another view from a smaller company (less than 100 employees) in the engineering industry:

> *'We need to train our staff in new technology, but we have a problem - we can't afford to release staff for lengthy periods away from plant'.*
>
> Steve Conquest,
> Managing Director,
> Compound Sections.

In the mid-eighties the Austin Rover Group decided to implement an Open Learning scheme. This is what their Chief Executive and their Technical Training Manager had to say about it:

> *'We at Austin Rover chose Open Learning because of its flexibility, its cost-effectiveness, the ability for people to be trained at the speed with which they can absorb that type of information'.*
>
> Harold Musgrove,
> Chief Executive.

> *'In the very early days of Open Learning for Austin Rover we had a new Product Information Management system developed. This required that 600 staff were trained over a six week period. Line management were insistent on this...traditional [training] methods were going to run at something in the order of £70K and we couldn't meet the deadline. With Open Learning we met the deadline and the cost was £35K. We thought that this was a very satisfactory solution'.*
>
> Innes Inglis,
> Technical Training Manager.

Another company publicly declaring the benefits of Open Learning are Prudential Assurance. They were seeking an effective way of training their fragmented sales force of 12,000 agents in 400 locations countrywide, and chose Open Learning. About which they had this to say ("*Personnel Today*", 1990):

> *'This scheme has the advantage of keeping training responsibility at a local level. This makes it much more immediate. New recruits do not have to wait for a place on a course and it enables managers to slot training into the office schedule'.*
>
> Peter Wynn,
> Open Learning Centre Manager.

As we have seen, there is strong anecdotal evidence to show that the ability to carry out training, without releasing key employees, is a major factor for companies choosing Open Learning. A recent study "*A Report into the Relative Costs of Open Learning*" (Coopers and Lybrand, 1990), based upon a survey of 50 companies, confirms the anecdotal evidence. The study identified that the most frequent reasons for choosing Open Learning were the logistics of training - because trainees were scattered around the country, on shift work, or difficult to release from their jobs.

In other words decisions were not usually explicitly related to cost. The study did point out, however, that there were cost implications to using Open Learning for logistical reasons. Savings can be made by not having to bring trainees together for more traditional training sessions. Reduced disruption at the workplace also represents a hidden saving. From the limited published information available (both anecdotal and formal studies) it appears that the predominant reason for using Open Learning is not having to release key employees. This may also bring about a secondary benefit of cost-savings.

1.2.5 Openness

SCOTTSU (1987) identified eight elements that contribute to Openness (Table 1). To this list three amendments are suggested.

a) Flexibility of use is a more apt description than "Sequence?", because it is a term with which industrialists easily identify (section 1.2.7).

b) Accessibility is an important factor. The end-user of a programme must be able to easily locate, and purchase, both the package and the tutorial support. Marvellous Open Learning programmes that nobody knows about are worthless.

Elements Which Contribute to the Openness of Open Learning Programmes

Issue for Learner	Closed	Open
1. Who?	Qualified entrants	Anyone
2. Where?	Study at one centre	Study at centre home or work
3. Length?	Fixed Start and end times	Flexible start and end times
4. Attendance?	Prescribed times	Related to individual needs
5. Method / Content?	Set in advance	Negotiated by learner
6. Sequence?	A to Z inclusive	Variable related to needs
7. Assessment?	Formal Exams	Related to learners' objectives
8. Support?	Timetabled	On demand

TABLE 1
Source: SCOTTSU, 1987

c) Clearly defined objectives. Without these, it is difficult to marry the training requirements to the suitability of a specific package.

An observation is that the greater the degree of control the less openness there is. "Openness" and "control" are both useful terms that we can use to describe Open Learning programmes.

As previously mentioned, Open Learning in the UK originated with the Open University. The Robbins Report (HMSO, 1963) laid the foundations for the Open University whose main aim was to open up higher education to those individuals who lacked formal or traditional entry qualifications. Embedded within this philosophy was a focus on the learner-centred approach.

In the previous section it was asserted that flexibility is a key characteristic desired by industrial trainers. A commonly held view amongst trainers is that Open Learning now refers to the characteristics of the learning materials rather than to the learner-centred approach. This change in focus has resulted from the transfer of Open Learning from the educational to the industrial environment and the desire for flexibility in the programmes. In being flexible, these programmes exhibit characteristics that make them more 'open'.

Table 1 gives the elements which are generally considered to contribute to openness. These are listed under the headings of 'open' and 'closed'. In the early parts of this research I tended to refer to the 'openness' and 'closedness' of programmes. The terminology of 'closedness' was both an awkward and incomplete description of the characteristics of the Open Learning programmes that I was evaluating. Practitioners and colleagues were indicating that completely open patterns of learning were not suitable in industrial situations. Flexibility was the key attribute. That is, programmes of *learning that contained* both some open and some closed characteristics. During the steering committee meetings (see section 1.6.2) I formed the general impression that trainers wanted to be able to assess the progress of the learning and if necessary to be able to intervene. It was via this route that the concept of the '...facility for external control and monitoring' came about.

Monitoring is a non-intrusive measure. Students and trainees need not be aware of it. Control on the other hand is asking the learner to demonstrate a behaviour at a particular point in time. It can be seen that the closed aspects of the learning also describe those that are monitored and controlled.

Control and openness are the 'principles of learning' that characterize the learning event. The principles of learning are the means by which learning theory are practically applied to training and education. Harrison (Harrison, 1989) gives a current view of those that are used in conventional training, and

suggests an 8-point checklist that can be used for incorporating the main principles of learning into learning design:

Design an appropriate structure and culture
Stimulate the learners
Help understanding
Include appropriate learning activities
Build on existing learning
Guide the learners
Ensure that learning is retained
Ensure that learning is retained

In addition, Open Learning has been influenced by the principles used in programmed learning. Programmed learning has its origins in military training dating from the 1950's. There are variations to the system but the major components (Callender, 1969) are:

Behavioural analysis
Continuous active responding
Immediate confirmation
Self pacing
Small steps
Validation

Other variations are described elsewhere (eg Richmond, 1970 and Dick & Carey, 1978). The terminology used in programmed learning is recognizable as being associated with RF Mager and his philosophy of structured learning (see section 2.1.2 *"Evaluation of Conventional Training"*). In later sections it will become apparent that the criteria upon which Open Learning materials are assessed are based upon the principles of programmed learning.

1.2.6 Project Definition

The formal definitions encompass the concepts of flexible, distance and Open methods of learning. They are characterised by flexibility in the place, pace, and time of the learning process. They do not take account of why the training is being carried out. Nor do they address the requirement for there to be the facility for external control. The following definition has been derived for use in this project:

> **Open Learning** *is education or training designed to meet an identified need. The learning is flexible in the time, place and pace of its delivery. It is characterised by the facility to be externally controlled or monitored.*

Open Learning therefore includes programmes that are delivered using the following media:

1. Text-based
2. Video-led
3. Computer-based
4. Audio
5. Interactive Video
6. Any combinations of 1 to 5

Open Learning also covers distance learning, flexible learning, and correspondence courses. Distance and flexible learning (as well as correspondence courses) are included on the list with the proviso that they have the facility to be controlled and monitored. That doesn't mean to say that must be used in this way - just that if the need exists, then the facility is available.

From our definition, Open Learning **does not** include:

1. Lectures
2. Conventional 'chalk and talk' training
3. Seminars and conferences

The items on this excluded list can all be modified to become Open Learning material. For instance, a conventional lecture can be recorded on video and designed to become distance learning material (for example, lectures for the MBA course at Aston University are recorded onto video for use as distance learning material).

In its studies of Open Learning materials, the Training Agency has chosen to exclude those that 'require sophisticated hardware' (for an example see, "*Open Learning for Management Development*", Training Agency, 1989). It is my opinion that Interactive Video (IV) **does** provide learning opportunities that meet the 'time' and 'pace' requirements. The difficulty comes with deciding whether it meets the requirements for flexibility in the 'place' of learning. Most certainly IV is not as flexible as text, audio, or even video. All of these media could be used by the majority of people to learn at a convenient place.

If the price of IV's falls they will become items that are sufficiently portable and inexpensive that they can realistically be used at place that is convenient to the learner. But at the moment this is not so. Interactive Videos are currently costing between £3,500 and £5,000, with the cost of IV discs being stable at about £750 each.

However, where IV is available it does provide flexibility to the *employer* or *trainer*. For this reason I would argue that it is embraced within the definition of Open Learning. This view is supported by a co-worker who is also researching in the area of training and development. Peter Jackson of Kalamazoo Computer Group (and Marketing Manager of their consultancy practice) has studied the use of IV in his organization as part of his thesis for an M.Ed. in training technology. He described to me how 80% of Ford motor dealers use Kalamazoo's accounting systems. Consequently, they come to his company for their training. During a demonstration, he explained that Interactive Video allows Ford the flexibility to train at their own sites. For some courses it can even be used to give basic training prior to a reduced-duration, residential course.

A similar, and documented, experience exists with Jaguar Cars ("*Personnel Today*", 1990). When Jaguar introduced the XJ40 in 1985, they had to re-think their approach to training. The car had many innovative features compared to its predecessors; it contained more electronic components, had a different type of engine, and had new gearbox and suspension systems. In the past Jaguar had run conventional four-day courses. With IV this is now covered by on-site training supplemented by a two-day residential course. The Interactive Video programme takes about three hours to complete. Groups of 10 - 12 trainees are then sent to Jaguar's Coventry plant for residential training. As they arrive, they are tested to ensure that they satisfactorily completed the IV training - if not they are sent right back.

> *'Despite misgivings, most dealers like it, because they have the training equipment on the premises. New people can be trained up to a basic level straight away, instead of waiting three to four months for a Jaguar course, and the system is constantly available in the workshop to be consulted like a reference manual'.*
>
> Mike Howell,
> Dealer Training Manager.

These experiences have led to an added (and useful) dimension to the definition of Open Learning. Flexibility does not just refer to the convenience afforded to the learner. It can also apply to the way in which the learning is delivered.

1.2.7 Target Audience and Identified Need

From the definition it is implied that Open Learning can only take place in the presence of an identified education or training need. This means that there is an actual, or envisaged, learner (or group of learners) who need to be trained or educated. These will be referred to as the TARGET AUDIENCE.

1.2.8 Characteristics of Open Learning.

To summarise, Open Learning can be identified by the following characteristics:

1. It is education or training.

2. It is flexible in the time, place and pace of learning.

3. It has the facility for external control and monitoring.

4. It meets an identified education or training need.

5. It has a target audience.

1.3 The Training Environment

To examine current developments in the training environment which might affect the uptake of Open Learning.

1.3.1 Arrangements for Training in the UK

There are two key elements in the arrangements for industrial training in Britain. They are the Training Agency, which is the arm of Government responsible for the promotion and development of training and Industry Training Organisations (ITO's), which are lead bodies that aim to influence training in their particular sectors of industry.

1.3.2 The Training Agency

Responsibility for Government training policy resides with the Employment Department. The Training Agency, which was formed in 1988, is a separate unit within the Department. It is responsible for the implementation of Government policy. Its operations are geographically divided into Regions and Areas. The Training Agency works closely with ITO's, training providers and voluntary organisations.

To persue its task, the Agency operates four main initiatives. These are Employment Training (ET); the Youth Training Scheme (YTS); Business Growth Training (BGT); and the Enterprise Allowance Scheme (EAS). In 1989/90 the Agency had a total budget of £2.6bn, of which 88% was allocated to Employment Training, and the Youth Training Scheme.

Employment Training was launched in 1988 to give work experience to the long-term unemployed (6 months or more). Trainees receive a flexible mixture of directed training and work experience which can last for up to one year, although the average is nearer six months (HMSO, 1989). Each trainee starts with a period of initial assessment to identify their needs and capabilities. This results in an Action Plan outlining the competencies that need to be achieved during the training period. Trainees qualify for an extra £10 allowance beyond their normal entitlement to State benefits.

The Youth Training Scheme was launched in 1983. It aims to provide school-leavers with a basic training for work. The scheme normally lasts for two years (although originally set at one year in the period 1983 to 1986) and trainees undertake a minimum of 20 weeks off-the-job training. This compares with 46 weeks in the EITB's Basic Training Scheme (EITB, 1985). Usually trainees are placed with employers through a Managing Agent (who is responsible for the recruitment of the trainees and for the monitoring and evaluation of their training). Each trainee receives an allowance of £29.50 in the first year and £35.00 in the second year.

The third programme is Business Growth through Training, which was launched in 1989. Its objectives are to demonstrate that training can improve business performance. A key element in the submission of an application for a

BGT grant is a business plan. This must demonstrate a clear link between future business success and the need for training. There are five BGT options:

1. Business and training planning
2. Better business skills for owner/managers
3. Managing change
4. Tackling skill needs jointly with other companies
5. Innovative training solutions

Of particular interest is Option 5 which provides grant aid for companies to develop new training programmes (including Open Learning) to meet their own or their industry's training needs.

The fourth Training Agency programme is the Enterprise Allowance Scheme. This provides financial help for the first twelve months of self-employment. During this time, an allowance of £40 per week is payable. The objective of EAS is to give a certain degree of financial stability during a new business's first year of trading. At the same time it reduces the number of people claiming benefit, and encourages people to come off the unemployment register. A cynical view is that it mearly massages the statistics. The average benefit claims are thought to be about £40 per week - and participants in EAS give up their right to claim any other social security benefits.

1.3.3 Industry Training Organisations

In the White Paper, "*Employment for the 1990's*" (HMSO, 1988), the Government proposed an agenda for action with six main objectives. These were the abolition of the Wages Councils, the setting up of a National Training Task Force, the establishment of a national network of Training and Enterprise Councils (TEC's), the launch of the Business Growth Training programme, the winding-up of the statutory Industrial Training Boards (ITB's), and the privatisation of the Skills Training Agency. These recommendations provided for the decentralisation of training by replacing existing provisions with local, employer-led TEC's.

1.3.4 Training and Enterprise Councils

Shortly after the publication of the White Paper came the document "*Training and Enterprise Councils: a Prospectus for the 1990's*" (HMSO, 1989). It outlined the role of the TEC's and gave five major principles for reform '...to bring about decentralisation, diversity, innovation and excellence'.

Firstly, TEC's would provide a 'locally based system' that tailored national training and enterprise programmes to the needs of the local labour markets. Secondly, they would be 'an employer led partnership' that would shift enterprise and training from the public to the private sector. Employers were felt to be best placed to identify the local key skill needs, and to ensure that the level and quality of training and business services met those needs.

Thirdly, to provide a 'focussed approach', that would tackle the fragmented and blurred boundaries between training, vocational education and enterprise development. Fourthly, 'an accent on performance', requiring better value for money, greater efficiency, and a higher return on investment. Finally, 'an enterprise organisation...capable of driving radical reforms stretching beyond the boundaries of existing programmes and traditional methods of delivery'.

TEC's will have one main purpose during the transitional phase from the public to the private sector. That will be to deliver the four Government training and enterprise initiatives (ET, EAS, YTS and BGT). It is intended that at least two thirds of the members of each TEC will be senior managers drawn from the private sector. The remainder will be senior people from local education, trade unions, voluntary bodies and other bodies engaged in training and enterprise. An important financial consideration is that TEC's will be allocated funding that would normally have been allocated to the area by the local Training Agency office. The Agency has seconded senior staff from these offices to the TEC's.

Within the industry, it is believed that the Government's hidden agenda is to persuade TEC's to appoint former Agency Area Officers as their Chief Executives. It is a quite plausible view when you consider that the Training Agency is being disbanded. Also, the Civil Service have no mechanisms for making staff redundant - only a policy of redeployment to other Departments (that are already fully-staffed).

A key theme throughout the Government's policy (as laid out in the White Paper) is the need for **quality**. TEC's will have to demonstrate that they are operating quality programmes of training and enterprise development 'that meets both Government guarantees and community needs...and to achieve agreed performance outcomes'. It is estimated that a national network of about 100 TEC's (with an annual responsibility for about £3 billion of public expenditure) will evolve by 1992, depending on local activity and initiative. By the end of 1990, 82 TEC's were thought to be active - but at varying stages of development (Turner, 1991).

1.3.5 Industrial Training Boards

The Industrial Training Boards were set up under the 1964 Industrial Training Act (HMSO, 1964). Broadly, they are responsible within their own industries for:

1. Defining and monitoring current and future training needs
2. Ensuring that employees undertake the training they need
3. Setting training standards
4. Coordinating training activities

To enable them to discharge these duties, the Boards are empowered to raise a levy from "in-scope" companies. They can also give grants to encourage training. Levy/grant arrangements vary from Board to Board, but there has been a tendency for the incidence of levy payments to reduce through 'levy-exemption' schemes. The current maximum levy that a Board can raise is one percent of a firms total emoluments (roughly equivalent to the total annual pay-roll) - this compares with 2.5 percent in 1964.

Each Board has a Chairman and members representing employers, trade unions and educational interests. The number of members varies between 11 and 31. Appointments are made by the Secretary of State for Employment, usually every three years.

The 1964 Act was subsequently repealed and replaced in 1973 (HMSO, 1973). The new Act aimed to reduce bureaucracy by changing the Boards' mandatory duties to enabling powers; excluding small firms from paying a levy, and limiting the maximum levy to 1%. The effect was to reduce the number of

Boards and the to limit the influence of those that remained. For example, in 1969 there were 27 Boards covering 15 million employees, and by 1988 this was reduced to seven Boards covered just 5 million employees, or 23% of the working population. These were Hotel and Catering, Clothing and Allied Products, Construction, Engineering, Off Shore Petroleum, Plastics Processing, and Road Transport (HMSO, 1988).

The present Government further amended the Act again in 1982 (HMSO, 1982), and introduced exemption-from-levy for those firms meeting minimum training standards. The Act abolished Exchequer funding for the Boards' administrative and capital expenditure but made provisions for the Boards to introduce a non-returnable-levy (NRL) set at a maximum of 0.2% of the levy-at-risk. Even companies with an exempt status needed to pay this.

The legislation also specified a new role for the ITB's '...of encouraging adequate training of persons employed or intending to be employed in the industry'. There are some important observations here. The role is clearly focussed on new recruits, adult training, and the needs of the industrial sectors covered by the individual Boards.

1.3.6 The Engineering Industry Training Board

The EITB operates in those companies whose predominant activity is engineering. The main criteria for deciding these matters is whether the final product contains metal or not. Anomalies have inevitably arisen over the years. A company producing hard discs for computers would be in-scope, whilst one producing floppy discs would not. A company precision grinding optical lenses would be out-of-scope but one producing magnifying glasses would be in-scope, and so on.

Conflicts can also arise over which Board has responsibility for a firm. The general rule is that the companies predominant activity determines this. As an example, Thorn EMI Lighting are manufacturers of domestic and industrial light bulbs. They have in-house catering facilities and a transport department. The idea that the company would be in scope to three (EITB, RTITB and HCITB) Boards is ludicrous. A pragmatic approach prevails in that the overall responsibility for the assessment of the company's training arrangements rests with one Board, in this case the EITB. To satisfy the specific requirements for

training of, say, catering and haulage staff, it would be expected that the company would follow the appropriate HCITB and RTITB recommendations. The EITB would take this into account when assessing the firm's eligibility for exemption-from-levy.

An insight into the extent of the EITB's activities is given in the Annual Report and Statistics (EITB, 1988). In 1987 there were 21,600 in-scope companies, of which 14,400 (67%) were below the exclusion level (40 employees or less). These establishments respectively covered 1,659,000 and 241,000 employees, giving a total of 1.9 million. In 1987, the four sectors employing the largest number of people were; machinery manufacture (413,000), electronics (252,000), motor vehicles (225,000), and metal goods (220,000). Firms in these sectors accounted for 65% of the total number of in-scope companies. In the 86/87 training year (1st Sept - 31st Aug) the Board gave exemption to 93% of those companies liable to levy. This generated a revenue of £3.2m compared to a total levy-at-risk of £166.9m. The Board's operating costs were covered through an NRL of £13.0m.

The zenith of the Board's achievements (and paradoxically one of the reasons for its downfall) was its craft training scheme. Since 1964 the Board has laid down recommendations for the training of the 325,000 craftsmen in the engineering industry. From 1981, however, the number of trainees entering Basic Craft training has fallen significantly. Between 1977 and 1981 there were annually well over 16,000 trainees completing first year training. By 1988 this had dropped to less than 7,500. The figures for completed apprenticeships show an even more dramatic fall - from a stable 12,000 in the period 1975-81, down to 2,243 in 1985, and a staggeringly low 325 in 1986.

These changes coincided with two major events. Firstly, the recession was hitting manufacturing industry particularly badly. This led to a decline in recruitment and training, and in recognition of that fact, the Board relaxed its exemption criteria. When the economy became more buoyant, the Board was unable to re-instate its previous standards for training. It was a position from which the EITB never recovered.

Secondly, as part of its programme to reduce unemployment, the Government introduced the Youth Training Scheme. The Board adopted the attitude that it wished to be distanced from YTS, on the basis that the quality of training being

offered was much inferior to its own First Year Training scheme. Whilst this was probably true in the early days of YTS, the standards did rise to levels that eventually approached those of the EITB.

However, in the process much harm was done. Politically, its was a major error of judgement. Eventually the Board suffered the consequences of the Government's displeasure. By comparison, the future of the Construction ITB was secured when they whole-heartedly embraced YTS. After July 1991, the CITB will remain as the only statutory Industrial Training Board.

1.4 Attitudes to Open Learning

To examine current developments in the training environment which might effect the uptake of Open Learning.

1.4.1 Introduction

The literature, surveys and studies on industrial training in the UK do not differentiate between the various forms of training delivery. Consequently, our methods for examining attitudes to Open Learning have been indirect.

Firstly, there is much information on the activity and attitudes towards industrial training in the UK. There are also studies that have compared our training systems with those of our economic competitors.

Secondly, there is a significant amount of published work on the Open Tech Programme. The Open Tech project was the major initiative in this country for the delivery, by Open Learning, of vocational education and training. In section 1.4 we review its influence upon Open Learning practice in the UK.

1.4.2 Training in the UK: Activity and Attitudes

In recent years there have been a number of reports that have been critical of the quality and quantity of training in this country compared to our economic competitors. The report "*A Challenge to Complacency*" (Coopers & Lybrand, 1985) identified that there was a disturbingly low level of investment in training, both in the public and private sectors. They identified the main reasons

for this as being a combination of complacent, ill-informed and sceptical attitudes to training at all organisational levels.

The report made many recommendations about how to influence attitudes towards training, including the use of:

1) Exhortations and encouragements to invest in human resources.

2) A more systematic approach to the organization of the training function, and greater expertise in training practitioners.

3) More rigourous costing and evaluation of training in order to demonstrate to managers its cost-benefit and cost-effectiveness to the organization.

4) Case studies showing how training can contribute to the achievement of individual and corporate goals - and how failure to train can inhibit progress.

The most recent and comprehensive survey was published in 1989. The report "*Training in Britain - A Study of Funding, Activity and Attitudes*" (HMSO, 1989) was quite revealing. It identified that:

1) An estimated 1.5m working years of training took place in Britain in 1986/87. This is equivalent to 7% of the total working days worked at a net cost of £33bn (or 8% of Gross Domestic Product).

2) Labour accounted for about 85% of the total costs of training.

3) One in five employers reported that they had not carried out any training in 1986/87.

4) Of these 42% reported that they only recruited people who were already experienced - rather than train new or existing employees.

5) Those that did train, provided training to 48% of their employees.

6) Only 24% of companies had a training plan, less still (15%) evaluated the benefits of training.

7) Only one in forty companies attempted any cost benefit analysis.

Within those companies that did train in 1986, the average amount of training per employee was 14.5 working days. In mechanical engineering this average was 6.3 mandays with 36% of the workforce receiving training of an average duration of 17.7 days. Table 2 shows how this compares with some other industry sectors.

The survey found that the most commonly perceived influence on training was the need to sharpen competitiveness (56%). This was followed by Government legislation (40%) - and included health and safety regulations. This was particularly strong in manufacturing, where it was mentioned by 50% of establishments compared with 36% overall.

The third most influencing factor (35%) was the Youth Training Scheme and other Training Agency programmes. Construction, retail, catering and service industries were particularly influenced by this.

By contrast, Industrial Training Boards were mentioned by only one in eight employers in those industries that they serve. Employers cited ITB's as a significant influence to the following extent; construction (24%), engineering (20%), and catering (16%).

The survey does not mention whether these figures included those establishments that fall below the levy-exclusion level set by their ITB (each ITB sets their own). For instance, the EITB has its exclusion level set at companies employing less than 40 people. These firms are not subject to the regulatory influence of their ITB, and their inclusion in the survey would distort the results. A question that the ITB's would have found to be more worthwhile would have been 'Does being subject to an ITB levy influence your training activity?'

Whilst the survey did establish the reasons why companies need to train, it did not ask employers the question "what stops you from training?" There is a subtle difference between the two. One identifies the catalysts the other identifies the obstacles. It would have been useful to have had information that either confirmed - or rejected - our anecdotal evidence that flexibility, and

release of employees, are key issues to influencing employers' training decisions (section 1.1.7).

Training Activity in Different UK Industries, 1986-87

Sector	Days per Employee	% of Employees Trained	Days per Trained Employee
Health	17.6	78	22.5
Education	9.6	64	15.2
Central Government	9.5	59	14.3
Retail	8.3	68	12.2
Finance	8.0	52	15.5
Electrical Engineering	7.3	40	18.2
Mechanical Engineering	6.3	36	17.7
Catering	6.3	45	13.9
Construction	5.8	24	23.8

TABLE 2
Source: HMSO, 1989

1.4.3 Comparisons with our Economic Competitors

Another well known report, "*Competence and Competition*" (NEDO/MSC, 1984), reviewed the systems for industrial training in the Federal Republic of Germany, the United States and France, and compared them with the provisions for training in the UK. Their findings were not favourable.

The system for training young people in Germany is probably the best known in Europe. It rests upon a consensus for securing economic success for both enterprises and the nation. This has produced a stable system that has the

objective that every person entering the labour market should be occupationally competent and qualified (either as a skilled worker or as a graduate from higher education).

The quest for quality is a national preoccupation. In educational terms quality is achieved through an apprenticeship for those not immediately going into higher education. Approximately 70% enter an apprenticeship at the age of 15, and over 20% go on to higher education.

A marked difference from the UK is their willingness to train for 'stock'. There is a belief that in times of unemployment, it is preferable to have unemployed, skilled workers rather than unemployed, unskilled workers. This leads to a pool of skilled labour, which is then treated as national resource.

The system is quite simple. Up to the ages of 15 or 16, pupils receive a general education in a secondary modern school (Hauptschule), an intermediate (Realschule) or a grammar school (Gymnasium). Nearly 70% enter vocational education and training through either the 'Dual System' or in full-time vocational schools. Nearly 20% study for 'A' levels (Abitur or similar); and 10% go into various pre-vocational courses.

In the 'Dual System' employers arrange the training, whilst the Laender Governments provide the day-release colleges (Berufsschulen). The system is governed by the 1969 Vocational Training Act which defines about 450 recognized training occupations, and sets national training standards for each. This includes the setting of syllabuses and examination requirements. The relationship between the trainee and their employer is governed by a contract and is subject to civil law.

The Dual System is controlled by the Chambers of Craft (Handwerk) and Chambers of Industry and Commerce. There is a legal requirement for all enterprises to belong to a Chamber. An important requirement in the craft sector is that small firms can only be set up by an apprentice-served craftsman. They must either hold a Meister's certificate, or employ someone who does. There are moves afoot in this country to introduce an equivalent to the Meister scheme. The EITB and City and Guilds are reported to be developing an Open Learning programme for this (Turvey and Moore, 1990). The 'Engineering Master' course will be aimed at those who have served an engineering

apprenticeship. They must also have at least three years experience at a supervisory level in any part of industry that has a strong engineering content.

As might be expected, the systems in other countries are less formal than in Germany. France imposes two main statutory constraints on employers. The first is that they spend a certain percentage of their payroll on off-the-job training. This is currently set at 1.2%. Let us put this into context. In the UK when the EITB operated a levy-grant system (section 1.2.6), over 90% of large employers were able to reclaim their 2.5% levy by demonstrating that they had spent an equivalent sum on training (EITB, 1988). In the mid-eighties under a 1% levy, the number of exempt companies still remained very high (see Table 3). An observation here is that the degree of statutory burden imposed by the French system is roughly equivalent to that imposed in this country. The point being that as an indicator of training expenditure, the levy (sometimes referred to as a training tax) is still an effective motivator at 1%.

Percentage of Firms Exempt or Partially Exempt from EITB Levy, Analysed by Size (1977/78 and 1985/86)

Firms having:	1977/78	1985/86
41-60 employees	(1)	71.7
61-99 employees	35.9	86.3
100-249 employees	52.2	93.4
250-499 employees	69.0	98.6
500-999 employees	79.6	99.5
1000 + employees	90.4	99.8

Note (1): Since 1984/85 firms have been liable to pay levy if their employment exceeded 40; in earlier years they were liable if their employment exceeded 60.

TABLE 3

Source: EITB 1989

The second constraint imposed by the French is that workers have a personal entitlement to take educational leave. Since 1978, there have been provisions for

the employees to receive an income which is either paid jointly by the employer and the state or solely by the employer. The French system offers substantial opportunities for full time vocational education. Specialist schools, known as Lycees Professionels, provide vocational education at upper secondary level. There are then two options open to young people. Either, at aged 14+ they can take a three year craft course leading to a Certificate d'Aptitude Professionelle (CAP) qualification. Or, at aged 15+ they can opt to take a shorter, two year CAP course. As an alternative they can take the less specialised, and slightly higher, Brevet d'Etudes Professionalles (BEP).

Finally, there are other courses that will enable entry into Higher Education (HE). These are the Brevet de Technicien or the newer, more broadly based Baccalaureat Professionelles. In fact, these final qualifications officially constitute as the first level of HE - equivalent to say a BTEC Higher National Certificate.

Japan's system is less regulated than that of either Germany or France. There are cultural traits that affects its industrial training system. Particularly: the emphasis on the long-term view; a clear national perspective; and a preference for consensus decisions. This has led employers to favour a general broad-based education. In Japan educational attainment is overtly linked to jobs and career prospects, which has led to high participation in post-compulsory schooling (92%). This manifests itself in the fact that the high average age of new entrants to the labour market. In 1983 this was 20 years old.

Vocational education in the school system is mainly confined to Upper secondary level covering the age band 15-18 years. Schools specialising in vocational education are called Vocational Upper Secondary Schools. There are also a small number (62 in 1983) of Technical Colleges offering 5 year courses to 16 year olds. There appears to be a tendency for vocational schools to specialise in particular subject areas such as: machinery; electronics; civil engineering; architecture; and industrial chemistry. Government regulations insist that at least one third of the total school hours must be devoted to general education - although the majority of schools seem to exceed this.

Schooling in Japan is free up until the statutory minimum leaving age of 15. Thereafter, fees become payable. In 1983 the average yearly cost of a place at Upper Secondary School was about £700.

opportunities exist at Special Training Schools. Students at these schools are mainly drawn from those who have completed a general education in Upper Secondary School. The courses are specialised and last for a year or longer. About 40% of the Upper Secondary Schools' students go on to do these courses. Education does not end abruptly on entry to work. The national policy of 'lifetime education' is reinforced by the emphasis that firms place upon self-development. It is expected that workers attend courses in their own time. In the UK, it is the Government's policy (as indicated in "*Employment for the 1990's*") to emulate some of the philosophies advocated by the Japanese. Namely; deregulation, cradle-to-grave provisions for education and training, and placing responsibility for self-development with the trainee.

The American system is the most diverse and deregulated of the four countries. There is very little interference from the Federal Government: the major responsibility rests at a State level. Vocational education and training is delivered in a number of ways, through: the 1300 public two-year colleges; the 3000 public and private four-year colleges and universities; several thousand 'trade' schools; extensive civilian in-house, and armed services training. This arrangement has been described as a vast 'non-system'. Table 4 shows that, of the four countries, America has the highest participation rate (94%) in post-compulsory education and training.

Comparisons between Enrolment Rates into Vocational Education and Training, 1988

Country	Minimum Leaving Age	Percentage in Full-time Education at Aged 16 Years
Germany	15	69
Japan	15	92
USA	16	94
France	16	78
United Kingdom	16	47

TABLE 4
Source: HMSO, 1989

In summary, of the four countries the USA and Japan have adopted the most *laissez-faire*, and least interventionist, attitude to their industrial training. The UK has the lowest enrolment rate of school leavers into the vocational education and training system (about half that of Japan and the USA). In terms of regulatory control, the UK system probably lies somewhere between those of the Germans and French - and yet we still fall way behind.

A review of the training systems of our economic competitors leads one to the belief that there is a *prima-facia* case for deregulation. Those countries that have the least State intervention, have the highest participation rates in vocational education and training. Even as a prejudiced observer (being an ex-EITB employee), deregulation seems appealing. But there are doubts. "*Training in Britain*" provides strong evidence to suggest that UK industry has a negative attitude towards education and training. Even in those sectors of industry that are outside of the statutory control of the ITB's, training is still at a low level (see Table 2).

My conclusion is that deregulation is not a panacea for all ills. The stark statistics are that 20% of firms did not carry out <u>any</u> training in 1986 (HMSO, 1989). Removing the existing infra-structure will not address the fundamental issue of changing the country's attitudes to training - such a Herculean task is a matter for Government. There is a very real risk that the present course of action will displace the blame from a national level to a local level (from ITB's to TEC's).

1.5 The Open Tech Programme

To examine the influence of the Open Tech Project on Open Learning Practice.

1.5.1 Background to the Open Tech Programme: Adult Training

The need for continuing education and training is a matter which is currently high on the political agenda. In the Government's White Paper, "*Employment for the 1990's*" (HMSO, 1988), Norman Fowler, then Secretary of State for Employment, said, 'we must invest in the skills and knowledge of our people...through a strategy of training through life'. It would be naïve to think that this policy had been inspired by an altruistic desire for us all to lead more

fulfilled and educated lives. The real reason is that the Government is concerned that the economy could be starved of skilled labour in the 1990's.

Demographic changes mean that industry will be faced with a shortage, in human resource terms, of its raw materials - young new entrants. This is because there will be radical changes in the number of young people entering the labour market. The White Paper quotes some projections from the Office of Population Census Studies (OPCS) and the Government Actuary's Department:

1) During the 1990's the population of working age will remain broadly stable at a little over 34 million.

2) Over the period 1987-1995, the workforce will on average increase by about 100,000 a year, compared with 300,000 a year in the four years between 1983 and 1987.

3) In 1983, there were 3.7m 16-19 year olds in the population. By 1993 this is expected to have dropped by 1.2m to 2.5m.

These demographic changes have important implications for the country. There will be a relatively stable workforce, accompanied by a sharp decline in the number of new, young recruits.

The relative stability of the labour force means that greater flexibility will be required of those already in employment. This requires industry to retrain its existing employees.

For some time the Government have been concerned about this issue. Brian Nicholson (the then Chairman of the Manpower Services Commission), in an address to senior education officers in Birmingham in 1986 (see Temple, 1988), quoted the following comparisons with the UK: France trains about twice as many 20 to 44 year olds; Holland gives up-grading training to between four and five times as many 25 to 44 year olds; and twice as many Germans had vocational qualifications (the source and validity of this information was not stated).

The White Paper also made proposals for encouraging new entrants into the workforce, in particular, women, ethnic minorities, unemployed people, and older workers.

1.5.2 The Open University

The major impetus for vocational training through Open Learning came in July 1982 with the launch of the Open Tech Programme (OTP). As its name implies it attempted to emulate the ideals of the Open University (OU) but targeted at a larger audience with different academic, more skill-based needs. The Open University is considered to be the standard-bearer for Open Learning in the UK (TIHR, 1987). However, the academic and social-science bias of its courses has meant that whilst the principle of flexibility of study has appealed to industrialists, the content and intellectual goals are not of direct application to industrial training. However, the Open University has made some efforts to provide relevant training for manufacturing industry, but the courses are mainly at post-graduate level and are beyond the scope and capability of most employed adults. For example, their Computer-Aided Engineering (Open University, 1987) and Manufacture, Materials and Design programmes (Open University, 1986) are specifically aimed at practicing managers and engineers. Both programmes are set at an intellectual level equivalent to that of an OU Postgraduate Diploma.

In a paper discussing the future role of the Open University, McNay identified the emergence of a growing market for professional courses within the Open Business School (McNay, 1986). This was thought to be partly caused by an overflow from undergraduate courses. In 1986, there were 56,000 applicants for the undergraduate programme of which 24,000 could not be offered a place. McNay speculated that in the medium to long term (until the late nineties) the OU will operate a largely unchanged portfolio of courses - with undergraduates forming a smaller proportion of new students. The importance of this is that the role of the OU in industrial training is not expected to significantly change.

In engineering the proportion of employees who might potentially benefit from the courses offered by the OU will be of the order of 10%. This estimate is based upon the fact that in 1987 there were 1.902m employees in mainstream engineering companies of which 122,000 were managerial staff and 90,000

were professional engineers, scientists and technologists (EITB, 1988). Arguably the demand for Open Business School courses will be much less than this since only 0.4% of engineering managers received day or block release for training in 1987, compared with the 10.5% given to professional engineers, scientists and technologists (EITB, 1988).

1.5.3 The Establishment of the Open Tech Programme

The OTP was started by the publication in, May 1981, of a consultative document, "*An Open Tech Programme*" (MSC, 1981). Following the responses to this, a Task Group was set up by the Manpower Services Commission to make more detailed recommendations. It was the publication of the Task Group Report (MSC, 1982) that spurred the programme into action.

The background environment in which the OTP was operating is an important consideration. The Government had been in office for three years pressing ahead with its policies for economic and financial reform whilst promoting and encouraging enterprise and deregulation. However, the economic recession had started to hit industry. Those that would survive would be fitter, leaner organisations requiring a more highly skilled workforce. The paradox for the Government was that whilst unemployment had reached over three million, there was a very real prospect of future skill shortages in the technical and supervisory grades.

The former Director of the Open Tech Unit (Tinsley, 1986) stated that the OTP was part of the Government's Adult Training Strategy and aimed to persuade employers and training providers of the importance of adult training particularly at technician and supervisory management level. The programme's key objectives were :-

1) To open and widen access to existing education and training provision by providing opportunities for Open Learning; and

2) To make possible new education and training provision for needs which could best be met through Open Learning.

Tinsley also commented that the programme was aimed at employed adults and was characterised by the 'consistent and innovative use of Open Learning

techniques'. These were thought to be able to overcome the main barriers to adult education:-

1) Geographical
The nearest site of formal training may be distant from the trainee's home location.

2) Personal
Domestic or physical constraints on the individual.

3) Anxieties
A reluctance to expose weaknesses in one's knowledge to others - especially in areas where the trainee might be expected to know the answers.

4) Work Demands
Employed persons may be constrained by work shifts or an unwillingness by the employer to release them for training during working hours.

Whilst supervisors and technicians might have been the target audiences for the OTP, as perceived by its managers at the time, the independent review of the programme (TIHR, 1987) shows otherwise. The OTP actually catered for five (often overlapping) areas of training. These were: industrial sectors; occupational groups; high technology; small businesses; and 'special groups'. Some of these training priorities related to skill shortages whilst others related to the updating and broadening of skills.

An interesting observation is the manner in which training needs were actually identified. The OTP relied heavily on project submissions by trainers and employers as a means of indicating labour market needs. Arguably these organizations put forward proposals that reflected their areas of expertise. This is perhaps the reason why the original objectives described by Tinsley were not fully realised.

Funding for the project was through the Manpower Services Commission and was for a period of five years ending in March 1987. The total funds available were of the order of £45m and helped to start over 100 collaborative projects (each of usually three years duration) mainly for the development of learning materials.

As well as the production of new resource materials a series of delivery projects were run with local authorities to provide a support structure aimed at offering wider and easier access to practical training facilities for mature adults.

Temple (1988) provides a critique of the subject by posing the question 'has Open Learning been helped or hindered by Open Tech?' She established that the Open Tech Task Group felt that the scale of the problem was so great that conventional methods of training, retraining and updating were too slow and too expensive. Certainly the emphasis of the Open Tech programme was on the cost advantages of Open Learning and the notion was promulgated that it would provide cheap training.

Extravagant claims are made about the potential cost savings of Open Learning. The Training Agency itself has encouraged employers to believe that they can save up to 90% of their training costs by changing from conventional forms of training to Open Learning (Training Agency, 1989). Woodward (1986) showed that compared to conventional training Open Learning had very high fixed costs and that depending on the number of trainees, the break-even point meant that it was not always the least expensive option.

Temple observed that from the outset the Open Tech had pre-set numerical targets (direct help for 25,000 individuals in 1985/86, help for 50,000 by March 1987). The aims were set high. Collaborative projects were expected to establish a self-sustaining small business in under three years with an unknown and untried product.

Temple concluded that this approach to funding was unsatisfactory because, without slippage, a contractor would have a year to set up a purpose built team and to start it functioning, a year of fully effective operation to start establishing a market and to get out a product, and a final year to meet targets and become financially self-supporting. Few of the projects were able to do this and those that did survive did so were under the umbrella of larger more diverse organisations such as the EITB.

1.5.4 The Open Learning Code of Practice

The results of the experiences from the Open Tech Programme were that the MSC identified a need to help suppliers to ensure that their materials and services were of the right quality to satisfy the expanding Open Learning market. In November 1987 they produced a Code of Practice for the industry.

The Code was promoted in an attempt to ensure that the lessons learned from the Open Tech project were disseminated to the industry. The hope was that this new and flexible form of training would not be undermined by either a lack of quality products or support services. The Code of Practice was published in "*The Quality Handbook*" (MSC, 1987). It aimed to give practical advice to individuals, companies and other institutions. It attempted to identify the professional skills that producers and deliverers needed in order to be able to provide a quality product or service.

In his forward to the handbook, Geoffery Holland, then Director of the MSC, explained that it represented 'the accumulated experiences and best practices of a cross-section of experts from industry who had successfully operated Open Learning systems'. Notable amongst these were The Open University, The National Extension College, W H Smith and ICI.

The handbook advocates that quality in Open Learning involves the entire series of processes starting with market research, then design & production and ultimately the delivery of the training. These processes are very similar to the general quality requirements found in manufacturing industry and for that reason the Code of Practice was intended to parallel British Standard 5750 (British Standards Institution, 1987), which is the recognized UK National Quality Management Standard.

Since its launch the impact that the Code of Practice has had on producers and deliverers has been very difficult to judge. However, an indicator of its usage is the extent to which suppliers publicize their compliance with the Code in their marketing materials and promotional literature. As will be discussed in Chapters 5 and 6, 67 Open Learning packages (from 42 different outlets) were assessed against the requirements of the Code of Practice. Included in the evaluation process was a review of the promotional literature that accompanied the various products. This showed that none of the 42 organizations - including the EITB -

advertised the fact that they adhered to, or attempted to adhere to, the Code's recommendations.

Three possible reasons for this observation might be concluded. Either: (1) the product does not comply with the Code's requirements; or, (2) the product complies but the producer does not acknowledge any marketing advantage; or (3) the product complies but the producer is unaware of it - because he does not know the requirements of the Code of Practice. By carrying out the evaluations, we believe that we have had an intangible influence upon all three possible factors. Firstly, by identifying non-compliant products, we have been in a position to advise producers on how they could improve their products to bring them up to standard.

Secondly, producers have been shown that the engineering industry takes seriously the issue of the quality of the Open Learning products that it buys. A first step to doing was the identification of compliant and non-compliant goods - which was the initial phase of the agreement with the Training Agency. Had this contract continued, it is possible to have envisaged a scenario whereby the Board would have endorsed certain Open Learning products. As an independent, public sector organisation, the EITB would not have entertained the idea of saying, for instance, that 'the only Open Learning products recommended by the EITB for management and supervisory training, are X, Y and Z'. However, the concept of producers submitting their products for scrutiny would have been a more realistic proposition. In which case, the Board might have been prepared to cautiously say, 'that in our opinion in the area of management and supervisory training, products A, B and C meet the Open Learning Code of Practice'.

Thirdly, as a result of the dialogue that producers have had with the project team, they now more aware of the requirements of the Code of Practice.

Interestingly, we have also established that the training profession has misunderstandings about the requirements of the Code of Practice. This view is based upon personal observation gained during four years of continuous contact with industrial trainers who specialise in Open Learning. A typical comment (source withheld at my discretion) from a practitioner was:

'I'm not interested in the Code of Practice, all I'm interested in is providing what the customer wants'.

A producer of Open Learning materials

Comments like this support what I believe to be the widely held opinion that successful business performance and the requirements of the Code of Practice are mutually exclusive. In Chapter 2 this view will be dispelled by showing how the Code is linked to the tried and tested methods adopted by successful manufacturing companies for ensuring high quality in their products and services. Perhaps another indicator of the low usage of the Code is the fact that the Training Agency has felt the need to continue to grant-aid projects - like this one - to promote quality in Open Learning.

Our particular contract with the Agency (see next section) was a continuation of a study entitled, *"The Identification and Assessment of Open Learning Materials to be used for Special Purposes"* (Stuart, 1989). This pilot study consisted of four mini-projects each with the aim of promoting quality Open Learning products and encouraging improvements in those which failed to meet the Code of Practice. The subject areas were An Introduction to Marketing, Implementing the Management Charter Initiative, Retailing, and Marketing Tourist Attractions. The EITB project adds engineering to this list.

The concluding report of the pilot study (referred to in the previous paragraph) was not put into the public domain although the EITB project team has had access to the results. Only the study on implementing the Management Charter Initiative has been published (MCI, 1989). The document, entitled *"Open Learning for Management Development"*, describes a range of quality Open Learning products 'to help senior managers in smaller organisations implement the MCI Code of Practice'.

Whilst the study identified some non-complying products, it shied away from exposing them in the published report. Had it done this, the repercussions and arguments that would have arisen could have lingered-on. But, such a direct statement about the unacceptability of low quality materials would have delivered a clear message to producers. A more palatable method of getting the message across seems to have been adopted by the omission of non-compliant materials from the final publication.

The evaluations were carried out by sub-contracted consultants, and the Board has had sight of one of their reports, "*The Provision of Management Education and Development through Open Learning for Managers on First Appointment*" (OTSU, 1989). This gave details of the evaluations carried out on 21 products, of which only three appeared in the final MCI brochure. The remainder were omitted on the grounds of either their lack of quality or that they were irrelevant to the MCI Code.

The EITB's experiences, and those of the Training Agency, indicate that the Code is not as widely understood within the training profession as might be expected. A possible reason for this is that the Code attempts to cover all the media used in Open Learning delivery and this has lead to its recommendations being written in very broad and general, sometimes vague, terms. A detailed analysis of the Code of Practice is given in Chapter 2, Section 3.

1.6 EITB Experiences of Open Learning

To review the EITB's experiences of Open Learning.

1.6.1 The EITB's Role in Open Learning

The EITB has traditionally operated as a producer-deliverer of its own Open Learning materials. Originally the Board established its reputation as a producer of quality materials through the Open Tech project. Two products were particularly responsible for this, CAD 1: Computers and the Designer (EITB, 1985), and Design for Economic Manufacture (EITB, 1985).

In addition to its widely acknowledged role as a producer-deliverer, the Board provided financial and advisory assistance to companies interested in new training technology. The main vehicle for these initiatives was the "*Development Grant for the Training of Adults*" whose purpose was described as...

> *'...to promote the development and initial running of new programmes of training and education of "adult" employees in the engineering industry whose jobs are being affected by new developments in technology and production processes' (EITB, 1990).*

Earlier, I introduced the term 'new training technology'. Within the Board it was well-accepted that new developments in training (such as Computer Based Training and Interactive Video) were worthy of support. By linking training with technology the Board were able to use the Development Grant to administer support for these new initiatives. An observation here is that there is considerable overlap between this EITB grant and the Training Agency's BGT Option 5 (see section 1.2.2).

Between June 1987 and October 1990, my role was that of a Senior Training Adviser with the EITB in the West Midlands. I worked with colleagues in the 'Advanced Technology and Change' team and was responsible for the administration of Development Grants in the West Midlands Region. Originally the work had a high degree of bias towards manufacturing technology (Appendix 1 describes a typical assignment), but because of the broadening in the interpretation of the criteria of the Development Grants the work eventually led to an involvement in Open Learning. This then became a personal specialism - particularly in terms of providing assistance to companies wishing to establish their own in-house Open Learning centres. Noteworthy examples of firms who were helped to establish their own Open Learning facilities are:

- Metal Box Engineering plc (manufacturers of canning equipment, Worcester)
- Magnetti Marelli plc (automotive lighting accessories, Cannock)
- Lucas Aerospace plc (Electrical and Electronic Systems Division, Birmingham)
- Matrix Churchill Ltd (machine tool manufacturers, Coventry)

1.6.2 EITB/Aston University Collaborative Project

The ultimate achievement in the advisory and consultancy work was the negotiation of a large contract with the Training Agency to promote and evaluate Open Learning materials. This formed the vehicle for a collaborative research project with Aston University under the Science and Engineering Research Council's (SERC) Total Technology Scheme (see SERC, 1989).

This link between a commercial project and research work proved to have both benefits and constraints. The most important benefit to the Board was the fact that the research was able to underpin the findings from the commercial project. This added credibility to the results. Another advantage was that the Board were able to enhance my skills in research work - adding value to their existing pool of human resources. A minor benefit was that the scheme provided the EITB with an annual subsidy of £3500 towards my salary. Also, because the research was aligned to a commercial project the Board provided me with the necessary administrative and secretarial support (typing, photocopying, binding, artwork, purchasing etc).

There were constraints, however, particularly in terms of completion time and the style of project management. Contract negotiations began in November 1988, when the Learning Systems and Access Branch of the Training Agency approached the EITB to see whether it would be prepared to undertake a project to promote and evaluate Open Learning materials. In April 1989 I tendered for the work on behalf of the EITB's Midland Region and was successful in securing a contract for £64,400.

The period of the contract was from the 1st August 1989 until 31st March 1990. This was later extended by another five months to allow extra time for the project to be completed due to slippage in the work schedule. This delay slightly complicated matters, in that the monies allocated to funding the project, had to be spent in the 1989/90 fiscal year. This obstacle was overcome by the Board invoicing the Training Agency in advance for the work due to be completed in the extended contractual period (1st April 1990 - 31st August 1990). This took the form of a £11,757 pre-payment and enabled the work to continue into the 1990/91 fiscal year.

The contract specified six areas of activity for the project - each of which had its own financial budget (Table 5). Subject to their prior agreement, the Training Agency gave the Board the flexibility to use virement to make financial adjustments between the various contract headings. Payments from the Training Agency were monthly in arrears with the invoices being raised locally by the EITB.

One of the contractual requirements was the need to establish a Steering Committee for the project. Their terms of reference were 'to provide advice and

assistance to the project team on the best means of fulfilling the EITB's contractual obligations to the Training Agency'. To assist the Steering Committee the I summarised the contract into eight main project objectives (Table 6).

Contractual Funding Arrangements for the EITB/Training Agency Open Learning Project, 1989/90.

Activity Heading	Nominal Budget Figure
Project Management	£20,125
Evaluation of Products	£12,075
Staff Training	£8,050
Promotion of Seminars	£6,900
Running Seminars	£9,200
Follow-Up Advisory Visits	£8,050

TABLE 5
Source: EITB Internal Document

The committee consisted of 14 members drawn from a cross-section of key Open Learning activists in the Midlands. Three represented large public companies, four were trainers with specialist knowledge of Open Learning, two came from Technical Colleges, and one represented a Group Training Association. The remaining four included a representative from Aston University, a Senior Training Adviser from the Plastics Processing Industry Training Board, the National Training Manager from a Non-Statutory Training Organization (The British Security Industry Association) and a Senior Training Adviser from the Training Agency's Learning Systems and Access Branch at Moorfoot. In all, there were six Deliverers, four Producer-Deliverers and four consultants. The Steering Committee met on three occasions during the life of the project - in October and December 1989 and in March 1990.

Objectives of the Open Learning Contract

1. To review the development of flexible learning methods to date.
2. To assess the reasons for the slow take-up of Open Learning by industry.
3. To examine the reasons for the uneven quality in Open Learning packages.
4. To examine objective methods for evaluating Open Learning materials.
5. To promote the methods of Best Practice for the production of Open Learning materials.
6. To present industry with a method for evaluating packages that they may wish to purchase.
7. To act as a model scheme for other training organisations in the promotion of Open Learning.
8. To produce a concluding report that would publicise the project's findings to industry in general.

TABLE 6
Source: EITB Internal Document

The original plan between the Board and the Training Agency was for a three year project (probably funded in a similar fashion to the Open Tech Projects). However, changes within the EITB and the Training Agency during early 1990 meant that this never happened. Two main reasons account for this.

Firstly, progress in establishing TEC's was greater than expected. A consequence of this was that the Treasury withheld Training Agency funding for development projects. This was done on the basis that the TEC's had already got an element of funding for this type of work in their 1990/91 budgets, and consequently, any funding to the Training Agency would be a duplication. The irony is that at that time, none of the TEC's were sufficiently active to have been able to continue with this work. Secondly, the Board made a corporate decision not to include Open Learning in its future field consultancy activities. It is thought that a significant factor was the lack of Training Agency funding for this project in 1990/91.

A significant drawback of having the research aligned to a commercial project was that as part of the winding-up of the EITB, the Board made me redundant in October 1990 - 13 months into the collaborative project. It was clear at that

point that the majority of the research plan could be left intact, apart from some specific work relating to the commercial viability of Open Learning consultancy within the EITB. An important consideration was the fact that the Board did not wish to hinder the project in any way. It allowed me to retain all relevant research records and documents. Leaving the Board's employment brought about unexpected benefits to the research. In particular, a more objective view of the project's achievements could be taken. Also, the scope of the research was not limited to the range of EITB activities. This has led to the extending of the research to include **quality** in conventional training.

1.6.3 This Research - Training or Education?

The previous section gives rise to an interesting philosophical question. Is this research either training or education? The answer is that it depends. If the research is structured and planned with guided tuition by the supervisor (instruction) - followed by the application of that tuition to the research project (practice) - then it can be argued that the research is training. If on the other hand it is an unplanned experience and along the way the researcher accidently or by chance acquires research knowledge and skills then undoubtedly it is education.This view agrees with the comments in the Science and Engineering Research Council's Booklet "*Research Student and Supervisor - an Approach to Good Supervisory Practice*" (SERC, 1989) in which it says:

> *'...about 40% of research students fail to submit a thesis within four years of starting their awards...many who complete late or even fail to complete at all nevertheless profit substantially from their period of research'.*

Clearly this form of research is education rather than training. Another relevant comment from the document is:

> *'The lack of a planned, disciplined approach to research or good supervision coupled with the temptations to undertake other research, activities or employment during the currency of a Research Council Studentship can all frustrate the timely submission of a thesis'.*

The implication is that the recommended approach for good supervisory practice leads to training rather than education. I would argue that training can be demonstrated by developing a research plan that clearly states aims and objectives - including the terminal behaviour, standards and conditions. At the

beginning of this research project a plan and timetable of activities was formulated (Cooper, 1989) that specified the research aims and objectives (reproduced here in Appendix 2). It listed 38 'enabling objectives' and each section of this thesis is devoted to addressing how a particular enabling objective was researched.

1.7 Concluding Remarks

The UK carries out less training than its economic competitors.
Compared to our economic competitors, a lower proportion of the UK's young people enter post-compulsory vocational education and training, (USA 94%, Japan 92%, France 78%, Germany 69%, and the UK 47%) (HMSO, 1989). France trains about twice as many 20 to 44 year olds, Holland gives upgrading training to between four and five times as many 25 to 44 year olds, and twice as many Germans have vocational qualifications (Temple, 1988).

Our systems are more regulated than theirs, despite changes.
Only Germany has a more regulated system of industrial training than the UK's (HMSO, 1989). Since 1973, successive Governments have steadily reduced the statutory controls placed upon industry by the ITB's.

The Government have proposed major reforms to deregulate training.
Future arrangements will decentralise the existing provisions and replace them with local, employer-led Training and Enterprise Councils.

But deregulation is not the only factor.
Attitudes to training in this country are poor, with 20% of employers failing to do any training in 1986/87 (HMSO, 1989). The management of training is often ad-hoc. Only 24% of firms had a training plan and fewer still (15%) evaluated their training. Demographic changes will have a significant bearing on the future nature of training, with the number in the labour market aged under 25 being projected to fall by 1.2m between 1987 and 1995 (HMSO, 1988).

Open Learning can play a part in meeting the challenges of the 1990's.

To meet these challenges more emphasis will be needed on adult retraining and the encouragement of new employees into the workforce. There is also anecdotal evidence to suggest that the release of key employees is a major barrier to adult training. Open Learning can offer flexible solutions to these problems.

Whilst Open Learning is flexible, it needs to be controlled.

My studies indicate that successful Open Learning programmes are controlled. I have proposed a new definition of Open Learning in which a key characteristic is the facility for external control or monitoring.

2.1 Evaluation Techniques

To identify existing Open Learning evaluation techniques.

2.1.1 Evaluation Versus Assessment

In everyday usage, evaluate and assess are synonymous terms. The Concise Oxford Dictionary (OUP, 1982) defines evaluate as to: 'ascertain amount of; find numerical expression for; appraise, assess'. A more focussed definition can be found in "*A Glossary of Training Terms*", (MSC, 1981). This refers to evaluation as 'the assessment of the total value of a training system, training course or programme, in social as well as financial terms'.

According to the dictionary, assess is to 'estimate the value of (esp property for taxation); estimate the magnitude or quality of' (OUP, 1982). Assessment is also described as 'a general term for the processes of ascertaining whether training is efficient or effective in achieving prescribed objectives. It covers both validation and evaluation' (MSC, 1981). This last definition complicates the matter by introducing a new term which, for completeness, also needs to be defined. 'Validation: a series of tests and assessments designed to ascertain whether a training programme has achieved the behavioural objectives specified' (MSC, 1981).

My view is that the terminology of evaluate-access-validate is very confusing, especially when 'assess' and 'assessment' are used to define both evaluation and validation.

This research project is concerned with examining the process of selecting suitable Open Learning packages to meet an identified training or educational need. Within this context, evaluation, assessment and validation have been given the following meanings:

> **Validation** *is concerned with examining whether the learning objectives of an Open Learning programme have been achieved. It does not consider the cost of the training or how effectively it has been carried out. It is only concerned with the end result.*
>
> **Assessment** *is the forward-looking process that examines the likely effectiveness of a potential Open Learning solution in meeting an identified education or training need.*

> **Evaluation** *considers not only whether the learning objectives have been achieved, but whether the whole Open Learning process has been effective in respect of cost and social benefits. It provides feedback for future assessment activities.*

For clarity, 'evaluating Open Learning packages' is the terminology that will be used to refer generally to the process of the assessment, training, validation and evaluation of Open Learning. The terms 'assessment' and 'validation' will only be used when it is desirable to emphasise a particular aspect.

2.1.2 Evaluation of Conventional Training

There is no doubt that the evaluation of training is vital. The report "*A Challenge to Complacency*" (Coopers & Lybrand, 1985) emphasizes the importance of evaluation as a means of changing attitudes, by showing in measurable ways the value of training. According to the report "*Training in Britain*" (HMSO, 1989), in 1986-87 only 15% of firms evaluated their training, and less than one in forty carried out any cost-benefit analysis. The report also identified that whilst the evaluation of the benefits of training is not widespread, it is most often to be found in enterprises with a relatively strong commitment to staff training. These employers tend to evaluate against broad human resource goals (eg. vacant posts and retention rates) rather than those relating to bottom-line financial benefits. Current research thinking agrees with this. Harrison (Harrison, 1989 after Warr, Bird and Rackham, 1970) suggests that:

> *'Evaluation looks at the total value of a learning event, not just at whether and how far it achieved its learning objectives. It thereby puts the event in its wider context, and provides information essential to future planning'.*

"*Training in Britain*" (HMSO, 1989) asked those firms that did evaluate their training how they did it. 53% cited monitoring trainees' output; 40% mentioned reports on the trainees' performance; and 30% said they looked at examination passes and qualifications. In my opinion, a key aspect of evaluation is having measurable learning objectives stated in behavioural terms. Harrison (1989) supports this view and suggests that:

> *'Behavioural objectives give a clear focus to the learning event by explaining the outcomes it will help the learners to achieve...The most helpful behavioural objectives are those which describe not only the kinds of behaviour to be achieved at the end of the learning event, but*

also the conditions under which that behaviour is expected to occur, and the standard to be reached in that behaviour'.

In principle I agree with these statements. However, Mager's guidance (1962) on preparing instructional objectives is much clearer. An aim is a general statement of intent, whereas an objective is a clear statement of the intended result. Objectives enable an aim to be fulfilled. The characteristics of well written training objectives are that they are unambiguous, realistic, relevant and achievable. They specify terminal behaviour, standards and conditions. For clarity it is worth recalling Mager's definition:

> **'An instructional objective** *is a statement that describes an intended outcome of instruction. An objective is meaningful to the extent it communicates an instructional intent to its reader, and does so to the degree that it defines the terminal behaviour expected of the learner'.*

Table 7 gives an example of trainer-orientated aims and objectives. They specify what the trainer expects of the trainees. A method preferred by trainers is to state them in learner-behaviour terms. These inform the learner of what they are about to learn and reinforce the learning points and personalize the learning process. This is reminiscent of the traditional instructor's adage:

> *'First you tell them what you're going to tell them; then you tell them what you've got to tell them; and then you tell them what you've told them'.*

An example of learner behaviour aims is 'at the end of training you will be able to implement Total Quality Management into your organisation'. The difference between the learner behaviour and trainer orientated may seem trivial, but the advantage of learner behaviour terms is that they can be incorporated into written training materials that the trainee will see (eg handouts and course programmes). The trainee is thereby made aware of what they are going to learn. This can add to the stimulus of the learning event (see section 1.2.4), and can contribute to making the process learner-centred.

I would therefore argue that before any meaningful evaluation can be carried out, there must be a clearly stated training need. An unambiguous way of doing this is to formulate training aims and objectives written in learner-behaviour terms.

Aims and Objectives for a Total Quality Management Course

	Training Aim
At the end of training, the trainee will be able to implement Total Quality Management into their organisation.	
	Training Objective (one of several)
Performance:	at the end of training the trainee will be able to state Deming's 14 Points.
Standards:	100% compliance.
Conditions:	no access to written materials or other aids; the time allowed is 10 minutes.

Table 7
Source: Cooper, 1990.

2.1.3 Materials Selection

The selection of Open Learning materials must be based upon a knowledge of the requirements of the learning. From previous work (section 1.2.9) it can be implied that vocational education and training has the following characteristics:

1. It has a target audience (the trainees).
2. It modifies knowledge, skills or attitude.
3. It is planned.
4. It is instruction followed by practice.
5. It leads to competence.
6. It has aims and objectives.

In order to evaluate the suitability of an Open Learning programme, the training need has to be examined to assess how effectively the programme might meet this need. Of the six factors, it is the target audience and the aims and objectives that yield the most useful information about the training need.

For instance, the fact that there are aims and objectives, and a target audience necessarily means that the process is planned - however ad hoc. Personal experience in working for the EITB indicates that the management of training is often unstructured and unplanned. For example, in smaller companies reaching the levy thresh-hold (41 employees) it would be rare to find formal, documented training plans and policies. In order to meet the requirements for Exemption from Levy they tended to rely on the services of a part-time consultant or were members of a Group Training Association (GTA).

This view is supported by recent research carried out at Warwick University (Pettigrew et al, 1989) which shows that decisions on training are not usually planned but are taken in response to immediate commercial pressures. Their survey of employers revealed that only 30% of companies that trained, had a training plan, with around 80% of establishments with 500 or more employees having a training plan, compared with 20% of those with 10-24 employees. Generally speaking, it would appear that larger establishments are better resourced to undertake the planning of training. The report provided little evidence of longer-term strategic thinking on training matters although companies with above average training are more likely to be also using other management tools such as manpower and business plans.

The other three factors (instruction and practice; competence; and, knowledge, skills and attitude) are interlinked and can be summed by 'has the training need been correctly identified?' It is pointless having laudable training aims and objectives if these just lead to incorrect training. As an example, a line manager complains because an employee has undergone training but can't perform the job as well as other workers. The fact that the training was not correctly designed to achieve this goes un-noticed. Is it the training that's at fault or, the manager's expectations? Evaluation can help answer these sorts of questions. Either, the training failed to meet the learning objectives, or the objectives were incorrectly set. The importance of identifying the training need can not be stressed too strongly - for this is the only reliable benchmark against which a learning programme can be assessed.

2.2 Strengths and Weaknesses

To pinpoint strengths and weaknesses of existing techniques (if any) for evaluating Open Learning materials.

2.2.1 Desirable Characteristics of an Evaluation Technique

When this research objective was formulated, it was assumed that there were techniques available to help to select appropriate Open Learning materials. My investigations have found only two published items of guidance. The first, "*Evaluating Open Learning Materials*" (Skills Training Agency, 1986), is concerned with post-training evaluation and is not applicable to materials selection. The second is a section in the Open Learning Code of Practice (MSC, 1987) called "Choosing a Package". This offers guidance to deliverers of materials on how best to advise their clients (see section 2.3.3). The Code of Practice proposes guidelines which are presented in the form of three key points:

> 1. In helping clients choose particular materials, aim to identify those that fit in best with learners' preferences for what, how, when, and at what pace to study.
>
> 2. Once an Open Learning package has been agreed, make sure that your clients fully understand what it will consist of and what they might expect to gain from it.
>
> 3. Make sure also that learners and/or sponsors are fully aware of what the package will demand of them.

The concept of using key points is an interesting one in that they can be used to form the basis of work instructions or company procedures. They are also a very effective way of communicating to trainers the methods of best practice that are adopted by the leading practitioners. However, as they are presented the key points do have a disadvantage. They do not provide documentary evidence to indicate whether the guidelines have been implemented each and every time.

Take this example, a delivery centre chooses to adopt, in principle, the key points of the Code of Practice for the selection of materials. In six months time one of their trainers is asked why was client "X" guided to choose product "A" instead of "B". He can't answer because there is no record of the decision making process. Perhaps product "A" was unpublished at that time, or the

learning aims and objectives of "B" more closely met the training needs of the client. The point is that without reliable, documented information the trainer can only speculate at the answer. Another disadvantage is that the guidelines do not enable the deliverer to differentiate objectively between apparently similar packages. If package "A" makes more demands on a learner than "B", does that make it more, or less, suitable? The key points are written in general terms, so how could the delivery centre be assured that the key points were being implemented consistently by the staff? The answer is that they can't be. Yet consistency is an essential requirement if the key points are to be useful in a practical training environment.

An alternative to key points are checklists. These are used extensively in industrial, quality assurance situations (for examples see Price 1989, and Haldane 1989). It has the advantage of converting the sentiment of the key points into practical work instructions.

I agree with the requirements of the Code of Practice for materials selection. However, I do not feel that they are presented in a way that can easily be incorporated into a company's work procedures or quality assurance systems. This presents a useful opportunity to outline a set of characteristics that would desirable in any Open Learning evaluation technique. I suggest it should be:

1. Practical: It must be able to be used by trainers in their work situation.

2. Consistent: Evaluations must be capable of being carried out by a number of individuals with realistic expectations of consistent results.

3. Quantitative: A quantitative technique is desirable in order to be able to differentiate between apparently similar programmes.

4. Documented: The facility to be able to justify the selection of programmes is valuable, both for management information and post-training evaluation.

5. Flexible: The technique must be capable of being tailored to meet specific company or industry priorities.

2.3 The Open Learning Code of Practice

To analyse the Open Learning Code of Practice.

2.3.1 Ensuring Quality in Open Learning

The Code of Practice attempts to lay down guidelines for producers and deliverers that will ensure high standards of quality in Open Learning. It is divided into three main sections. Part One states the requirements expected of producers, Part Two relates to deliverers, and Part Three states the common requirements of both producers and deliverers.

As a producer-deliverer, the Board was covered by all three parts of the Code of Practice. My work and that of my colleagues, the Field Advisers, was ostensibly concerned with the delivery of EITB Open Learning materials. Essential to this was a dialogue with the Open Learning Development Unit (the producers of the materials) at the Board's Headquarters. This enabled me to form a useful impression of the production side of the EITB's Open Learning operations.

In addition, considerable contact has been made with the producers of materials during the evaluation of their products (see section 5.2.5). Also, I have carried out consultancy work to help producers to write their own Open Learning materials.

2.3.2 Requirements of Producers - General Comments

Producers of Open Learning materials are defined as the organisations or individuals 'who design and develop the self-instructional material [packages] and perhaps suggest the support system that will enable learners to get the best out of it' (MSC, 1987).

The particular section of the Code of Practice which solely affects producers is Part One. This section is broken down into six major topic areas which are further sub-divided into a total of ten individual requirements. The six major headings are "Researching & Planning"; "Designing for Effective Learning"; "Piloting and Improving"; "Informing Users"; "Training the Deliverers"; and "Improving and Updating". Appendix Three details the full requirements.

Two examples are given of how well-known commercial organisations have tackled the designing of Open Learning materials. The first is Henley Distance Learning Ltd and the second is the Austin Rover Group. Based on his experiences with Henley Distance Learning, Professor Cooper (Cooper, 1986) identified that:

> *'the key steps in this process are those associated with planning and quality. The planning process is normally the longest development stage. It is essential to develop clear outline plans with all those involved - potential learners, companies adopting the programmes, business schools, professional experts and trainers'.*

To achieve this, eight steps needed to be taken:-

1. Planning, proposal, outline and specification
2. Team selection with editors
3. Drafting
4. Assessment
5. Re-drafting with visualisation
6. Re-assessment
7. Production release
8. Support

Austin Rover's experiences of developing Open Learning materials were described by Williams (Williams, 1986) as being very similar to designing conventional courseware. A mechanistic approach in structure and procedure was adopted with the starting point being the identification of the training need. The training department were approached at the point where the training need had already been identified elsewhere within the organisation. The first stage was to decide if Open Learning was a suitable solution to the problem. For this a six step approach was adopted:-

1. Identification of the training need
2. Definition of the problem
3. Determine the suitability of an Open Learning solution
4. Determine the resource requirement
5. Decision: proceed, abandon or re-define

Having completed the design specification the content outline and objectives needed to be approved by the client and/or the subject matter expert prior to the package being ready for development. In both the Henley and the Austin Rover situations the companies have adopted their own (albeit different) systems and procedures for ensuring effective design in their Open Learning products. The important fact is that they both have an identifiable internal structure tailored to meet their own particular requirements.

The first observation about this section of the Code is that it is concerned with ensuring that the producer provides what the customer wants. This implies the use of systematic market researching techniques. However, my experience is that the most common occurrence is for producers to be commissioned to develop materials, where the market research and the identification of the training need is assumed to have been carried out by the commissioning agents. Independent producers sometimes speculatively produce materials because they have identified a commercial need in the market place. In these situations the producers believe that the sales of the materials will be self-financing even though no other organisation seems willing to under-write the production or delivery costs.

2.3.3. EITB Experiences of Producing Materials

Statutory Training Organisations have been in a slightly different situation from the commercial organisations in that they have tended to produce training materials for what they have determined to be the training needs of their industry. The motivation for writing materials is different between the ITB's and the independent producers. One is driven by a training need and the other is driven by a commercial need.

Whilst this difference might appear to be just a subtlety, the effect is that statutory bodies have satisfied their industries needs, whilst independent operators have adopted a free market approach and produced whatever the market wants. For example, internal EITB funding paid for the development of four training programmes to meet a need in the electronics industry, where their requirement was for resource material to provide awareness training in an emerging production technology. In the mid-eighties electronic consumer products started to be manufactured using leadless components that were surface-mounted onto printed circuit boards.

As a joint venture with GEC Telecommunications, the EITB developed training materials in the areas of introduction, management issues, design & production and inspection & rework (EITB, 1987). The money used to pay for this development work was raised from the Non-Returnable-Levy (NRL) and the training need was satisfied by the Board on behalf of its in-scope companies.

According to the Board's last published survey of in-scope establishments (EITB, 1988) there are a similar number of employees in the electronics sector (251,000) as there are employed as Technicians and Supervisors (267,000). The interesting conclusion is that, within the engineering industry, the number of employees effected by the continually changing technology of electronics is at least as significant as the target audience for the Open Tech project (see section 1.5.3). Had commercial pressures prevailed, then the cost and high risk of producing the Surface-Mount material would have deprived the industry of a much needed, but specialised, piece of training material. The free-market operators have not ventured into this area of training, possibly due to the high risk attached to a product with an unknown life-cycle.

Products can become dated either because the subject matter changes or the method of training delivery becomes dated. The later is particularly true of Computer Based Training (CBT) and Computer Aided Learning (CAL), where increased processing and storage power has meant that the access and capabilities of desk top machines have brought learning opportunities directly into the workplace. An example of the former is the area of Computer Aided Design (CAD) which has changed radically in the last five years because of advances in configurations of both hardware and software. Materials published under the Open Tech Project are almost obsolete except when used to teach at awareness level the concepts of CAD. A specific example of this is the Board's Open Learning package "CAD 1: Computers and the Designer" (EITB, 1985).

With only four exceptions the Board's portfolio of 24 Open Learning programmes have been publicly funded; principally through the MSC's Open Tech Programme. This provided support to produce the Design Series which was the Board's first major step into Open Learning and provided a series of seven text and video-based packs each based upon about 30 hours of study.

As discussed previously, where producers are commissioned to write materials the market research is assumed to have taken place. My experience is that the basis on which the commission is being made needs to be confirmed. During 1986/87 the Board worked closely with the University of Wales Institute of Science and Technology (UWIST), to produce CBT material for managers and supervisors on the principles of statistics. The course content included collecting, summarising, and presenting data and aimed to provide training that would enable the learner to understand the mathematics behind the statistical techniques that are used in Quality Assurance. Open Learning was the chosen method of training delivery because it was felt that these particular categories of middle-management employees would be reluctant to admit to their colleagues and subordinates the fact that they were lacking in this knowledge.

UWIST had researched the need through years of observation and experience gained through their industrial consultancy work. However, the Board did not confirm this for themselves and the result was that although the material was developed and piloted it was never released due to lack of forethought about a pricing and marketing strategy. One of the project team (John, 1990) summarised the situation by saying:-

'The client did not confirm for themselves the market need'

Where speculative ventures like this are concerned both parties need to clarify for themselves the strength of the demand in the market place for a perceived training need. Failure to do this can result in repetitions of the UWIST situation, in which the EITB wasted a significant four-figure sum of money.

In those situations where market research has been adequately carried out, the primary, and most significant indicator of success is the sales volume and market share of the products. I have speculated that for the Board's Design Series the total sales run to perhaps several hundred for each product line. This estimate is based upon the disclosure in the 1988/89 Annual Review (EITB, 1989) that since its launch in 1985, total sales from the Design Series had reached £80,000. Also, during the fiscal year 1988/89 the Midlands Region received commission for the sale of EITB materials of £865. This is equivalent to the sale of 17 packages (totalling about £4900), all of which were directly attributable to the efforts of the Region's Field Staff. I suspect that this is an under-estimate of the sales figures because they exclude any orders placed

directly by Midlands-based companies with the Open Learning Unit at Watford. It is only the sales that have been routed through the Regional office that have accrued commission.

The potential market for training services and materials (of all types) can be envisaged by examining the revenue of the private sector training providers. In 1987/88 this was estimated to be £845m (HMSO 1989). Separate figures for the amount spent on Open Learning are unavailable, but an estimate is that it accounts for between 2-3% of the total. This estimate is solely based on the activity level of Open Learning training in Midlands engineering companies. The Board sustains 40 field staff to cover all aspects of training activity in the East and West Midlands, and can justify just one full-time Open Learning specialist. Whilst this is a crude measure I believe it to be of the right order of magnitude. Consequently, the degree of the EITB's market penetration into Open Learning appears to be low, especially when it is considered that Board staff have direct access to the 26,100 in-scope engineering companies and their 1.90m employees (EITB 1988).

2.3.4 Researching & Planning

Within commercial organisations the term researching and planning is generally synonymous with design. However, in the Code of Practice design has a quite different meaning. Design, as in "Designing for Effective Learning", concerns itself with the issues of style and presentation that make the Open Learning material attractive and interesting to the learner. For the purposes of clarity, the definition given by The Design and Engineering Councils (DC & EC, 1986) is the one which will be adopted when discussing the Code of Practice's requirements for researching and planning. They describe design as:

> *'a complex activity requiring the collaboration of many specialists in different disciplines. The total activity has to be carefully managed if a correctly identified market need is to be fulfilled on time, within budget and with the most appropriate technology'.*

2.3.5 Designing for Effective Learning

From my definition of Open Learning (section 1.2.9), an important requirement is to know the identified training need, and the target audience. Without these two benchmarks it is unlikely that correctly designed and tailored materials can

be produced. Knowing the training need enables the producer to have a design specification. And, knowing the target audience enables producers to establish the level of entry knowledge that the trainees will have. A comment from David Draper, Training Manager, Modern Alarms in Birmingham, summarized this point succinctly (Draper, 1990):

> *'When writing material of a technical nature, it is easy to overlook the target audience which leads to assumptions about what the student already knows'.*

Another key feature of Open Learning is flexibility (section 1.2.7). A range of entry points and the use of a modular design are very effective ways of doing this. This enables the use of route-maps which can be used to give a visual overview of the whole course of study. A good example of this approach is to be found in the house-style adopted by Henley Distance Learning. As perhaps the largest producer of Open Learning materials for management training in the UK (source: "*Open Learning Directory*", Training Agency, 1989), their reputation is very high. My studies have also shown that their materials meet all the requirements of the Code of Practice (section 6.1.7). The Effective Management package (Henley Distance Learning, 1987) contains the following key elements in its style; route maps, modular design, clear presentation of text; activities, Self Assessment Questions (SAQ's), graphics to reinforce learning points, and a friendly, unpatronizing, writing style.

In contrast the EITB's Information Technology Series (EITB, 1988) is less well designed. The weakest characteristics are; large sections of unbroken text; few graphics, cumbersome & spiral-bound workbooks, non-modular design, lack of route maps, and a technical tone and style to the text. It is important to note that both materials had the same target audience - middle management. Designing for effective learning is the most difficult yet most vital aspect of producing Open Learning materials. Failure will result in unsuccessful learning which leads to lack of repeat business which leads to commercial failure.

2.3.6 Piloting and Improving

This is an important section of the Code in that it aims to ensure that no product is released to customers without it first being properly tried and tested on a controlled group of individuals. The link between piloting and effective design

is clear in that an essential part of the design process is to fine-tune the design (through detail design) prior to it's final release.

Professor Cooper's experience (Cooper, 1986) indicates that draft materials must be assessed after each stage of writing by panels of experts and practised users and that materials should be tested in a finished form under realistic conditions. Austin Rover initially piloted their materials using trainees at their Haseley Manor Open Learning Development Unit. However this proved to be an unsatisfactory arrangement because too many errors kept escaping detection. Williams (Williams, 1986) identified two reasons for this. Firstly, insufficient pilot numbers and an inappropriate cross-section of the target audience. Secondly, insufficient control of the material design and development process.

The design and development procedures were tightened-up by having more involvement by both the client and the subject matter experts. Piloting was improved by checking the materials on a one-to-one basis with the trainers and the trainees, and by following this up with a full two-month field trial at all of Austin Rover's training centres. The experiences of Modern Alarms in Birmingham are similar (Draper, 1990):

> *'Pilot schemes are a good test but draft copies must be produced as near to the completed work as possible. Writing and re-writing takes time, especially if major changes are needed'.*

A general observation is that unplanned and uncontrolled design procedures may leave little or no time for piloting and rework. However, effective project management would ensure that sufficient time was built into the design programme to allow for this vital element of the design cycle.

2.3.7 Informing Users

Both the end-users and the deliverers of the material need to know just exactly what the contents of the package are and what it aims to achieve. If the customer incorrectly identifies a product then the likely result is that they will be dissatisfied and put off from having further dealings with the producer - so there are commercial benefits to be gained from observing this part of the Code.

The EITB's experience as an Open Learning producer is that publicity material is of considerable use in informing potential customers. In fact it is the primary

means by which the Board markets and sell its products. Within the EITB's publicity literature, there is an application form to give the potential user the opportunity to preview the individual packages. These are released on a 30 day sale-or-return agreement and there is evidence that about 50% of these previews mature into actual sales (Stenner, 1989). From the Board's point of view this is the most cost-effective way of selling because of a number of factors:-

1) The product turnover is low (100's per year)
2) There is a low profit margin per unit (<£50)
3) The costs of direct selling are extremely high at £350 per working day (as at October 1990).

In other words just to break-even each member of staff must sell at least seven packages per day just to cover their running expenses. However, if an end-user could be persuaded to use the EITB to deliver the necessary tutorial support for the packages (say two or three mandays at the same daily rate), then a completely new complexion could be put on the economics of the situation.

2.3.8 Training the Deliverers

Training of all those involved in the process is essential in order to secure effective delivery of Open Learning. Failure to do so will result in the inappropriate use of materials with the subsequent loss in confidence that that would bring to the producer. It is therefore in the producer's best interests to ensure that the products are delivered and supported as intended. Reputable suppliers of materials always insist on training all those individuals likely to be involved in the delivery in order that they can maintain their status as suppliers of quality materials.

In December 1989, the Midland Region of the Board entered into a Trading Agreement with Henley Distance Learning. The idea was to mirror the success that the Road Transport ITB had had as a Henley Distributor. At that time RTITB were selling large numbers of Henley programmes to their industry (Redshaw, 1989) - in excess of 300 units per year. The programmes were marketed as a joint venture. Henley provided the materials and the distributor support, whilst RTITB actually sold and supported the packages. To illustrate our point about the training of deliverers, Henley stipulated within their Trading

Agreement that it was a requirement for them to train EITB staff in the selling, briefing and de-briefing [their terminology] of their programmes.

2.3.9 Improving and Updating

This issue is predominantly covered by "Design for Effective Learning". The link with design is obvious here in that "Improving and Updating" closes the design cycle by ensuring that experiences from the users are incorporated into subsequent revisions and generations of the product.

2.3.10 Guidelines to Producers

As described earlier the Code is written in general terms to cover a variety of delivery media. However, during the course of this project I have carried out a significant amount of Open Learning consultancy work which has enabled me to formulate more specific recommendations for producers. Particular expertise has been gained in the area of producing text-based materials.

The client portfolio has included; CMB Engineering, Lucas Aerospace (Electrical & Electronic Systems Division), Magnetti Marelli, Froude Consine, British Security Industry Association, Heath Springs, Worcester Chamber of Commerce, Modern Alarms, Concentric plc, Royal Ordnance (Rocket Motor Division), The Cannock Engineering GTA, New Haden Pumps, Hardy Spicer, Rexel Business Machines, Ross Courtney & Co., and Superform Metals.

The range of work with these companies has been wide and varied, from securing delegates on One-Day Workshops, to advisory and consultancy work, and the grant-aiding of Open Learning Development projects. The funding activities have included both the development and revision of resource materials, as well as the establishment of in-company Open Learning Centres. In administering grants it was my job to help the client to submit a proposal, to establish a written contract and to then monitor and validate the final grant claim. In these situations considerable opportunities existed to guide and advise the client on how to tailor their proposals to ensure the greatest chance of success.

One such activity was a long term contract (18 months) to help develop text-based materials for the Intruder Alarm industry. The grant application was given

priority under the Development Grant Criteria (EITB, 1988) because the resource material was likely to be required by more than one organisation. This resulted from the requirements of a new British Standard, BS 4737 - Installation and Specification of Intruder Alarms (BSI, 1986). This experience led me to derive a set of fourteen guidelines for producers (Appendix 4).

2.3.11 Requirements of Deliverers

Deliverers are the people who help individual learners or corporate bodies to identify existing Open Learning resource materials to meet an identified training need. Usually they are agents for other producers' materials or are themselves producer/deliverers. Their most important function is to provide the support services required in order to run Open Learning programmes. These services are tuition, counselling, and consultancy.

The Code of Practice makes specific demands of deliverers, and like Part One it is broken down into six main areas; "Attracting Clients", Clarifying Clients' Needs", "Choosing a Package", "Agreeing the Support System", "Operating the System" and "Evaluating and Improving" (see Appendix 5).

2.3.12 Attracting Clients

The essence of this part of the Code is that the services offered by a deliverer must be readily available to their potential clients. In the commercial context clients are likely to be personnel and training staff. The most comprehensive reference point for materials and support is the Open Learning Directory (Training Agency, 1989). This is an annual publication which currently lists 1500 courses and their costs, together with the whereabouts of local support centres, the names & addresses of producers, and a variety of other material relevant to anyone interested in Open Learning.

Another good source of reference is MARIS (Materials and Resource Information Service). Lewis (1984) described MARIS as 'a database of materials that are for use in Open Learning; available in the UK and are in a target area of interest to the Open Tech (ie. for technicians, supervisors or managers)'. MARIS was an Open Tech project and it lists materials under the headings of subject, occupation, key skills & knowledge, subject level, and entry qualifications required. The information is sent out in the form of

computer printouts, but can also be accessed through Prestel on MARIS-NET (for a review of this see Freeman, 1985) which enables other more comprehensive services to be examined, such as other databases on education & training, electronic mail and Viewdata.

In my opinion, the major drawback of MARIS-NET over the Open Learning Directory is the fact that it has a narrow scope of interest and that the costs of accessing the database are high compared to the once-off payment of £20 for the text-based reference.

Support services are usually - but not always - based around facilities at technical colleges. There are historic reasons for this in that 11 of the 19 Open Tech delivery projects were based around Colleges (TIHR, 1987). 41 of the 55 delivery centres that advertised their services in the 1989 Open Learning Directory were based upon Colleges of Further Education. Of the remainder, ten were commercial organisations, two were Information Technology Centres, one was a Group Training Association and one was a Skill Centre. All of these Delivery Centres are agents for Open Learning materials from several different producers. Consequently clients will often get to know about a Delivery Centre through the producer's own communications network. However, it is important that the facilities are widely known amongst potential local and national clients.

In my opinion this section of the Code could be wholly satisfied by an entry either on MARIS or in the Open Learning Directory.

2.3.13 Clarifying Clients' Needs

Clarifying the clients' needs assumes that the client has already made some sort of attempt at formally identifying the training need that they are trying to satisfy. It is my experience that this important first step often fails to be carried out. In the next section a documented case is given that demonstrates the consequences of failing to identify the training need.

As I have stressed time and again, an identified training or educational need is an essential starting point for any venture into Open Learning.

Having clarified the need the deliverer must carry out an analysis of the advantages and drawbacks of utilising Open Learning which then needs to be

fully discussed with the client. In commercial situations, careful consideration needs to be given to ensuring that there is no unnecessary conflict between the needs of the client (who pays) and the end-user (the trainee). It may be that the company expects the training to be done in the individuals own time and without financial reward.

In this situation the deliverer must examine very closely whether the trainee is sufficiently motivated. The major motivation could well be self-improvement leading to improved career opportunities. In this case the benefits to the trainee must be sufficiently attractive to warrant him giving up his own time without payment. Such matters must be carefully thought through if the delivery is to be successful. It is the task of the deliverer to establish the facts and to advise the client accordingly. Only then can the next step of choosing a particular Open Learning package be considered.

2.3.14 Choosing a Package

Some deliverers are clearly and openly aligned with one or more producers of Open Learning materials, and the desire for them to say "here's a solution - now what's your problem" may be overwhelming. If the Deliverer hasn't got the particular solution to the identified training problem then they must have the integrity to say so. All 55 delivery centres in the 1989 Open Learning Directory clearly state their particular areas of expertise (in general terms). Only 20% (11 centres) specifically named the producers that they were agents for (Table 8).

No matter what the circumstances, the starting point for selecting a package is to look at the identified training need (ITN) and to match it to the learning aims of an individual package or piece of courseware. To select a package on the basis that it has the right sounding title is wholly inadequate. Unfortunately instances of such bad practice do exist. For example, the Training Agency asked the Board to investigate why Open Learning had failed in a small North Staffordshire engineering company employing 75 people (New Haden Pumps at Cheedle). The failure related to one individual Electrical Draughtsman. An Open Learning package had been bought by the company without sufficient regard to its suitability other than that the package had what appeared to be the right-sounding title.

Delivery Centres: The Number of Publicized Agencies for Open Learning Materials

Centre	Number of Agencies
Bath College of FE	2
Enterprise Training Services	5
Flexible Training Systems	13
Gloucester ITEC	2
Hampshire Open Learning Unit	10
North East Wales Institute	4
Northern Business School	11
Peoples' College Open Learning Unit	8
Oxford Centre for Adult Learning	12
Scot-West Open Learning Unit	12
York College of Arts and Technology	4

TABLE 8

Source: Training Agency, 1989

When the trainee ran into problems in making progress with the programme the company found that the local Delivery Centre was unable to provide the appropriate tutorial support. At my request, the local EITB Field Adviser was asked to investigate the matter and to report back. The first task that the Adviser carried out was a basic ITN and she established quite clearly that the training need would never be satisfied by the chosen package because its learning aims were totally different from that required by the client. The cause of the problem transpired to be an unsystematic approach to identifying training needs rather than the failure of Open Learning (as inferred by the company). However, the producer/deliverer was not entirely blameless because if they had at least drawn the client's attention to the package's contents and its support requirements, then a more successful outcome would have been likely.

It is my view that this part of the Code is of paramount importance but it can only be achieved if the necessary clarification of the client's needs has already been thoroughly carried out.

2.3.15 Agreeing the Support System

A commonly-held opinion amongst Open Learning practitioners is that in the early days of Open Tech, the need for support for the trainee was vastly under-estimated. For example, in 1983 the Hotel and Catering ITB secured funding under the Open Tech programme to develop an Open Learning scheme covering all aspects of catering management. The scheme was aimed at the then 300,000 managers and supervisors (or 75% of the total) that the HCITB had estimated existed within the industry and who had no formal management qualifications. The series consisted of nine self-study modules. Each unit was piloted and then extensively revised. Critten (1985) found that the most common form of support needed by his sample of 80 trainees was that of reassurance. The reassurance that the problem that they faced was no different from anyone else's. HCITB termed this type of support 'motivational' and they established that in most cases this could be provided via a telephone help-line. In addition to this a second kind of support was identified. This related to helping the student in a specific way and this they referred to as 'tutorial' support. Colleges of technology were able to provide this technical support on a local area basis.

Another study of relevance was carried out in 1988 by the Microelectronics Open Learning Unit (MOLU) of East Devon College of Further Education. The college had had Open Tech funding to produce materials for the agricultural engineering industry. Students were all learning at a distance and were widely spread throughout the UK. Jeram (1988) carried out an investigation based upon students on the 'Basic Electronics' course which comprised of eight modules each of a nominal 20 hours of study time.

Tutorial support was provided via the telephone by 13 part-time tutors. Each student was able to progress at their own pace with no external timetable or other constraints imposed. Tutoring was available on demand within times agreed between the student and the tutor. A regular tutor-initiated contact was built-in to the system to promote student progress.

The study took the form of a postal questionnaire sent out to 169 students of which 110 replied (65%). Whilst the questions covered every aspect of the course some important conclusions arose relating to external contact and tutorial support. 35% of those responding claimed that their learning would have been helped by contact with other students with a remarkably low 4% feeling that they needed more support from their tutors. The study demonstrates that whilst the tutorial support was provided the element of reassurance was absent.

There is also anecdotal evidence from the EITB's project steering committee to support the view that tutorial support is vital. When the committee were consulted about our proposed new evaluation technique, tutorial support was identified as the most important factor that contributed to successful Open Learning (see sections 1.5.1 and 3.5). Consequently a great deal of significance must be attached to it by deliverers. A comment that sums-up the importance of tutorial support came from Phil Ferrar, Training Manager of the Bradford & Bingley Building Society (Ferrar, 1991):

> *'We hear of people who do not believe that Open Learning works, but we can only think that if Open Learning doesn't work, it is because it is not supported well enough'*

The first stage of agreeing the support system is to consider compiling a work schedule for the particular Open Learning programme. Due account must be taken of the individual circumstances of the trainee, and his working and home environments, together with the needs of the employer or sponsor (if appropriate).

The likely time demands to be placed upon the trainee must be explained (particularly where there is some final deadline such as the installation of a piece of machinery on site or where the candidate is preparing for some public examination with a fixed exam date). A time schedule or plan of activity must then be determined. The onus is on the deliverer to ensure that the agreed plan is consistent with the constraints on both the trainee and the resources available from the Delivery Centre. The plan should be available to all interested parties - the trainee, the tutor, the Delivery Centre Administrator, and if appropriate the employer.

The importance of including 'the facility to be externally controlled or monitored' in our definition of Open Learning can now be fully appreciated.

2.3.16 Operating the System

The issues raised under this section of the Code are very much inter-related with "Agreeing The Support System", but here we are concerned with the mechanics of implementing what was agreed at the previous stage. The role of support centres (Training Agency, 1989) is thought to be to provide:-

(1) Advice on choosing the most appropriate course.
(2) Guidance on how to plan study time.
(3) Reassurance for those who have not studied recently.
(4) Opportunities to meet and talk to other learners.
(5) Tutorial guidance (individual or group).
(6) Access to hardware facilities (computers, video cassettes, interactive video or language laboratories)

Typical activities carried out by delivery centres are outlined in the document *"Standards of Performance for Open Learning Staff"* (Training Agency, 1989) which fall into the task headings of:-

1. Enrolment of Learners
2. Arranging tutorial sessions
3. Storing and distributing resource materials
4. Maintaining a booking system
5. Maintaining training records
6. Administering accreditation and certification

Responsibility for managing these tasks needs to be assigned to competent members of staff. This has a clear link with Part Three of the Code "Staff Competence" (see section 2.3.19).

2.3.17 Evaluating and Improving

These two aspects of the Code involve validating the training against the original training objectives to ensure that the programme has met the client's requirements. Feedback to the producers of the material is vital in order that appropriate revisions may be made (if appropriate) to the packages.

Records of complaints are also essential if the producer or deliverer are to be able to sensibly analyse the source of any problems that have arisen as a result of running the programme. Statistics are the basis of modern day quality assurance systems. To quote Lord Kelvin:

> *'When you can measure what you are speaking about and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind'.*

One of the current quality philosophies is that of Dr W Edwards Deming. He took the process control concepts developed by Shewhart in the 1930's (Shewhart, 1931) and applied them to both manufacturing and service industries (see Mann, 1989). Deming's philosophy is based around the 'Deming Cycle' (Deming, 1985). It uses testing and statistical feedback at various stages of the process in order to constantly improve the level of customer satisfaction. It is a systematic approach based upon the PLAN, DO, CHECK, ACTION cycle.

Deming advocates 14 Points for success. The 11th Point is to 'use statistical methods for continuing improvement of quality and productivity...' Statistical data-analysis techniques are used as mechanisms for tapping and exploiting the potential information generated by the processes turning out goods and services. This anticipates, identifies and then enables the correction of mistakes leading to reduced variability in the system.

Shewhart (Shewhart, 1931) gave criteria for determining when data was in statistical control and developed methods for charting sequential averages of measurements. The term 'in-control' can be confusing but it means when the process is in a balanced operating condition so that only intrinsic variability is affecting the output characteristics of the process. The output characteristics against which a product or service is judged are called the Quality Indicators (QI's). In Open Learning delivery I would suggest that the following QI's could

be used; course completion rates, repeat business, examination results, and attitudes of both employers and trainees. It is important to note that all of these are measurable.

If a customer has a problem then there must be in-built traceability and records so that the source of the fault can be identified and rectified. Traceability and the use of statistical techniques are two important elements of British Standard 5750 (BSI, 1987). This is discussed more fully in section 2.5.

2.3.18 Requirements of Producers & Deliverers

Part Three of the Code of Practice is concerned with ensuring that there systems and procedures in place to enable Parts One and Two to be implemented. The five elements are; "Staff Competence", "Structures and Plans", "Monitoring and Correcting", "Dealing with Complaints" and "Liaising with Others". Appendix 6 gives the full requirements.

2.3.19 Staff Competence - Introduction

In recent years there have been questions raised about the uncoordinated nature of the accreditation of vocational qualifications. In the White Paper "*Education and Training for Young People*" (HMSO, 1985) the Government expressed concern that some examining and certifying bodies did not provide opportunities for:

1. Testing of skills and competence as well as knowledge and understanding.
2. Acknowledgement of accreditation between bodies.
3. Recognition of learning achieved outside of formal education and training.
4. Flexible patterns of attendance and learning.

It also announced its intention to review vocational qualifications. This led to the establishment of the National Council for Vocational Qualifications (NCVQ) in 1986. NCVQ does not itself award qualifications but accredits or hallmarks vocational qualifications offered by other bodies. It does this through a credit accumulation system (the National Record of Vocational Achievement) within which an individual can log Notional Vocational Qualifications (NVQ's) and units achieved towards an NVQ. The criteria for an NVQ are that a qualification should test not only relevant skills, knowledge and understanding but also the

ability to apply these in work-related activities. The NCVQ assesses the level of competence for each NVQ. Within occupational groups there are five assigned levels of competence. In the engineering industry, Levels One and Two are concerned with semi-skilled and skilled operators, Level Three is Craft Skills, Level Four is Technician, and Level Five is Incorporated and Chartered Engineers (EITB, 1989). The lead body for setting these NVQ's is currently the Engineering Training Authority (formerly the EITB).

Competence is defined as 'a description of something which a person who works in a given occupational area should be able to do. It is a description of an action, behaviour or outcome which the person should be able to demonstrate' (see "*The Development of National Certification*", Training Agency, 1988). The competence itself will usually consist of a short sentence containing three elements; a verb specifying an activity, the object of the activity, and the conditions of the activity. Each competence is accompanied by one or more performance criteria. Performance criteria 'are statements by which an assessor judges the evidence that an individual can perform the activity specified in a competence to a level acceptable in employment' (Training Agency, 1988).

Competences in Open Learning:
The Eight Main Groupings

1. Find and select Open Learning packages and programmes
2. Design and develop Open Learning programmes
3. Provide advice and direction to learners
4. Provide tutoring for individuals and groups of learners
5. Provide administrative services for an Open Learning scheme
6. Manage the resources of an Open learning scheme
7. Provide marketing services for an Open Learning scheme
8. Evaluate and validate an Open Learning scheme and its programmes

TABLE 9
Source: Training Agency, 1989

2.3.20 Staff Competence in Open Learning

The Training and Development Lead Body (TDLB) was set up by the Training Agency in January 1989 (see Moon, 1991) to establish a set of standards for all those involved in training and development. The TDLB is currently (Feb 1991) formulating qualifications at Levels of Competence 3, 4 and 5. Within this framework there are specified competences for Open Learning staff (Training Agency, 1989) which fall into eight groupings (see Table 9 on previous page) and include a total of 65 competences. These standards are based upon the work originally done by the Open College (Lewis, 1988) - which since 1988 has offered the Certificate in Open Learning Delivery (COLD). This is a nationally recognized qualification that is accredited by SCOTVEC, City and Guilds of London Institute (CGLI) and the Royal Society of Arts Examinations Board. To demonstrate a typical Open Learning competence and its performance criteria, let us look at the seven competences in Group Six (Table 10). One of these is to "manage the premises of an Open Learning scheme" for which there are the following performance criteria:

- the premises comply with all statutory requirements
- the premises are secure at all times
- maintenance schedules for the fabric of the premises are set and maintained
- maintenance schedules for the fittings of the premises are set and maintained
- the premises are functional at all required times
- premises costs are maintained within budgets

Elements of Competence in:
"Manage the Resources of an Open Learning Centre"

1. Allocate physical resources for an Open Learning scheme.
2. Manage the premises of an Open Learning scheme.
3. Control the acquisition of stock and all equipment and supplies.
4. Operate effective employment policies and procedures for directly employed staff.
5. Operate effective employment policies and procedures for contract labour.
6. Maintain financial control policies and procedures.
7. Maintain the operating standards of an Open Learning scheme.
8. Produce systems for the evaluation of an Open Learning scheme.

TABLE 10
Source: Training Agency, 1989

In other words these are the activities that would be expected of a competent worker in respect of managing Open Learning premises. There are another 64 such competences, some of which may or may not be applicable to producers or deliverers of Open Learning materials. In order to meet the Code's requirements for staff competence, I recommend that the document "*Standards of Performance for Open Learning Staff*" (Training Agency, 1989) should be used as a vehicle for identifying staff training and recruitment needs within an Open Learning organization.

2.3.21 Structures and Plans

This section is concerned with ensuring that producers and deliverers have the necessary procedures and systems in place to enable them to meet the Code's requirements. Whilst it is not a specifically stated, it is implied that these structures and plans are documented, otherwise how else could a producer or deliverer substantiate their claim to be meeting the Code of Practice? An observation here is that there is very little within the Code to endorse the fact that the main responsibility for quality lays squarely with management. Within the quality assurance discipline it is generally accepted that management has a key role to play in the implementation of any quality system. For example, the first section of BS 5750 (Quality Systems) (BSI, 1987) is that of 'management responsibility' and consists of the elements of quality policy, organization, and management review. Juran identified in the early fifties (Juran, 1951) that 85% of potential improvements in quality could be made only by management. That is, the vast majority of quality problems are outside of the influence of the employees.

Deming also has something to say about management's role in his First Point when he says 'create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs' (see Mann, 1989). The interpretation of this is that the direction and long-term planning of an organization should be focussed on the quality of the product or service and that this aim is essential for success in the long-term. Quite clearly this is a task of management and not of employees. Having identified to managers that they have a key role to play, producers and deliverers might justifiably ask the question "what systems do we need to implement?". Here there is very little in the way of direct guidance from the Code of Practice. However, I would recommend that the starting point for this process is to

identify all of the competences required within the organization, and to then go about writing procedures that will cover each of the associated performance criteria (374 in all).

2.3.22 Monitoring and Correcting

The previous section was concerned with establishing the relevant systems and plans to ensure a quality product or service. This element examines the need for the management to review (on a regular basis) their systems and procedures to ensure that they are effective. But this begs a question: how do you know that you're providing a quality product or service? Quality Indicators for deliverers were discussed in section 2.3.17. To that list I suggest that the following are added for producers; product life cycle, sales figures, design lead time, repeat business, and the number of document revisions. The key issue is being able to objectively assess where you are now and where you would like to be. Without QI's it is difficult to be able to see how a producer or deliverer is able to judge these matters. An added advantage of QI's are that they enable the application of statistical techniques. These can be used to gauge whether the process is in control and to assess its inherent variability. This section of the Code is a management concern and it finds direct parallels with the requirements in BS 5750 Part One Section 4.2 (BSI, 1987) for Quality Systems, and Statistical Techniques.

2.3.23 Dealing with Complaints

The primary concerns in this element are for an organization to have appropriate procedures for the control of non-conforming products or services. This includes the necessity to be able to trace the cause of the fault and to then be able to take steps to rectify any future possible breaches of quality. Suitable quality records will need to be kept in order to do this.

2.3.24 Liaising with Others

This element is a 'catch-all' in that it requires producers and deliverers to enter into a dialogue with any individual or organization that might affect its quality assurance but who may not have been specifically referred to elsewhere in the Code. Like section 2.3.22 it is closely related to the requirements in BS 5750 Part One for Quality Systems.

2.4 Links Between the Code of Practice And The Assessment Criteria

To identify links between the Code and the list of criteria presented to the EITB by the Training Agency.

2.4.1 The Assessment Criteria

Corporate Sponsors are the organisations who are interested in encouraging their employees or members to undertake Open Learning programmes (MSC, 1987). Typical of these are commercial companies, public sector bodies (The Civil Service, Industrial Training Boards) and trade associations (including Group Training Associations). They are usually willing to contribute to some of the costs involved in Open Learning such as purchasing resource materials, commissioning the design of new packages, tailoring existing packages, providing tutorial support and full or part release of employees during working hours. Within the "*Quality Handbook*" (MSC, 1987), Section D is devoted to the needs of Corporate Sponsors. It is based upon a series of checklists which can be used as an aide-memoire when considering Open Learning as a possible means of training delivery. In all there are 86 Key Questions for potential users of Open Learning to consider. A Pilot Study commissioned by the Training Agency (Stuart, 1989) condensed these Key Questions into a checklist covering 12 major issues which ought to be addressed. These are collectively referred to as the Assessment Criteria (Appendix 7). Obviously such a condensed checklist cannot cover all aspects of the Code of Practice and in order to assess the strengths and weaknesses of this checklist an analysis exercise was carried out to match the Assessment Criteria against each of the elements of the Code of Practice.

2.4.2 Cross-Referencing The Code And The Assessment Criteria

The results of this analysis work are presented in Appendix 8 and the following observations have been made:-

1) 12 of the 18 completed cells in the matrix refer to Part One of the Code. That is, three quarters of the Assessment Criteria focuses on the abilities of the producer to meet the Code of Practice.

2) The remaining six completed cells refer to the requirements placed upon deliverers (Part Two of the Code). This reveals a serious imbalance between the significance attached in the Assessment Criteria to the roles of the producer and those of the deliverer.

3) A projection of the completed cells onto the Code of Practice (horizontal) axis reveals that there is an incomplete coverage within the Assessment Criteria of the requirements of the Code of Practice.

4) A more complete coverage of Part Two of the Code could be gained by examining whether a deliverer is "Clarifying Client's Needs". This could easily be remedied by including another element into the checklist that identifies the training or educational need.

5) Further investigation shows that there are no completed cells that would indicate a cross-matching between the Assessment Criteria and Part Three of the Code of Practice. Part Three of the Code is mainly concerned about the quality management systems being operated within an organisation (section 2.3.18 et seq).

6) Item 11 in the Checklist is "Qualifications" and its direct relevance to the Code of Practice is unclear. An inspection of the matrix reveals no completed cells relating the role of qualifications to either Parts One, Two or Three of the Code.

It is my opinion that qualifications may, in certain circumstances, contribute to the motivation of the trainee. This view is endorsed by anecdotal evidence from the project's Steering Committee. The minutes of the meeting held on the 12th March 1990 confirm the fact the committee regarded qualifications (ranked equally with learning design, presentation and support) as the most important of the twelve criteria. If qualifications do contribute to the motivation of the learner then cell K2 should be completed. Compliance with the Code of Practice will ensure compliance with the Assessment Criteria (other than qualifications). This can be demonstrated by projecting the completed cells onto the Y-Axis. A projection onto the X-Axis clearly shows that the converse is not true - compliance with the Code cannot be inferred by compliance with the Assessment Criteria. Consequently, it would be most unwise to draw any

conclusions about an organisation's quality systems purely from the results of applying the Assessment Criteria.

2.5 Links Between the Code of Practice and British Standard 5750

To identify links between the Open Learning Code of Practice and British Standard 5750.

2.5.1 Background to British Standard 5750

The UK quality standard is embodied in British Standard 5750 (BSI, 1987 and BSI, 1990) and it is applicable to both manufacturing and service industries. It is the country's prime standard by which the effectiveness of quality assurance systems are measured. Current quality standards have evolved from those originally used in the procurement of defence equipment, the most important of which is that developed by the North Atlantic Treaty Organisation (NATO), AQAP One - "Requirements for an Industrial Quality Control System" (NATO, 1984). BS 5750 is a derivative of this. BS 5750 consists of four main parts, and it deals with quality systems that can be 'used for external quality assurance purposes'. That is, where it is necessary to demonstrate to some third party that the organization operates a formal quality assurance system. These four parts of BS 5750 have identical International Organisation for Standards (ISO) counterparts which are detailed in Table 11.

Part One is the broadest of the three parts and its scope is to specify the 'quality requirements for use where a contract between two parties requires the demonstration of a supplier's capability to design and supply a product'. The purpose is to prevent non-conformity at all stages from design through to installation and servicing. Part Two has applications where production is the main concern and only applies to situations where there is minimal or no design function. It is identical to Part One other than the fact that the sections referring to design and design control have been removed.

Part Three is the most specialised part of the standard and is applicable 'in contractual situations where the conformance of the product to specified requirements can be shown with adequate confidence'. In essence this only applies to what are known as specialist Test Houses where products from

clients are tested for conformance to a national standard. An example of a typical product being brought to a Test House would be a measuring instrument used in an inspection department. BS 5750 Part One, Section 4.11 (b) specifies that all inspection, measuring and test equipment must, at prescribed intervals, be calibrated against certified equipment having a known relationship to a nationally recognized standard. The process of being able to identify how each measuring or test instrument is derived from the national standard is known as traceability.

The Relationship Between
BS 5750 and ISO 9000

BRITISH STANDARD	CORRESPONDING INTERNATIONAL STANDARD
BS 5750 Part 1: 1987 Specification for design/ development, production, installation & servicing	ISO 9001: 1987
BS 5750 Part 2: 1987 Specification for production & servicing	ISO 9002: 1987
BS 5750 Part 3: 1987 Specification for final inspection and test	ISO 9003: 1987
BS 5750 Part 4: 1990 Guidance notes for the implementation of BS 5750 Parts 1, 2 and 3.	ISO 9004: 1990

TABLE 11
Source: British Standards Institution, 1987

Part Four provides guidance notes on the interpretation of the other Parts of the standard. The emphasis in Part Four is on there being a clear link between the quality assurance system and the demands of the business - no matter what the size or nature of the business is. The current debate amongst training and development workers is about the manner in which BS 5750 can be applied to their own activities, most of which fall into the service sector. An examination

of the requirements of the standard and the literature published by the British Standards Institution (BSI, 1987) leaves the reader with the clear impression that it is biased towards manufacturing. To a very large extent this is true especially when the origin of the standard is considered. However, the literature advocates that the principles are applicable to any quality assurance system. The standard specifies that "product" can be used to denote "service" as appropriate but that still doesn't help to understand how the requirements specifically apply to producers or deliverers of Open Learning.

Although not immediately obvious the common element to between education & training and manufacturing is that of design. Trainers and enterprise workers design programmes of training, or of advice, or of counselling. The manufacturing bias is now really being stretched for two reasons. Firstly, design is being interpreted in its very broadest sense, and secondly, the intended notion within the standard of a product is being replaced with the less tangible concept of a service. It is for these reasons that training professionals cannot pick up the standard and immediately identify with its requirements.

In addition to Part Four, BSI provides further clarification of the interpretation of the standard through Quality Assessment Schedules (QAS's) which are guidelines for particular industry sectors. The final draft of the QAS for training and education has been circulated (BSI, 1991) and this confirms my view that Part One applies to any organization that designs its own training programmes, and Part Two applies in situations where standard programmes of training are being delivered.

As far as Open Learning is concerned, Part One applies to producers and producer-deliverers and Part Two applies to deliverers.

2.5.2 British Standards Institution Assessment and Registration

The BSI Assessment and Registration scheme has two main elements. The first is an examination of the documentation (usually a Quality Manual) during which the quality system is tested for compliance with the appropriate Parts of the standard and any related Quality Assessment Schedules. This is followed by an assessment visit to carry out an in-depth examination of whether the organisation is able to demonstrate the practical application of its documented procedures. The visit is usually carried out by a team of assessors under the

direction of a Lead Assessor. The assessors are interested in establishing that the quality system is a true reflection of the requirements of the standard, and that the documented procedures are actually being applied. This is usually referred to as a systems or horizontal audit.

In addition the assessment process will involve a product (or vertical) audit in which the assessor will carry out an audit trail for a particular product - back to the original order and the raw materials and then forwards through to inspection, packaging and despatch. If the visit is successful and no critical or major non-compliances are found then the company will appear on the BSI Register together with about 9000 other approved organizations. The initial assessment is then followed by regular unannounced surveillance visits (at least two per annum). The fees for Assessment of an organization's quality system are only available by quotation from British Standards Institution, however, for a small unit (employing ten or less people) the Assessment fee for Part One approval would be of the order of £2,000 - £3,000 (as at November 1990), together with a further annual Registration fee of 50% of this figure (BSI, 1991).

2.5.3 Implementing BS 5750 - Consultancy Experiences

In order to be able to speak with authority on the application of the standard to training and education it was necessary for me to understand how the standard was being implemented within its source industry - manufacturing. The vehicle for doing this was a consultancy project funded by the Dudley Training and Enterprise Council under a scheme to promote the Investors in People Award.

The Investors in People Award aims to redress some of the problems identified in the report "*Training in Britain*" (HMSO, 1989). The programme was announced by the Employment Secretary, Michael Howard, at a Confederation of British Industry (CBI) conference in November 1990 (Times, 6/11/90). Mr Howard told delegates that companies would have to work with their local TEC's to draw up acceptable training proposals that would form part of their business plan. In addition they would have to meet four key criteria before they qualified for the award. Firstly, a company would need to make a public commitment to develop its employees to meet its business objectives. It would have to regularly review the training and development needs of every employee, and provide them with training throughout their employment. Finally, the

company would have to evaluate the effectiveness of the training against its business objectives. These requirements are directly related to the rectification of the following problems that were identified in the report "*Training in Britain*":

1. Only 24% of employers had a training plan in 1986/87 - less than that (only 20%) in smaller firms (10-24 employees).

2. Training tends to be concentrated amongst younger people, those with good educational qualifications. the percentage of unskilled and semi-skilled workers over 35 years old having had training in the last three years was 11% in 1987. Amongst younger people only about 20% of 16 year old school leavers were receiving structured training in 1985 (excluding YTS).

3. Only 15% of employers attempted to assess the benefits of training with less than 3% attempting to do any cost-benefit analysis.

4. Establishments with above-average training were found to be more likely to have management plans (business and manpower) than below-average trainers.

In line with these general objectives of the Investors in People Awards the consultancy project was focused upon a small engineering company. The project took place over an elapsed time of six weeks during February and March 1991. The company identified for this "extended case-study" was Patelmo Engineering Ltd at Halesowen (W. Midlands) who are contract precision machinists employing 16 people. They manufacture heavy-duty components such as machine tool cranks, mill couplings and chocks, lead screws, cylinders, rams, pistons and fan shafts.

According to their Financial Director, Maurice Stevens, Patelmo's most pressing business need was to obtain BS 5750 Part Two approval. In mid 1988 the company had used the services of an outside consultant to design a quality assurance system to meet the requirements of the standard. The project was funded under the Department of Trade and Industry's Enterprise Initiative (for details of the current scheme see HMSO, 1990). Recent commercial pressures from customers had added a greater degree of urgency to the need to implement this quality system. The first task was a review of the company's quality policy, which needed to be updated to state the fact that seeking BS 5750 was a key business objective for 1991/92. This was an important step forward in that the

policy was a clear statement saying "the company need to implement a quality assurance system...and this is how we're going to do it...". The policy identified those within the organization who were responsible for implementing the system and made a clear commitment to train its employees to prepare them for this change. The policy was authorised by the managing director and endorsed by the rest of the management team and displayed in places prominent to both employees and visitors (Appendix 9).

An immediate need was to identify quite precisely the extent of the implementation. To do this the systems for a Management Review and an Internal Quality Audit had to be invoked. This exercise served the very useful purpose of acting as a vehicle for identifying training needs. Patelmo were quite aware that the introduction of BS 5750 would require considerable staff training, however, at the outset of the project the only specific requirements that could be stated were the training aims and objectives (Appendix 10). During the audit and review processes the non-compliances were categorized as either critical, major or minor. The value of this exercise was that it identified and then prioritized the company's training needs. Furthermore, it introduced a discipline and rigour into the production of a rolling training plan (Appendix 11). Consequently, the business objective of achieving and then maintaining a quality assurance system also allowed the introduction of a formal process for identifying the company's training needs. The audit and review programmes provide documentary evidence that the training needs for all aspects of the business are examined during the course of a 12 month period. The underlying theme for this firm was that business change and training are intrinsically linked.

One of the earliest training needs to be identified arose from the fact that the BSI had recently updated their standards and QAS's. This meant that the company had to amend and update their quality manual, revealing a training need for the document control procedures to be understood and then implemented. A visit around the shop also highlighted other areas of concern. In particular the calibration status of inspection equipment was not labelled. On further investigation it was established that the calibration system had become dormant, which exposed the need to rewrite the calibration manual in line with the recommendations of BS 5781: Part 2: 1981, Measurement and Calibration Systems (BSI, 1981). It transpired that the most effective way for this company to comply with the standard was for them to sub-contract their calibration to a

British Calibration Service approved test house. This simplified the company's procedures and removed the need to have an environmentally controlled Standards Room.

The strategy adopted for implementation was that of a "cascading" the system into operation - starting at the management level (with a management review) working down to internal audits and then to individual procedures. This systems audit followed by a product audit allowed the management issues to be resolved before the implementation was taken down to shop-floor level. The company found this to be a more attractive approach than the piecemeal solution that had previously been adopted. By the end of the consultancy project, Patelmo had reached a stage where they were ready to invite BSI to do a pre-assessment visit - although an immediate benefit to the company was that the quality assurance system provided them with an increased robustness to external customer audits. They were able to demonstrate that smaller firms could meet the criteria for the Investors in People award to the extent that the results of this consultancy work are being published in mid-1991 by Dudley TEC in the form of an extended case-study (see Appendix 12 for the final draft).

Another relevant area of consultancy work has been with a large training organization called In-Comm business services, based at Bilston in the W. Midlands. They employ 70 people and operate from eight local sites. Their General Manager, Colin Simmonds, a former EITB colleague asked for some assistance to help the company with their plans for achieving BS 5750. The discussions with the company have helped to establish the following points related to the application of the standard to training and education:-

1. The scope of the QAS for training and education does not extend to consultancy and advisory services. However, where a training deliverer also practices consultancy work the use of quality plans would be an effective way of ensuring a quality service. BS 5750: Part 1: 1987 does not specifically require the use of quality plans but the latest guidance notes from BSI (BS 5750: Part 4: 1990) strongly advocates their use in project management.

2. The foundation stone for BS 5750 is that it is 'applicable in contractual situations', although in the service sector the contract may be a verbal or implied one (as amplified in section 4.3, contract review, of the QAS for training and

education). In these circumstances a quality plan will help to clarify both the customer's and the deliverer's perception of the expected quality of the service.

3. Part One of the standard applies to producers and producer-deliverers. Deliverers of pre-designed courses and programmes (such as the Enterprise Allowance Scheme's awareness days) are covered by Part Two.

4. The major areas of the standard likely to affect producers are contract review, design control, document control, assessment of sub-contractors, process control and control of non-conforming products.

2.5.4 Cross-Referencing the Code of Practice and the Requirements of BS 5750 Parts One and Two

Having obtained an understanding and working knowledge of the standard I then set about cross-referencing Parts One and Two with the Code of Practice (Appendices 13 and 14 respectively). Using the same procedures as adopted in Chapter 2, (Section 2.4.2) completed cells have been projected onto the X and Y Axes. It was anticipated that the requirements of BS 5750 would completely meet the requirements of the Code of Practice. However, two areas of the Code remain uncovered by Parts One and Two of the standard namely, "Informing Users" and "Attracting Clients". Both of these parts of the Code are related to marketing activities an area which the standard does not directly address. Examination of the cells projected onto the Y-Axis reveals that there are areas where there is no overlap between the requirements of the Code and the standard. For example the needs for servicing of equipment is unlikely to be an issue for either producers or deliverers. The scope of the Code of Practice is much more vague than that of the British Standard and many of the quality system requirements are covered in the Code under the non-specific heading of Structures and Plans. The cross-referencing reveals that:-

1) There are tangible links between the Assessment Criteria and The Code of Practice, and between The Code and BS 5750.

2) BS 5750 does not address the requirements in the Code of Practice for "Attracting Clients" and "Informing Users".

3) There are sections of the standard which are not applicable to Open Learning production or delivery.

The conclusion to be drawn is that there is an identifiable link between the two requirements but compliance with one does not automatically ensure compliance with the other.

2.6 Recommendations to the Training Agency

To advise the Training Agency of the limitations of the Assessment Criteria.

2.6.1 Recommendations

The results of the studies in sections 2.4 and 2.5 can be summarised into six main conclusions:-

1) There are tangible links between the Training Agency's Assessment Criteria and The Code of Practice, and between The Code of Practice and British Standard 5750.

2) With the exception of qualifications compliance with the Code of Practice will ensure compliance with the Assessment Criteria.

3) The Assessment Criteria is biased towards testing the effectiveness of production rather than the effectiveness of delivery.

4) The Assessment Criteria does not test for compliance with Part Three of the Code (Requirements of Producers and Deliverers)

5) BS 5750 does not address the requirements in the Code of Practice for "Attracting Clients" and "Informing Users".

6) Because of its manufacturing bias there are sections of the Standard which are not applicable to Open Learning production or delivery. These are Inspection, Measuring and Test Equipment, Handling, Storage, Packaging and Delivery and Servicing.

These conclusions were presented to the Training Agency in a final contractual report (Cooper, 1990) which I compiled but which was authorized by the local EITB management. The contents of the report were fully discussed with the Board's Training Agency contact, Mr C Stuart, Senior Training Adviser (Learning Systems and Access Branch) at a meeting on the 3rd October 1990. In addition to those listed on the previous page, I also put forward eight other benefits (both tangible and intangible) that I believed had been brought about by the project:-

1. *The industry has available to it the results of evaluations on the quality of 67 relevant Open Learning products.*

2. *There is an increased awareness amongst engineering companies in the Midlands of what Open Learning is about.*

3. *Producers of Open Learning materials now know that the engineering industry looks at the quality of the products supplied to it.*

4. *The industry in the Midlands are more aware of the products and services provided by us [the Board].*

5. *Our [the Board's] Regional staff are now trained to identify opportunities for selling Open Learning consultancy services.*

6. *Contacts have been made between ourselves [the Board] and the local deliverers of Open Learning.*

7. *Through the Steering Committee, we [the Board] have heightened the awareness of the Code of Practice amongst key Open Learning activists in the Midlands.*

8. *We [the Board] have increased the "usability" of the Assessment Criteria and raised trainers' awareness about it.*

It was envisaged that this contract would last for three years, during which time the Training Agency would provide funding for the dissemination of the results. This would have taken the form of either a Training Agency or an EITB publication. However, in May 1990 the Board decided to withdraw from field consultancy services in Open Learning. This effectively brought the EITB's involvement in this research project to an end.

Consequently, the Assessment Criteria's usefulness in the selection of Open Learning materials has not been fully exploited.

2.7 Ways In Which The EITB Meets The Code of Practice

To investigate how effectively the EITB meets the Open Learning Code of Practice.

2.7.1 Methodology

In April and May 1990 I investigated the effectiveness with which the EITB met the Open Learning Code of Practice. In order to do this it was necessary to examine each of the 17 elements of the Code and to assess the degree of compliance with which the Board met them. In addition to my own observations and prejudices it was necessary to seek objective information to balance my views. Eight potential sources of information were identified for this:

1. EITB promotional material
2. Work procedures and instructions relating to the delivery of EITB materials
3. Information published by the Board for the engineering industry.
4. The Open Learning Directory and MARIS-NET
5. EITB Open Learning packages
6. Internal financial records
7. Customer requests for information
8. Records and procedures relating to the production of EITB materials.

Most of the items on the above list were directly available to me - especially those relating to delivery activities in the Midlands Region. However, as I was not involved in the production of the existing range of EITB materials I was going to have to rely heavily on information from the Board's Open Learning Unit at Watford to be able to assess compliance with Part One of the Code. For a number of reasons, but mainly internal politics, this information was not freely available and had to be obtained indirectly.

The interface between my area of work (delivering the programmes in the Midlands) and the Open Learning Unit's (the production of materials) allowed me to assess how the Board met Part One of the Code. For example, an examination of the Board's Open Learning materials would indicate the effectiveness with which the Board satisfies the requirements for "Designing for Effective Learning". An important limitation of this indirect approach was that it would have to be confined to activities taking place within my geographical

working area. Whilst acknowledging this I still felt that the exercise would yield valuable information and I decided to proceed.

2.7.2 Internal Survey

In carrying out the investigations, the most useful resource available to me were the 50 colleagues who worked in the Midlands. Their opinions and experiences could provide valuable quantitative and qualitative information. The only question that remained was how best to utilise them.

The Spring of 1990 was a challenging time for the Board. In its move to commercialism the Board were assigning training staff to new and different tasks - even to new geographical locations. Time was of the essence, not just because of the pressure to complete the research, but because the staff were being disbursed. Another constraint was that of cost. Managers were reluctant to release their staff for work unless they could recover the cost through internal cross-charging.

Terms of Reference for the Internal Survey

The purpose of the internal survey will be to establish from the staff:

- Their personal product knowledge
- Their activity in selling / marketing
- The degree of customer satisfaction with EITB Open Learning products
- The completion rates for EITB Open Learning programmes

The survey will be:

- Quick to complete
- Simple to answer
- Confidential
- Anonymous

TABLE 12

The proposal put forward to EITB management was for an internal survey of Midlands' field staff. It was argued that this survey together with my existing knowledge would give an overall impression of the strengths and weaknesses of the Board's approach to meeting the Code of Practice. Whilst this solution appeared to me to be an attractive one, it still met with opposition from the new line managers. With hindsight this was an understandable reaction. The staff were no longer involved in Open Learning work and were never likely to be involved in it again. However, with perseverance and goodwill, consent was eventually given to carry out the survey. This agreement was not formally documented, but Table 12 gives my interpretation of what was agreed in the discussions with the four EITB Coordinators (the line managers).

2.7.3 Designing the Questionnaire

Having established the general terms of reference for the survey, the next phase was to examine each of the agreed elements and to design appropriate questions to extract the relevant information from the staff. The format adopted for the questionnaire was that of eight questions with 'tick-box' answers. For ease of completion, the questionnaire was restricted to two sheets of single-sided A4 (see Appendix 15).

Product Knowledge (Q1, Q2, Q4 and Q5): The Board's longest established product range was the Design Series. This was developed as a series of seven packages under the Open Tech programme from 1985 onwards (see section 1.5.3). Its primary aim was to provide resource material for training design skills within the engineering industry. All seven packages in the series were fully completed and available for sale from May 1988 onwards. The packages follow a recognisable house-style in that they all use a combination of media (text, video and audio) and that they normally have a case study as an integral part of the programme. The mechanics of selling the packages involves placing an order with the Open Learning Section at the Board's Headquarters at Watford. There the orders were processed and passed to the EITB Publications Unit at Stockport for despatch. The packages currently (October 1990) retail for £150 + VAT each and are available for preview on a 30 day sale-or-return basis. A later edition to the portfolio (Spring 1989) was a series of Information Technology programmes. These were introduced and marketed in the same manner as the Design Series and currently (October 1990) retail for the same standard price of £150 + VAT each. Delivery of the programmes was either

internally through the network of 251 EITB field staff or externally through EITB approved distributors. In order to test whether staff were aware of these procedures the following key questions needed to be asked:

> *Are you aware of the existence of the Design Series and the Information Technology series?*
>
> *Do you know the standard price of EITB Open Learning packages?*
>
> *Did you know that the Board operates a 30 day sale-or-return facility to allow companies to preview materials?*
>
> *Are you aware that the Board has external delivery agents for its materials? If yes which ones are you aware of?*

Selling and Marketing Activity (Q3 and Q6): Question three was the most sensitive to ask bearing in mind that the answer could imply non-performance. It was decided that the best way of approaching this was to ask:

> *Have you sold any EITB packages in the last year?*

rather than 'have you ever sold any EITB Open Learning packages?' The reason for doing this was to help respondents to feel more comfortable about answering the question. The underlying message that was trying to be conveyed was 'I am not questioning your professionalism, I just want to know your activity in this area in the last 12 months'. If the respondent replied YES to the question they were then asked to specify a broad category of the number of packages sold. These were 1-5, 5-10 and 10+. Any greater degree of precision might have implied that the staff were being assessed against some performance targets, which they were not. A question very much aligned to this was one trying to assess the amount of marketing activity. Question six asked:

> *What proportion of your contacts in companies are aware that the EITB produces Open Learning materials?*

Respondents were then asked to categorise their answer into one of five bands in the range 0-100%.

Customer Satisfaction (Q7): The purpose of this question was to try to establish the staff's views on whether they felt that the EITB Open Learning products were adequately researched and planned. The question asked was:

Do you believe that the Board's packages meet either (i) the needs of its clients? or (ii) the wants of its clients? or (iii) don't know?

Completion Rates (Q8): This question tried to identify the completion rates for the Open Learning programmes. It also tried to establish secondary information (where appropriate) about the likely causes of failure of EITB Open Learning programmes.

With the last EITB Open Learning package you sold: Did it meet an identified training need? Did it have an appointed mentor or tutor? Did the trainee complete the course? Was the package used solely as resource material?

Without this information it is difficult to see how the Board would be able to carry out "Improving and Updating".

2.7.4 Piloting the Survey

As part of the research for the survey, ten colleagues were asked whether they would be prepared to complete the questionnaire. All ten said that they would, but three were concerned that when they had helped with similar requests in the past they had not received any feedback of the results. An assurance was given that this would be done and six weeks after the questionnaires were sent out a summary of the findings was circulated to all Midlands Field Staff. The draft survey was discussed with the group of ten colleagues and this secured their commitment to the survey by their ownership of the problem.

2.7.5 Administration of the Survey

On the 30th April 1990, 48 voluntary questionnaires were sent out together with a covering memorandum from myself. It is important to bear in mind the likely impression that this survey might have caused amongst the staff. The request, which had come from a colleague in a supervisory grade, was asking them for information that could imply a degree of non-performance. The atmosphere was one where redundancies were being considered by the management. To allay any fears it was clearly stressed that the replies would be totally anonymous, but undoubtedly some advisers were sufficiently concerned about this aspect of the questionnaire as to not complete the survey.

2.7.6 Results of the Survey

48 questionnaires sent out (representing 19% of the national field staff) of which 25 were returned. This response rate (52%) was higher than expected bearing in mind the previous comments. A major constraint in carrying out this survey was that it had to be confined to the operational area of the EITB Midland Region. Whilst acknowledging this fact, it is my opinion that the survey provides a useful impression of the national picture of how the EITB meets the Open Learning Code of Practice.

Question One revealed that thirteen respondents were aware of both the Design Series and Information Technology (I.T.) packages that the Board produced (see Table 13). However, nine advisers were unaware of the Information Technology packages but knew about the Design Series. A surprise finding was that three respondents did not know of either of the two product lines. With hindsight this question could have been constructed differently. A weakness was the fact that the it listed the range of products. A better phrasing of the question would have been 'are you aware of (i) the Design Series and (ii) the I.T. Series? (iii) neither the Design or I.T. Series?'

Internal Survey:
Responses to Question One

Question: Are you aware of the existence of the following EITB packages [A list of the Design Series and Information Technology packages followed]?

Responses:	
Aware of the Design Series only	9
Aware of the I.T. Series only	-
Aware of both the Design Series and the I.T Series	13
Aware of neither	3

TABLE 13

In answering question two, ten advisers said that they did not know the current standard price of the packages - only three respondents correctly identified it as £150 (Table 14).

Internal Survey:
Responses to Question Two

Question: Do you know the standard price of EITB Open Learning packages? [At the time of the questionnaire the standard price was £150].

Responses:	
£100	-
£150	3
£200	6
£250	5
£300	2
Don't Know	9

TABLE 14

With regard to recent sales, only three respondents were able to say that they had sold a package in the previous twelve months (Table 15).

Internal Survey:
Responses to Question Three

Question: Have you sold any EITB packages in the last year?

Responses:	
None	22
1-5	3
5-10	-
10+	-

TABLE 15

However, thirteen advisers were aware of the policy for allowing potential customers to preview products on a 30 day sale-or-return basis (Table 16).

Internal Survey:
Responses to Question Four

Question: Did you know that the Board operates a 30 day sale-or-return facility to allow companies to preview materials?	
Responses:	
Yes	13
No	12

TABLE 16

Eleven advisers knew that the Board used external delivery agents but only three respondents could identify a specific sales outlets (Table 17).

Internal Survey:
Responses to Question Five

Question: Are you aware that the Board has external delivery agents for its materials? If yes, which ones are you aware of?	
Responses:	
Yes	10
No	15
Names of Agents:	
Don't Know	7
One Agent Named	2
Two Agents Named	1
Two + Agents Named	-

TABLE 17

When question one was cross-referenced with question four it was found that nine advisers knew of both the Design and I.T. Series and knew of the sale-or-return facility (Q1 & Q4). Only five of these also knew that the Board had external delivery agents (Q1 & Q4 & Q5). Table 18 gives a full analysis of the correct answers to the questions on product knowledge.

Internal Survey:
Analysing Correct Answers to
Questions on Product Knowledge

Correct Responses to:	
Q1	13
Q1 ∩ Q2	1
Q1 ∩ Q4	9
Q1 ∩ Q5	5
Q2 ∩ Q4	2
Q2 ∩ Q5	1
Q4 ∩ Q5	6
Q1 ∩ Q4 ∩ Q5	5
Q1 ∩ Q2 ∩ Q4	1
Q1 ∩ Q2 ∩ Q5	-
Q2 ∩ Q4 ∩ Q5	1
Q1 ∩ Q2 ∩ Q4 ∩ Q5	-

TABLE 18

Not one adviser was able to correctly answer all four questions on product knowledge (Q1 ∩ Q2 ∩ Q4 ∩ Q5). I found the results of this part of the survey to be very disappointing - it was my responsibility, as the Region's Open Learning specialist, to ensure that the staff had at least a basic product awareness. Evidently, the staff had not received sufficient training in this area.

In replying to question six, seventeen respondents (68%) felt that they did not know whether the Board's packages met either the needs or the wants of their clients (Table 19). Such a high percentage might suggest that the question was ambiguous. Certainly there could be confusion over the meaning of 'wants' and 'needs'.

Another interpretation might be that the Board's marketing strategy was unclear to the staff. If it was unclear to the staff then it would be unlikely to be clear to the clients. In other words, the staff would have been unable to convey to their clients the market need that the packages were trying to satisfy. That would imply that the market research for the programmes was imprecise. It is again

important to stress that the survey examines how the Board meets the Code of Practice from the viewpoint of the staff who were delivering the products. But because the Board is a producer/deliverer inferences can be drawn about the production of materials even though direct access to information on matters such as market research are unavailable.

Internal Survey:
Responses to Question Six

Question: Did you believe that the Board's packages meet either the needs or wants of its clients?

Responses:

Needs only	1
Needs and wants	2
Neither needs nor wants	2
Wants only	3
Don't know	17

TABLE 19

When asked about the awareness amongst their clients about the fact that the EITB produced Open Learning materials the range of responses was quite varied. Eleven advisers estimated that less than 20% of their clients knew that the EITB were Open Learning producers. Seven estimated it to be between 20 and 40%, two at between 40 and 60% and one at between 60 and 80%, and two at over 80%. The range of estimates can probably be put down to the particular interest and enthusiasm of the individual advisers. What is clear, however, is that much could have been done to raise the profile of EITB products within client organizations.

The final question tried to examine how effectively the Board was "Clarifying Clients' Needs", "Agreeing the Support System" and "Evaluating and Improving" the delivery system. Fifteen of the advisers felt unable to answer this question, of which seven volunteered the fact that they had never sold any EITB Open Learning packages (Table 20).

Internal Survey:
Responses to Question Eight

Question: With the last package you sold:	
Responses:	
Did it meet an identified training need?	
Yes	8
No	-
Don't know	2
Did it have an appointed mentor or tutor?	
Yes	3
No	2
Don't Know	5
Did the trainee complete the course?	
Yes	2
No	-
Don't know	8
Did it end up being used solely as resource material?	
Yes	7
No	1
Don't know	2

TABLE 20

Of the ten individuals who did respond to this question, eight felt that the packages were sold to meet an identified training need, whilst the other two respondents didn't know whether this was the case. On tutorial support the answers were nearly evenly distributed between YES there was an appointed tutor (three), NO there wasn't (two) and, the adviser saying that he DIDN'T KNOW (five). On course completion, eight respondents didn't know whether or not the trainee had finished the course whilst the remaining two knew that there had been a successful completion of the training. Interestingly, none of the responses indicated any specific knowledge of a failure to complete.

2.7.7 Assessing how the EITB meets the Requirements of the Open Learning Code of Practice.

The information provided by the survey now enabled me to review the effectiveness with which the Board met the Code of Practice. The procedure was to classify the degree of compliance as being either Fully Compliant, a Minor Non-Compliance, a Major Non-Compliance or a Critical Non-Compliance. A set of matrices were then constructed (Tables 21, 22 and 23) which cross-referenced the requirements of the Code with the organization's ability to meet them. Explanatory notes are given below and in the following pages to justify the reasons for reaching the individual classifications.

Researching & Planning

Whilst most of the information regarding the researching and planning for the Board's Open Learning programmes was unavailable to me, inferences could be drawn by examining the end products. The first and most significant indicator of whether successful market research has been carried out is the sales volume of the products, and it is speculated that the total sales run to perhaps several hundred for each of the product lines (see Section 2.3.3). It is also known that during the fiscal year 1988/89 the Midlands Region received commission for the sale of EITB materials of £865 (EITB, 1990). This is equivalent to the sale of 17 packages, all of which were directly attributable to the efforts of the Region's Field Staff. The results of the internal survey indicate that the products are not achieving successful market penetration, especially when it is considered that the market to which the Board has direct access is the 21,600 in-scope engineering companies with their 1.90m employees (EITB, 1988).

Without knowledge about the circumstances leading up to the commissioning and execution of the projects, a more informed judgement cannot be made about this aspect of the Code of Practice. The only comment that can be made on the basis of known facts is that some minor improvements could be made to researching and planning. For example, it is evident that thoughts about the product life-cycle have not always been given adequate consideration. Specifically, in the Design Series the technology behind computer aided design has moved on so quickly that the package "CAD1: Computers and the Designer" (EITB, 1985) now needs updating and improving. Consequently in this area there is a minor non-compliance.

Assessing how the EITB meets Part One of the Open Learning Code of Practice

Requirements of the Code of Practice	Fully Compliant	Minor Non-Compliance	Major Non-Compliance	Critical Non-Compliance
PART ONE				
Researching & Planning		√		
Designing for Effect-ive Learning		√		
Piloting & Improving		√		
Informing Users			√	
Training the Deliverers			√	
Improving & Updating			√	

TABLE 21

Designing For Effective Learning

As professional trainers this aspect of the Code should have been the one in which the EITB was beyond reproach. Evidence here is much more tangible than in the previous section in that Open Learning packages are physically available for review and evaluation. Examples from individual packages indicate that there are some improvements that could be made. The volume of text and inflexibility of use of some of the later packages (particularly the Information Technology Series) is significant - but rectifiable with additional development work. The materials are evidently written with the help of trainers, with the learning aims of the packages always clearly stated and described in learner-behaviour terms. The Design Series material is generally well structured with

clear instructions about the method of study and usage of the various media. It is packaged in well presented, robust plastic carriers which have room for the text, video and audio tape.

Experiences with the packaging of the three Information Technology programmes is not so favourable. More flimsy plastic wallets have been used which tend to show up marks and scratches very easily. The labelling of the packs has a tendency to peel off. After very little usage the packaging makes the materials look second-hand. The comments and observations here are mainly confined to detail, consequently the classification of compliance reflects this.

Piloting & Improving

To my knowledge piloting of the Information Technology packages was carried out prior to their launch and formed the basis of the promotional video "*Introducing I.T. Applications*" (EITB, 1987). However, there is no evidence that the Board has updated any of its existing programmes, notably the Design Series. This can partly be justified by the fact that the sales volume is too low to contemplate re-writing packages. From an economic point of view the costs would be prohibitive for the potential return on investment.

Informing Users

An omission by the Board was not to publicise the Design Series in the "*Open Learning Directory* " (Training Agency, 1989). The announcement of the then forthcoming Information Technology programmes was referred to, however. Having examined many leaflets and brochures from a cross-section of different producers, it was clear to me that the EITB's literature does not compete with the top-end of the market but is quite respectable when compared to that produced by the smaller organizations. This is consistent with the fact that the EITB operates in the middle of the price range of the currently available Open Learning packages. At the time of the survey, the standard price of an EITB programme was £150. Examples of the range of prices for predominantly text based material at that time were £12 for units from the NEBSM Super Series (supervisory management training) (Pergammon, 1987) to £420 for the Henley Distance Learning's Effective Management package (HDLL, 1989).

Training The Deliverers

As previously mentioned the Board has both internal and external delivery agents. Comments about the external delivery agents cannot be made because of the fact that there is no comprehensive information available about who they are or how successful they have been. Results from the internal survey were disappointing in that despite the efforts of this project there was considerable lack of knowledge about the EITB's products and the mechanisms for their delivery. This could be a significant factor in explaining the low sales of products by the Midlands staff. Other factors, such as the lack of knowledge about the EITB's network of retained tutors (which is now dormant) for the Design Series, have led to the belief that major changes are necessary if the Board is to be effective as an Open Learning deliverer.

Improving & Updating

From the comments made above, regular reviews of the products and the way in which they have been delivered did not take place. Consequently, there is a major non-compliance here.

Attracting Clients

The failure of the Board to effectively advertise its products and services (see "Informing Users") applies equally to the delivery of programmes as it does to the production. Again these comments are confined to the internal delivery systems because there is insufficient information to comment on the manner in which external deliverers attract their clients. Promotional literature produced by the Board and advertising for its consultancy services does not emphasise the fact that it can deliver Open Learning materials. In the light of the comments herein perhaps that is wise.

Clarifying Client's Needs

EITB field staff are very well placed and capable of carrying out those tasks necessary for "Clarifying Client's Needs" and for advising on how to "Choose a Package". In respect of these two parts of the Code the Board has the capability to fully meet the standards required. However, the internal survey

revealed that skills of the Field Staff were not being fully utilised to implement this part of the delivery system. Consequently this is a major non-compliance.

Assessing how the EITB meets Part Two of the Open Learning Code of Practice

Requirements of the Code of Practice	Fully Compliant	Minor Non-Compliance	Major Non-Compliance	Critical Non-Compliance
PART TWO				
Attracting Clients			√	
Clarifying Clients Needs			√	
Choosing a Package			√	
Agreeing the Support System			√	
Operating the System			√	
Evaluating & Improving				√

TABLE 22

Agreeing The Support System

Many of the packages sold have been sold directly from the EITB's Watford Headquarters without the local staff necessarily being aware of a potential opportunity to provide advisory and tutorial consultancy services. In my personal experience, the agreeing of support for EITB packages was an infrequent occurrence. This is confirmed by the results of the internal survey. Only three of the ten respondents to Question 8b were able to say that a mentor or tutor had been appointed for the last Open Learning package that they had sold.

Operating The System

Considerable enhancements could be made to the way in which the Board operates its system of delivery, the results of which could have significant financial benefits. For example, commercial fees could be charged for accreditation of successfully completed EITB programmes. This could be done by:-

1) The provision of completion certificates. Existing administration facilities at Regional Offices are capable of producing respectable laminated certificates for such purposes.

2) The validation of training programmes. As mentioned under "Clarifying Clients' Needs", this is an area of considerable strength that the Board has.

3) The provision of tutorial support. Significant efforts would have to be made before the Board could provide an effective national coverage of tutorial support for all of its programmes.

If all of these issues were addressed then the Board would be able to demonstrate that they met this particular requirement of the Code of Practice. But at the time of the survey this was an area of major non-compliance.

Evaluating & Improving

Evidence from the internal survey suggests that the drop-out rate for EITB Open Learning programmes is an unknown quantity. This implies that insufficient control has been exercised over the operation of the delivery system, and that no post-training evaluation has been carried out. Without this, the feedback loop necessary to improve the quality of the delivery system is absent.

Staff Competence

EITB products have been launched over a period of time, and this has led to there being gaps in the staff's product knowledge. This was shown in the internal survey, where it was evident that there was confusion amongst the respondents about the products and services offered by the Board. This could easily be rectified by regular refresher seminars or courses.

Assessing how the EITB meets Part Three of the Open Learning Code of Practice

Requirements of the Code of Practice	Fully Compliant	Minor Non-Compliance	Major Non-Compliance	Critical Non-Compliance
PART THREE				
Staff Competence		√		
Structures & Plans			√	
Monitoring & Correcting			√	
Dealing with Complaints			√	
Liaising with Others			√	

TABLE 23

Structures & Plans

Unavailability of information about the manner in which the production of materials is handled, and the identity of the external deliverers means that the comments in this section are confined to internal delivery only. When the Design Series was first launched in May '88, the procedures for the delivery of the programmes by EITB Field Staff were agreed between Headquarters and the Regional Managers (Stenner, 1988). Collaboration was requested between the Open Learning Unit at Headquarters and the Regions and it fell into three specific areas:-

1) The Creation of Leads. Each adviser was asked to produce three contacts per month of companies or individuals who showed interest in the materials. It was intended that this should be done on an opportunity basis rather than as a specific activity, and to be done in a soft sell fashion .

2) Follow-up of Sales. In the event of a sale, local staff were requested to make a half-day visit to the purchase to advise on how the material could best be used. For this the Region would get a commission of £50 per package. From a Regional Manager's point of view this was an uneconomic proposition when the cost recovery rates for their staff's time was £350 a day.

3) Video Pack Sales to Educational Establishments. Educational establishments were envisaged as being a potential outlet for the video components of the packages, and for the sale of these the Regions would get a 25% commission on the retail price of any order.

These procedures had either not been properly implemented or had lapsed. Part of the reason for this might have been the fact that some EITB managers could have considered Open Learning an uneconomic activity to be involved in. Another factor was that there was no coordinated or central control over the production and delivery of all of the Board's Open Learning material. On appointment to the Midlands Region in June 1987, one of the first exercises I carried was to identify the materials produced by the Board, their source and their purchasing point (Table 24). Since then there have been no significant changes to this piecemeal approach. Consequently it is inevitable that the Board fails to meet the Code's requirement for 'clear management structures and plans by means of which to operate effectively and efficiently'.

Purchasing Points for
EITB Open Learning Materials

Name of Package	Purchasing Point
1) The Design Series	Headquarters
2) Failure Modes & Effects Analysis	Publications Unit
3) An Introduction to Surface Mount Technology	Eastern & Southern Offices
4) Managing Major Change	Wales Office
5) BS 5750: Quality Audit	Leeds Office

TABLE 24
Source: Internal EITB Documents

Monitoring & Correcting

It is implicit that if there are major weaknesses in the quality of the delivery, and to a lesser degree the production, of Open Learning materials then there is a failure to adequately monitor and correct quality problems. Kepner Tregoe (1963) defined a problem as 'a shortfall in an expected standard of performance'. Without adequate planning and structures the standards of performance have not been set, and this is the case with the EITB. A commitment from management to adhere to the minimum standards laid down in this Code would have been a significant step forward.

Dealing With Complaints

A formal complaints procedure does not exist but the present informal methods of dealing with quality problems could be improved upon to meet this requirement.

Liaising With Others

No formal procedures exist to regularly liaise with deliverers or customers in order to improve the existing programmes. Major changes to the methods of operation would be required here in order to meet the Code. Appropriate systems for regular quality reviews would need to be installed.

2.7.8 Conclusions

The first point to make is that within the organization it is assumed that because programmes are produced by the EITB then de facto they must be of the very highest quality. If this were the case then the Board would be providing products and services that its customers wanted and this would be reflected in the volume of sales (which have hitherto been very modest). The counter-argument to this and an often heard comment within the organization is that the Board never envisaged that the products would be commercially viable. The programmes were produced by the EITB (in its capacity as a statutory training organisation) as resource material for the industry which it serves and not as a profit-making venture. The answer to these arguments and counter-arguments probably lies in the fact that the Board has produced what it perceived that the

industry needed rather than what the industry wanted. The internal survey failed to give a clear indication of the staff's views on this issue.

Whilst there are major weaknesses to the manner in which the Board approached Open Learning (both production and delivery) it has the capability to more than meet the quality recommendations laid down in the Code of Practice. As with all instances where quality standards need to be implemented it requires commitment from the senior management within the organization. For instance, Crosby's first step of the Quality Improvement Process is to 'Establish Management Commitment' (see Bendell, 1989). To proceed further along the route of improving the quality of the EITB's Open Learning, decisions would have to be taken at the highest possible level within the Board. The main conclusions from our researches are:

1) Improvements could be made in the delivery of the Board's Open Learning materials.

2) A pre-project survey would have helped to evaluate the impact of the Training Agency contract upon EITB practices.

3) The internal survey identified that staff training was a weakness.

4) Lack of information precludes a detailed assessment of the manner in which the production of EITB materials complies with the Code of Practice. Inferences from the internal survey imply that Part One of the Code is not being entirely met.

2.8 Concluding Remarks

'Evaluating Open Learning' has a precise meaning.

Evaluating Open Learning is the process of selecting the most appropriate Open Learning materials to meet an identified training or educational need. It is assessing their fitness for purpose.

Specific techniques for evaluating Open Learning have not been found.

Five desirable characteristics of an Open Learning evaluation technique are that it should be practical, consistent, quantitative, documented and flexible.

There is an Open Learning Code of Practice.

The Open Learning Code of Practice sets out, in general terms, a series of requirements for ensuring quality in Open Learning. These have been distiled by the Training Agency into 81 key points known as the Assessment Criteria. My contribution has been to propose 14 specific and practical guidelines to help producers of text-based materials.

The Code, BS 5750 and the Assessment Criteria are linked.

The Code of Practice, BS 5750 and the Assessment Criteria are all linked. With the exception of qualifications compliance with the Code of Practice will ensure compliance with the Assessment Criteria. The Assessment Criteria is biased towards testing the effectiveness of production rather than delivery. It does not test for compliance with Part Three of the Code (Requirements of Producers and Deliverers). BS 5750 does not address the requirements in the Code for "Attracting Clients" and "Informing Users". Because of its manufacturing bias there are sections of the standard which are not applicable to Open Learning production or delivery.

There are shortfalls in the way the EITB meets the Code.

An internal survey confirms my view that improvements could be made in the delivery of Open Learning materials in the EITB's Midland Region. Lack of information precludes a detailed assessment of the manner in which the production of EITB materials complies with the Code of Practice. However, inferences from the internal survey imply that Part One of the Code is not being entirely met.

3.1 Defining Quality

To define quality in the context of Open Learning.

> *'There is hardly anything in the World that some man cannot make a little worse and sell a little cheaper; and the people who consider price only are this man's lawful prey'.*
>
> John Ruskin 1819-1900.

3.1.1 Definitions of Quality

The obvious source for a definition of quality in Open Learning is the handbook "*Ensuring Quality in Open Learning*" (MSC, 1987). Unfortunately this does not give definitions of either quality or of Open Learning. What the handbook does do is to list 233 desirable attributes of Open Learning presented in the form of key questions. This is consistent with one of the commonplace definitions of quality which is 'the degree of excellence'. My view is that this approach is flawed because what may be excellence in an Open Learning programme for one target audience might be undesirable in a programme for another. As an example, take the need for the Open Learning to be learner-centred. The style and tone of any text in the programme would come under this general heading. It is quite obvious that a producer could not use the same style and tone for an audience of senior managers as he would if writing for an audience of power-press operators. Because of these difficulties the Code of Practice fudges the issue by asking this vague question of producers: have you taken adequate steps to be sure that you have identified the learners' needs? (see section C.2/K of the Code of Practice).

A general observation here is that I believe that there are two missing elements to the Code of Practice. Namely, crisp and precise definitions for both Open Learning and quality in Open Learning. Without these fundamentals the Code of Practice is destined to be couched in vague and woolly terms.

Another commonplace definition of quality is 'fitness for purpose', this has been some credence by being referred to in BS 4778: Part 1: 1987 - Quality Vocabulary (BSI, 1987). This has been refined (Fittall, 1990) to become:

> *'Quality is the TOTALITY [my emphasis] of features and characteristics of a product or service that bear upon its ability to meet a given need'.*

This gives a more focussed approach to the problem of quality in Open Learning - providing, that is, that the 'purpose' or 'given need' is known. This is a more useful definition than the degree of excellence in that it ties in with the recurring theme in this thesis of there being an identified training or educational need for the Open Learning. It also confirms the importance of having a clear understanding of what is meant by Open Learning. To re-emphasise what was said in section 1.1.11, Open Learning has the following characteristics:

1. It is education or training.

2. It is flexible in the time, place and pace of learning.

3. It has the facility to be externally controlled and monitored.

4. It meets an identified education or training need.

5. It has a target audience.

It is only when these characteristics have been identified that an informed judgement can be made about the quality of an Open Learning programme.

3.2 A New Evaluation Technique

To propose a new rigourous evaluation technique for quantifying the quality of Open Learning programmes.

3.2.1 Basic Principles

The concept behind the proposed evaluation technique is that of assessing a particular Open Learning programme against the requirements of the Code of Practice. The vehicle for doing this is the Assessment Criteria, which is an abbreviated checklist for Parts One and Two of the Code of Practice.

3.2.2 Characteristics of the Technique

The technique is based upon a systematic review of the key points in the Assessment Criteria and an examination of whether the Open Learning programme meets the minimum criteria laid down in the Code of Practice. This methodical approach allows the decision-making process to be recorded for

future reference, with the advantage that invaluable management information is available for carrying out a post-training review of the Open Learning programme (see input evaluation, section 3.8.2).

The unique feature of this technique is that it is quantitative. It enables an objective discrimination between apparently similar materials to be carried out. In principle the system is simple with each of the 12 Assessment Criteria being given a ranking according to its perceived contribution to the quality of Open Learning. Combined with this is an assessment of the degree of compliance with which the particular programme meets each of the individual criteria. As stressed time and again it is vital that the training or educational need is clarified because without this it is not possible to assess fitness for purpose.

The new technique that is being proposed aims to meet the desirable characteristics that were specified in section 2.2.1. That is, it must be practical, consistent, quantitative, documented and flexible. In the remainder of this Chapter I aim to demonstrate that the technique possesses these features.

3.3 Ranking the Assessment Criteria

To propose a system for ranking the order of the revised Assessment Criteria in terms of their contribution to the quality of training programmes.

3.3.1 Refining the Assessment Criteria

The Assessment Criteria being used in this investigation have arisen from the recommendations made in a Pilot Study commissioned by the Training Agency. As part of that study, a checklist was devised for evaluating Open Learning packages (MCI, 1989) but in their unpublished concluding report the project team proposed amendments to form what was called the Revised Assessment Criteria (previously referred to as Appendix 7). Whilst these revised criteria remained as recommendations they were neither field-tested nor proven. Consequently, the first stage of this part of the research was to clearly define and quantify the attributes and characteristics of the learning material that would constitute full compliance with the criteria.

3.3.2 Quantifying Compliance

In testing for compliance with the Code of Practice, each of the 12 essential criteria need to be examined to see whether the desired characteristics appear in the package being evaluated. Appendix 16 gives a description of the benchmarks used during the evaluation process. In the majority of cases the assessment would be based upon a polar decision although the system does allow for the indication of whether major or minor changes are required for total compliance. This allows for discrimination amongst the non-compliant products. My experiences are that very few packages fully meet all the criteria in every respect (see section 3.6).

The Pilot Study proposed four sub-classifications of compliance: "*Fully Acceptable*", or "*Minor Changes Needed*", or "*Major Changes Needed*" or "*Not Important*". It was felt that "*Unacceptable*" more accurately described a complete failure to meet the Code of Practice rather than the more misleading phrase of "*Not Important*" because this implies that the criteria is not applicable to that particular product.

Based upon the analysis work of cross-referencing the Assessment Criteria and the Code of Practice, as described in Chapter 2.4.2, I would argue that all the criteria are relevant to Open Learning programmes and that the phrase "*Not Important*" is likely to make both producers and deliverers of these materials become complaisant about the quality of their products.

3.3.3 Ranking the Assessment Criteria

Practical experience and personal discussions with EITB colleagues (and other practitioners) indicates that the evaluation criteria contains some elements that are considered to be more important than others in their contribution to the overall quality of Open Learning materials. This fact was acknowledged in the pilot study when the first four criterion were identified as being equally important, with the remaining eight criteria listed in their order of significance (unpublished Training Agency report, 1989). Opinions do differ over the rank order of the criteria so it was agreed with the Training Agency that the performance criteria should be ranked on a scale of one to ten.

Table 25 gives the complete list of the weightings used and these are primarily based on my experiences of Open Learning in industry, and as such they are arbitrary judgements and subject to criticism. However, more tangible evidence to support these decisions comes from reviews of both the Code of Practice and the available technical literature as described in Chapter 2. In principle the order of the ranking remains as recommended by the pilot study except for the following changes:-

1. Support

This item appeared ninth on the list, but consultations with EITB colleagues and the Project's Steering Committee indicates that support for the trainee is of great importance and has consequently been given an improved weighting of 9 out of 10 (now joint second). One of the committee members summed up the general consensus by saying (Clarke, 1991):

> *'Rarely do we find trainees who are suitably motivated to complete packages on their own, and without tutorial support they don't progress through the packages'.*

Jeram (1985), Critten (1985), Lewis (1984 and 1988) and others have all identified the importance of tutorial support in successful Open Learning (see particularly section 2.3.15).

2. Flexibility

This characteristic was considered to be of greater importance than that attached to it by the pilot study and was given an improved ranking of joint sixth on the list with 8 out of 10. Flexibility is a key characteristic of Open Learning as highlighted by Tinsley (1986), Temple (1988), Cooper (1986), Williams (1986) and others. Programmes that are rigid in the time, place and pace of their delivery do not meet our project definition of Open Learning. It therefore seems appropriate that any ranking of the Assessment Criteria should reflect this. As we have already said, uncontrolled patterns of learning are undesirable in Open Learning. It would therefore be incorrect to bias any ranking too much in the other direction.

3. Qualifications

Whilst in themselves qualifications do not make for good Open Learning material they are often essential ingredients in the motivation of trainees. It also demonstrates that the training was of sufficiently high standard as to be awarded

a nationally recognized qualification. Accordingly this criteria has been up-graded from the eleventh most important to eighth with a weighting of 7 out of 10.

Weightings Attached to the Assessment Criteria

Criteria	Weighting (out of 10)
1. Learning Aims Clearly Stated	8
2. Relevant Learning Design	10
3. Learning Outcome Achievable	9
4. Learner Centred Provision	9
5. Presentation	9
6. Relevant Product	8
7. Evidence of Piloting and Usage	5
8. Accessibility and Product Marketing	5
9. Support	9
10. Flexibility of Use	8
11. Qualifications	7
12. Diagnosing Learner Needs	5

TABLE 25

This view is somewhat biased in that accreditation has been at the core of the EITB's philosophy on improving the standard of training in the engineering industry. In reviewing the achievements of the Board over its 25 year existence, Harry Gadd, the Chief Executive underlined this policy by saying that the EITB had established and maintained quality training standards (EITB, 1989), in particular the recommendations for craft and technician training. These are now accepted as the norm in the engineering industry and in other sectors (HMSO, 1989).

Having established classifications of compliance and a rank order for the Assessment Criteria, the next stage of the research was to propose a product scoring system.

3.4 Product Scoring

To develop a simple technique for determining a product score for the quality of Open Learning programmes.

3.4.1 Failure Mode and Effect Analysis

In constructing a product scoring system, a significant influence has been the technique known as Failure Mode and Effect Analysis (FMEA). This is used within the engineering industry for assessing likely failures in products and processes (EITB, 1986), and it has found particular favour in the automotive industry. It has some of the characteristics that are being looked for in any new Open Learning evaluation technique, namely, it is documented, quantitative and consistent.

The technique works by analysing each component and sub-assembly looking for potential modes of failure. Once these have been identified, the likely severity of the effect of the failures is assessed, together with the likelihood of the failure occurring and of it being detected. This information can be used to establish a Risk Priority Number (RPN), (Table 26). FMEA investigations are usually undertaken by a small design or production team. However, specialists may need to be called upon for specific help. The process is usually recorded by entering the results onto a standard pro-forma (Appendix 17). In carrying out a design FMEA three questions need to be asked:

- How could this process, part or assembly fail?
- What effect would the failure have?
- What might cause it to fail?

Having established these factors, the next stage is to make assessments of:

- How likely is it to fail?
- How serious might it be?
- How likely is that the fault will be detected before reaching the customer?

Risk Priority Number
in Failure Mode and Effect Analysis

$$RPN_{(n,i)} = O_i S_i D_i$$

Where, RPN is the Risk Priority Number for component n, failing in mode i.
O_i = Occurrence of Failure Rating
S_i = Severity of Failure Rating
D_i = Detection of Failure Rating

TABLE 26

Rating tables can then be used to convert these risk factors onto a scale of one to ten. By referring to sets of standard rating tables a consistent approach to quantifying the effects of a failure mode can be achieved. Table 27 shows an example from Jaguar Cars of a Rating Sheet for how they rate the severity of a failure. Similar standardized sheets exist for rating the risk of occurrence and non-detection of failures.

The RPN can then be calculated from the product of these three ratings. The RPN must be calculated for each cause of failure. So five different modes of failure will have five separate RPN's. The greater the RPN the greater the risk of a serious failure occurring and of it reaching the customer undetected.

The value of the FMEA technique to this research is that it provides a well-proven method for establishing a documented, quantitative and consistent scoring system. These ideas are transferable to a system for evaluating Open learning materials.

3.4.2 Likert Scale

An added refinement to our technique has been to introduce the idea of quantifying the closeness with which the product meets the Code of Practice by scoring the quality of the materials. The method adopted has been an amended Likert Scale (Likert, 1961). Likert's rating scale measures the disposition of individuals towards some given object or issue. The measurement is made in

terms of intensity of those dispositions. This is done by summing each individual's response/reaction to a series of favourable and unfavourable statements about the object or issue. An example is given in Table 28.

Rating Table for Rating the Severity of Failures

CRITERIA	Rating
MINOR SEVERITY A very minor failure which would have no noticeable effect on vehicle or system performance. Customer would probably not notice the failure.	1
LOW SEVERITY A minor failure causing only slight customer annoyance. Customer would not notice any deterioration of sub-system or vehicle performance.	2 3
MODERATE SEVERITY A failure which would cause some customer dissatisfaction, discomfort or annoyance (eg radio speaker buzz, high pedal effort) or would cause noticeable deterioration in sub-system or vehicle performance.	4 5 6
HIGH SEVERITY A failure which would engender a high degree of customer dissatisfaction (eg inoperative control). Does not affect vehicle safety or ability to meet vehicle regulations.	7 8
VERY HIGH SEVERITY A failure which would affect safety or ability to meet vehicle regulations.	9
CATASTROPHIC A failure which may cause damage to property, serious injury or death.	10

TABLE 27
Source: EITB, 1986.

Profile of Organizational Characteristics

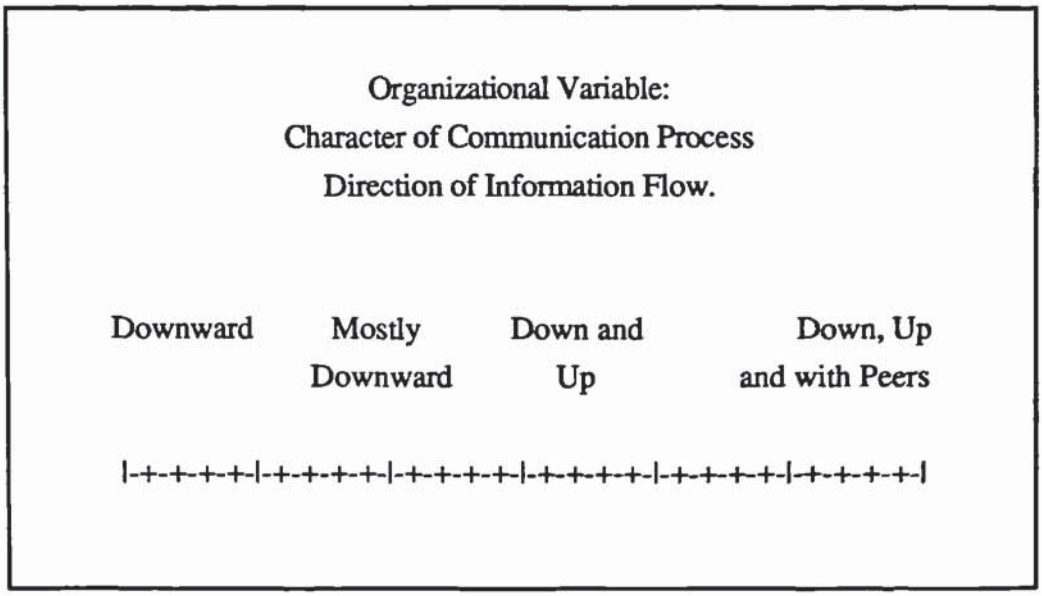

TABLE 28
Source: Likert, 1967.

Likert scales are commonly used by trainers in end-of-course questionnaires to assess reactions to training events. For use in an Open Learning evaluation technique, the scale has been modified to accept the classifications of compliance with the Code of Practice, namely, fully acceptable, minor changes needed, major changes needed and unacceptable. Each classification has been given a ranking on a scale of one to five (see also section 3.4.4):

Fully Acceptable:	5 points
Minor Changes Needed:	4 points
Major Changes Needed:	2 points
Unacceptable:	0 points

Hence, the product scoring system can be expressed as in Table 29.

Thus a product that fully meets the Code in respect of "qualifications" would get 35 evaluation points (fully acceptable x weighting of qualifications). By examining all twelve criteria it is possible for a product fully meeting the Code of Practice in every respect to obtain a maximum of 460 evaluation points.

Product Scoring System
for Evaluating Open Learning Materials

$$Ps = \sum_{x=1}^{12} a_x b_x dx$$

Where
Ps = Product Score
a_x = Weighting of Criteria x
b_x = Product Ranking for Criteria x.

TABLE 29

3.4.3 Designing Consistency into the Quantitative Technique

Before addressing the issue of scoring compliance it is important to say that the specification for a new technique (section 2.2.1) required that it be consistent. There are two main areas of concern here, validity and reliability. Validity examines whether the design of the technique is sound whereas reliability is concerned with the robustness of the technique in usage.

Validity of the methodology

1) weightings of the assessment criteria
2) scoring of compliance

Reliability of the methodology

3) Variance between the evaluations of individuals (inter-evaluator)
4) Variance within an individual's evaluations (intra-evaluator)

The weightings and rational relating to the assessment criteria have already been explored in some detail in section 3.3.3. This section deals with the issues surrounding the scoring of compliance. Intra- and inter-evaluator error are discussed more fully in section 5.2.4 "*Training the Evaluators*".

3.4.4 Scoring Compliance

Essentially, compliance has been categorized into one of four groupings. Initially it was thought that scoring was a more straight-forward matter than this because most of the decisions *appeared* to be binary (eg. Open Learning

programmes either had clearly stated learning objectives or they didn't, other examples were 'Diagnosing Learner Needs' and 'Accessibility' both of which had binary outputs). However, this proved to be inappropriate when considering issues like 'Qualifications' where there is a hierarchy of nationally recognized qualifications. In these types of situation, an ordinal rather than a binary scale seemed more appropriate. The approach adopted was to follow the quality assurance theme and to categorize compliances and non-compliances into four groups. The mixture of the two scales (binary and ordinal) may seem unsound but it will be shown that converting all the non-compliances into binary format[1] (referred to as polar scoring) in fact makes no significant difference to the overall rank order of product scores.

The next step in producing a quantitative technique was to define a scale of suitable range and increments, and to then define the relative positioning of the four classifications of compliance. The range of the scale was chosen as 0-5 with increments being confined to integers only to give a six point scale. In quantitative work, the use of zero is not normally encouraged because of the mathematical and statistical problems that it can cause. In this case these considerations were over-ruled to enable binary decisions (5 or 0) to be included. The temptation to use a wider range was resisted (eg. 1-10 or 1-100) on the basis that the number of divisions in the scale might imply a higher accuracy than could realistically be achieved.

This restricted range of the scale was designed-in to the system so that a single mis-classification of compliance by an evaluator would not distort the overall product score. What was needed was a low resolution scale with a low numerical ratio between intervals.

It was felt that the six points on this ordinal scale allowed for sufficient differentiation between the categories of compliance but without giving a misleading impression of high accuracy.

A negative scoring system was not considered suitable for several reasons. Firstly it would require more than the four classifications of non-compliance. Other terms such as 'detrimental' and 'very detrimental' would need to be included in the technique. This would increase the likelihood of evaluator error

[1] 'Major Changes Needed', and 'Minor Changes Needed' become converted to 'Unacceptable'.

(there would be six or more categories to choose from instead of the existing four). Secondly, it would increase the range of the ordinal scale and increase the number of intervals required which would add to the impression of greater accuracy. Thirdly, it would increase the complexity of the instructions and guidelines needed for the evaluators detracting from the simple and pragmatic approach of the methodology.

Errors due to multiple mis-classifications are discussed more fully in section 6.2.

Defining the upper and lower limits of the scale as 0 and 5, also defined the positioning of 'Fully Acceptable' and 'Unacceptable'. The other two points on the scale could be placed on any of the other four remaining integers providing they were in ascending order and maintained the integrity of the ordinal scale. Their placement was not necessarily confined to a linear scale.

A linear distribution across the scale would have positioned 'major changes needed' at $1^2/_3$ points and 'minor changes needed' at $3^1/_3$ points. It was intended that there should be a distinct and non-linear gap between these two scorings. 'Minor changes needed' was rounded-up to the nearest integer and assigned 4 points. This reflected the fact that this category was intended for comparatively small non-compliances and so it was closely aligned with the scoring for a compliant product (5 points). However, 'major changes needed' represented a significant departure from the Code of Practice and was penalised accordingly by being assigned 2 points.

In devising a scoring system for assessing compliance with the Assessment Criteria, a major consideration was the fact that most of the assessments required the evaluator to make a subjective decision about particular characteristics of Open Learning programmes. For example, in assessing whether a programme is learner centred the evaluator needs to envisage how the materials will present themselves looking from the viewpoint of the target audience. Whilst guidelines about the interpretation of the criteria can, and have been defined, there will always be circumstances where the evaluator needs to use their own judgement. These judgements will be affected by the prejudices and pre-conceptions of the evaluators and differences of opinion are to be expected. The difficult nature of the evaluation task stems from the fact that it is not always possible to discriminate between categories of compliance without

the designer being unduly prescriptive. Greater precision might be achieved through a high resolution scale but this would be at the expense of flexibility and practicality.

It is important to say that any product scoring system contains arbitrary decisions that the designer has had to make. Obviously these are open to question. However, I have tried to show that this scoring system is based upon the tried and tested methods of FMEA and Likert, and that the subjective decisions have been kept to a minimum.

3.5 Concluding Remarks

The quality of Open Learning materials refers to their fitness for purpose.

In order to be able to assess the quality of an Open Learning product it is necessary to know the purpose for which it will be used. An unambiguous way of doing this is to have training aims and objectives written in behavioural terms.

A new evaluation technique is proposed.

The technique has five key characteristics. It is:

- Practical
- Quantitative
- Consistent
- Documented
- Flexible

The next chapter describes how the technique has been tested on a range of Open Learning products. As mentioned in section 1.6.2 the vehicle for these studies has been a commercial contract between the Training Agency and the EITB. The constraints that this placed upon the research (in terms of manpower, time and money) are explained. Emphasis is also placed upon the reasoning behind the selection of the evaluated products.

4.1 Selecting Subject Titles for Evaluation

To decide upon a suitable series of subject titles for evaluation and to justify the decision making process.

4.1.1 Introduction

In selecting a range of subject titles for evaluation the Board were aware of the fact that the Training Agency were committing £65k of government funds to this project, of which £14K was allocated to the evaluation of Open Learning packages. With such large sums of public money at stake it was reasonable for the Training Agency to expect the Board to be accountable for the way in which it spent those funds. In validating the contract's stage-payments, the Training Agency were particularly interested in seeing how the range of subject titles for the evaluations were selected. The reason for this was that in the business plan and original submission for funding (Cooper, 1988) it was envisaged that initially 70 products would be evaluated. Out of these, ten or twelve of the better quality products would then be added to the Board's portfolio of products and services. Consequently the selection of a suitable range of products was a key decision in determining the commercial success of this project. At that time the range of Open Learning materials available was quite extensive with over 1500 products listed in the "*Open Learning Directory*" (Training Agency, 1989). From these a handful had to be selected to form the basis of the Board's commercial Open Learning activities in the Midlands. The selection of an appropriate range of products was therefore of vital importance. Consequently, a systematic approach to the decision making was a necessity.

Another influencing factor was that the Board were indirectly accountable to the engineering industry at large - including the suppliers of Open Learning materials. In particular those producers whose materials were not selected for evaluation - for they would have a legitimate right to ask why their products had been excluded from the study. As a public sector organization the Board were accustomed to being subject to this sort of scrutiny but because public monies were at risk, this added to the need to justify the decision making.

4.1.2 Kepner Tregoe Decision Analysis

The technique adopted for the decision making process was one known as 'Kepner Tregoe'. The guiding principles for the technique are explained in the text "*The New Rational Manager*" (Kepner et al, 1963). The reason for its selection was that it is particularly valuable when making complex decisions that need to be justified. Its advantages are (Perkins, 1989):

- To summarize complex situations
- When alternatives are not always obvious
- When planning to implement a decision may be complex
- When peer groups are in a decision making situation
- When there are autocrats in decision making committees
- When the reasoning behind a decision or recommendation needs to be demonstrated

A key characteristic of KT is that it is documented process. For the Board's purposes this was an important consideration because the Board were required to keep financial and other records for five years after the completion of the contract.

KT does have its limitations. Firstly, it is not applicable to simple binary decisions. Secondly, it is a time-consuming task which according to practitioners can take between 5 and 10% of a project's planning phase (Perkins, 1989). Whilst aware of this, it was felt that the selection of a balanced group of subject titles was critical to the project's success and that it was worth spending the time on the analysis work. The whole process actually took four working days to complete (over an elapsed period of two weeks) which represented 10% of the 40 working days allocated to evaluation.

4.1.3 The Decision Statement

Kepner Tregoe give a succinct definition of their process which helps to provide a focus to decision making:

> **Decision analysis** *is a systematic putting together of information and judgement to arrive at a committed course of action'.*

This leads to the first step in the KT process which is the derivation of a decision statement. This helps to clarify the purpose of the decision which was:

> *To select subject areas for the evaluation of Open Learning material.*

From this objectives for the decision can be set. These are generated from asking the questions 'what results do we want from the decision?' (outputs) and 'what resources are we prepared to commit?' (inputs).

4.1.4 Deriving the MUSTS Statements

The objectives are classified into those that are essential and those that are desirable. An important aspect at this stage is to ensure that there are no overlaps between the objectives. The essential objectives are called MUSTS and it is usual for there to be no more than two or three of these. A vital aspect of the MUSTS statements is that they have to be quantifiable. For each potential solution, the decision maker has to be capable of reaching a polar decision (GO or NO GO) as to whether the solution meets the MUSTS criteria.

Consider the two essential requirements for selecting subject areas for evaluation. The first was that solutions must fall into an EITB product grouping. In the Board's move towards commercialism, the products and services that were being offered were rationalised into four product areas - training technology, business systems, technology and people skills. Potential solutions either fall into one of these groupings or they don't. For example, instructional techniques (training technology) would be a GO, as would be pattern-making in the foundry industry (technology).

Secondly, the subject area had to be one where there was an existing market for Open Learning materials. It would have been fruitless to choose a topic area in which there were no Open Learning products. Two benchmarks were used for

this. Either it had to be specific products with proven sales records or it had to be a recognizable market niche in which there were a range of individual Open Learning products. A convenient measure for this was the number of entries in the "*Open Learning Directory*" (Training Agency, 1989). To have only chosen the later option could have resulted in the exclusion of topic areas where a sole producer monopolised the market.

The MUSTS statements formed an essential part of the decision making process. Any subject title that failed to meet the MUSTS criteria got no further consideration. A key to the effective use of Kepner Tregoe is the correct selection of the MUSTS statements. If they are set too stringently then valuable potential solutions are lost. If on the other hand the criteria are too lax then valuable time is wasted in investigating inferior solutions that should have been discarded at the outset.

Effective MUSTS statements ensure that only viable alternative solutions are allowed to remain in the process and proceed to the next stage.

4.1.5 Deriving the WANTS Statements

These are the desirable objectives. The technique requires that the WANTS statements be put into a rank order and weighted on a scale of one to ten. Table 30 lists the WANTS (and their weightings) used in this analysis work. As with the essential criteria, care needs to be taken to ensure that the WANTS can all be quantified or estimated. The most time-consuming part of the KT process is collecting the information to be able to qualify the WANTS statements for each alternative.

4.1.6 Generating Alternatives

Having established the criteria against which the decisions will be made, the next step is to generate alternatives (in Kepner Tregoe parlance this is deriving a set of potential solutions) which can be assessed against the MUSTS and WANTS. This is the stage at which brain-storming can play a part. It is important to note that brain-storming is sometimes wrongly confused with decision making. In the Kepner Tregoe method it is just one small aspect of the total process. Fortunately a ready made set of alternatives already existed in that one of my colleagues had recently carried out an audit within the Midland

Region to assess the range of commercial activities that were being undertaken (Williams, 1989).

Weightings Attached to the WANTS Statements

WANTS Statements	Weighting
Have Applications for In-Scope Companies	10
Support Regional EITB Initiatives	9
Support National EITB Initiatives	8
Have a Long Product Life Cycle	7
Have Regional EITB Staff who can Provide Tutorial Support	6
Have Applications for the Development of Regional EITB Staff	5
Have Applications for Out-of-Scope Companies	4

TABLE 30

He identified that there were no less than 74 separate products or services being offered. This confirmed my intuitive feeling that the Board were being too diverse in their commercial activities.

Table 31 summarizes Williams's findings by classifying the activities into the product groups and the types of service being offered. Bearing in mind that the subject areas selected needed to be consistent with the existing product range, Williams's list proved to be an ideal input to the KT process.

EITB Products and Services Being Offered in the Midland Region (July 1989).

Product Groupings	Number
Training Technology	13
Technology	18
Business Systems	19
People Skills	24
SUB TOTAL	**74**
Types of Service	**Number**
Training Resource Materials	6
Consultancy (fee-paying)	25
Advisory (free of charge)	25
Courses (free and fee-paying)	28
SUB TOTAL	**74**

TABLE 31

Source: Williams, 1989.

4.1.7 Measuring the Alternatives against the MUSTS and WANTS Statements

All 74 alternatives were able to meet the first MUST requirement, that of falling into an EITB product grouping. However, 54 of these failed to meet the criteria for being in an existing market for Open Learning materials. The remaining 20 were then assessed for how well they met the WANTS criteria. This next stage involved a lot of information gathering. Each alternative had to be assessed against each of the WANTS statements, requiring in all 140 qualified judgements to be made. The analysis work for this part of the process was recorded onto standardized worksheets, and these are given in Appendix 18.

4.1.8 Tentative Decision and Adverse Consequences

Having gathered the necessary information, each alternative was assessed against its ability to meet the highest ranking WANTS statement. The alternatives were then rated on a scale of one to ten. A 'weighted score' was then found from the 'weighting' times the 'rating'. By repeating this procedure for each of the criteria an overall score was obtained. The higher the score the closer the alternative is to being the ideal solution. Table 32 summarizes the results of the analysis.

From the completed scores the two highest scoring subject areas from each of the four EITB product groupings were selected. These eight solutions were assessed for 'adverse consequences'. This part of the KT process allows the decision maker to review whether there are any risks that can be identified in the tentative choices. In this case there were no changes except in the business systems group. European Languages was a clear 'first best choice' (480/490). However, Statistical Process Control (SPC) and Quality Systems were closely scored.

There were reasons why the Board had considered these to be separate items. The EITB's Midlands Region specialised in providing consultancy advice on implementing quality assurance systems, whilst at a national level the Board were interested in promoting an interactive video for the training of operators in SPC (EITB, 1988). It would have been inconsistent to have selected SPC alone because it is in fact an integral part of quality assurance. Consequently, a review of the adverse consequences led to the second best choice being amended to Quality Systems including Statistical Process Control.

One other comment is that the choice of Open Learning as a subject area for evaluations seems to be an anachronism. Why evaluate Open Learning materials that are about Open Learning? There is actually a logic to it in that it is an area in which the EITB had both expertise and commercial experience which more than equalled that in some of the technical areas such as engineering design. The only surprise is that it met the MUSTS criteria for being in an existing market for Open Learning materials. In fact, I was able to locate an astonishing 33 packages, which is more than any of the other 73 alternatives that were considered.

Results of Kepner Tregoe
Decision Making

Product Groupings	Weighted Score
Training Technology	
Open Learning	386/490
Training Planning	270/490
People Skills	
Basic Supervisory Skills	371/490
Basic Management Training	300/490
Technology	
Basic Electronics	423/490
Engineering Design	381/490
Introduction to Wordprocessing & Office Management	283/490
Computer Literacy	272/490
Spreadsheet Fundamentals	212/490
Information Technology	196/490
Introduction to CAD	151/490
Introduction to Robotics	61/490
Business Systems	
European Languages	480/490
Statistical Process Control	301/490
Quality Systems	286/490
Marketing	259/490
Business Planning	241/490
Finance for Non-Financial Managers	130/490
Starting a Small Business	119/490
Financial Analysis	105/490

TABLE 32

Before settling on the final choice of subject titles, the tentative list was discussed with the Training Agency and the Steering Committee (at a meeting held on the 6th October 1989) to see whether or not they were in agreement. The general consensus was that the list covered the range of products that they felt were likely to be of interest and benefit to the industry. Two further points

were made. At the next stage (selecting individual products for evaluation) the committee felt that the Board should look at the 'cheap and cheerful' end of the spectrum of Open Learning products. For guidance, they suggested that we use an upper limit of £250. The second point was made by Bernadette Tivendale of Dudley Technical College. She felt that the Board should include Open College products in its evaluations. My only reservation was that at that time the Open College had not proven itself - all their products were new and the Open College had not sufficiently established itself in the market place. This is just one example of what I meant by the Board being open to scrutiny. In this case one of the agent's for Open College materials was saying 'why haven't you included our products in your evaluations?' This sort of remark confirmed the view that documenting the decision making was going to have to be a characteristic in the next stage of the project - that of selecting the 70 Open Learning products for evaluation.

After these consultations the eight subject areas remained unchanged as European languages, quality systems (including SPC), basic electronics, engineering design, Open Learning, training planning, basic management training and basic supervisory skills.

4.2 Selecting Materials

To select a range of materials for evaluation covering different media.

4.2.1 Selection Algorithm

In order to be systematic about the selection of products, an algorithm was devised which incorporated the key selection criteria (Appendix 19). These were:

1. To use EITB products in preference to other suppliers.
2. To review packages on a sale-or-return basis before making a commitment to purchase.
3. If this was not possible to obtain loan copies from other sources.
4. To use the most reputable suppliers.

Whilst in principle this was a good idea, the algorithm turned out to have several fundamental flaws. The first was that producers were not always willing to

release packages on a sale-or-return basis. With hindsight it was naive to think that they would. There appeared to be two reasons for this. Firstly, for those products that were priced at below £50 the costs of administering a sale-or-return scheme was uneconomic. Secondly, illicit copies could be taken of Open Learning materials that used transferable media (particularly videos and CBT).

4.2.2 Subject Area

Another weakness was to use the terminology of 'most reputable supplier'. This assumes that there is an approved list of suppliers. This was not the case at all. In fact an approved supplier list was a desirable output from the evaluation phase of the project (see Section 4.2.5). The selection process was carried out through a dialogue between myself and the EITB colleague who would be doing the evaluation. Between us we used our best judgement to make a selection and Appendix 20 gives a full listing of the final products.

Distribution of Evaluated Products Across the Subject Areas

Subject Area	Number of Packages Selected
Quality Systems[1]	5
Training Planning	5
Supervisory Training	5
Basic Electronics	7
European Languages	8
Engineering Design	9
Open Learning	10
Basic Management Training	21

[1] Five products were selected in this category but only three were evaluated (see section 5.2.3).

TABLE 33

This worked well except when looking at products in the supervisory and management areas. The problem here was that it was difficult to clearly categorize products that were solely suitable for either managers or supervisors. A pragmatic approach was adopted and a total of 26 products were identified for evaluation from the two subject areas.

Table 33 shows the distribution of the selected products across the range of subject areas. The apparent imbalance between the number of products selected for management training and the number selected for supervisory training can be explained. The individual products have been classified according to the target audience as stated by their producers. This is not necessarily a reflection of their sole use.

4.2.3 Delivery Media Used

Table 34 shows that of the 67 packages selected, the majority (48) were either text-based (32) or video led (16). A smaller number (19) of audio, CBT and Interactive Video packages were chosen.

Distribution of the Media Used in the Selected Products

Media Used	Number of Packages Selected
Audio	5
Computer Based Training	7
Interactive Video	7
Video Led	16
Text Based	32

TABLE 34

4.2.4 Price Range

Interestingly, the seven IV packages were the most expensive, all costing more than £1000. Although this contradicted the 'cheap and cheerful' advice of the steering committee, I felt that it was good practice to include a range of delivery media. Having said that, 40 of the packages (59%) fulfilled the criteria and were priced at below £250 (see Table 35).

Difficulty was found in pricing five of the products. All five were packages for basic management training, of which three were CBT and two were text based. My feelings were that the products were expensive, and that the producers were coy about discussing price alone without talking about the benefits. Certainly in the case of CBT the initial costs are high but can be justified on the basis that in the long run the cost per trainee can be lower than conventional training (Coopers & Lybrand, 1990; Williams, 1986; Woodward, 1986).

Distribution of the Price Range of the Selected Products

Price (excluding VAT)	Number of Packages
< £50	15
£50 - £99	4
£100 - £249	21
£250 - £499	10
£500 - £999	5
£1000 +	7
Not Known	5

TABLE 35

The reason why similar difficulties were not experienced with the IV packages might be explained by the fact that they were reviewed at the Open Learning Centre at Metal Box Engineering in Worcester. The costs of the various packages were obtained through discussion with the client and not through direct contact with the producers of the IV material. The two text based products

were both aimed at the Certificate in Management Studies (CMS) qualifications. One can only speculate that the producers were reluctant to discuss a flat-rate price for their courses because they were interested in selling the added value of residential schools to potential clients.

4.2.5 Sources of Supply for Evaluated Products

A review of the sources of the selected products reveals that there were a total of 39 different suppliers of the 67 products selected for evaluation.

Sources of Supply for the Evaluated Products

Number of Products from a Single Source	Number of Occurrences
9	1
8	-
7	-
6	1
5	1
4	-
3	3
2	5
1	28

TABLE 36

Table 36 shows that 20 of the products (29%) come from three suppliers. Of the suppliers the largest is the EITB (9 products). This is hardly surprising when it is considered that these are the very packages that the Board has the expertise to deliver. In many ways this is a vindication of the selection process. The two other major suppliers were Interactive Information Systems (6 products) and MacMillan Intek (5 products).

4.3 Concluding Remarks

A Systematic Approach was Taken to the Selection of Subject Areas for Evaluation.

Due to the need for accountability Kepner Tregoe Decision Analysis was used to select eight subject areas for evaluation. These were European languages, quality systems (including SPC), engineering design, Open Learning, training planning, basic management training and basic supervisory skills.

A Range of Products were then Selected within these Subject Areas.

The products used a variety of delivery media (text, audio, video-led, CBT and Interactive Video) and were priced from £6.95 to £3120. The 67 products were sourced from 39 different suppliers of which the largest single supplier was the EITB (9 products).

5.1 Consultation with Subject Specialists

To test the proposed order of ranking for soundness by consultation with subject specialists and Open Learning practitioners.

5.1.1 Consultation with the Project's Steering Committee

In order to test the ranking system, it was necessary to consult acknowledged specialists in Open Learning and to seek their views and opinions. I felt that it was particularly important to involve practitioners in the consultation process in order that the technique that evolved should have a practical bias. In this respect the most valuable resource available was the project's Steering Committee. When the views of these specialists were sought (at a meeting held on the 12th March 1990) it was felt that all the criteria were important but that three of the rankings ought to be up-rated - Presentation, Support and Qualifications. However, there were considerable differences of opinion, particularly amongst the deliverers over the role of qualifications.

The representatives on the committee from Technical Colleges argued strongly for attaching greater importance to qualifications, and this is not unexpected when it is considered that the raison d'etre of Open Learning facilities at Technical Colleges is to provide external students with the opportunity to obtain academic qualifications. When sometime later one of the representatives was asked to comment about this, he said (Snow, 1991):

> *'My experience is that they are very important. If an employer expects an employee to work in their own time then they [the employees] expect some sort of quid pro quo in the form of a nationally recognized qualification'.*

A similar view was expressed (outside of the forum of the Steering Committee) by an educationalist who coordinates Open Learning activities in the technical colleges of Hereford & Worcester and Powys County Councils (Macklin, 1991):

> *'We think that they [qualifications] are so important that we have started a project, £20K during 1991/92, to ensure that there is a nationally recognized qualification at the end of every one of our Open Learning courses'.*

This contrasted strongly with the views of the industrialists whose main aim in utilising Open Learning seemed to be to meet an identified training need, to quote one representative:

> *'If a qualification is attached to the training then the we consider it to be a bonus for the trainee - but not specifically for the company'.*
>
> Bob Peters, Open Learning Centre Manager,
> CMB Engineering, Worcester

The Steering Committee meeting resulted in some suggested adjustments to the ranking of the criteria (see Table 37). In addition to the views of the committee, another important source of information was the pilot study.

5.1.2 Reference to the Pilot Study

Whilst the pilot study's work had in fact been concluded there were opportunities to discuss the matter both with our project's Training Agency contact, Chris Stuart (who had coordinated the work of the pilot study) and with Chris Spencer, a consultant who had been involved in evaluating materials for the retail sector.

They (Stuart & Spencer, 1989) had concluded that the first four criteria were the most important with the remainder listed in rank order. I converted these onto a scale of one to ten to compare them with the rankings used in the project during the evaluation phase. Table 37 shows that there are differences of opinion about the ranking of the Assessment Criteria (that proposed by the pilot study, my view and the subsequent refinements then proposed by the Steering Committee).

In order to assess the relative merits of each technique, each of the alternative views was tested upon a 'controlled' set of evaluation data. This had been gained during the contract with the Training Agency in which the Board carried out reviews of 67 Open Learning packages and which is described in the next section.

Ranking of the Assessment Criteria by Subject Specialists

Criteria		Pilot Study	Researcher	Steering Committee
1.	Learning Aims	10	8	8
2.	Learning Design	10	10	10
3.	Learning Outcome	10	9	9
4.	Learner Centred	10	9	9
5.	Presentation	9	9	10
6.	Relevant Product	8	8	8
7.	Piloting	7	5	5
8.	Accessibility	6	5	5
9.	Support	5	9	10
10.	Flexibility	4	8	8
11.	Qualifications	3	7	10
12.	Diagnostics	2	5	5

TABLE 37

5.2 Testing the Technique

To test the technique on a selected sample of Open Learning programmes.

5.2.1 Methodology

During the period August - September 1989, a total of 67 Open Learning packages were evaluated by seven EITB field staff. The evaluations required 22 observations to be made about each training package and it was anticipated that the in-depth evaluation would take approximately one-half manday, this being based upon the experiences of the pilot study. However this proved to be a slight under-estimate of the actual time required (40 instead of the expected 34 working days) probably due to difficulties experienced in acquiring preview copies of Open Learning packages on a sale-or-return basis.

The producers of the materials were contacted and the reason for requesting preview copies was clearly explained as was a verbal undertaking that the results of the evaluations would be made available to them. I took the view that an unwillingness to let the Board scrutinise the material reflected a lack of confidence by the producers in their own materials.

5.2.2 Contractual Constraints

The staffing requirements for the commercial aspects of this project had already been identified in the business plan - basically 100% of my time for three years. This had formed the basis of the original funding proposal submitted to the Training Agency (Cooper, 1988). However, once the work had started it became clear that the first phase (the evaluations) was going to take longer than I had anticipated. Additional help from other members of staff was going to be needed if the task were to be completed on time.

Six months had elapsed between the submission of the business plan and the start of its implementation. During that time operational changes within the Board meant that finding the staff for this job might be a problem. A particular issue was the fact that the operations of the Board were now divided into business units. Any work carried out by a member of staff for another business unit had to be cross-charged to that unit. The consequence was that every manday of effort obtained from another business unit would have cost this project £350.

However, it was successfully argued by my line-managers that this project formed part of an on-going commitment that had been agreed prior to the Board's organizational changes. The result was that no internal cross-charging took place, although the use of staff time from other business units did come under much closer scrutiny.

5.2.3 Appointment and Competence of Evaluators

The selection of the evaluators was based upon three factors; (1) current and anticipated fee-earning work-load, (2) interest in Open Learning and (3) specialist subject knowledge. The seven training staff involved in the evaluation process were:

Evaluator 1:	Myself, Project Manager
Evaluator 2:	M J Brewer, Senior Training Adviser
Evaluator 3:	D Wood, Senior Training Adviser
Evaluator 4:	H R Fitall, Senior Training Adviser
Evaluator 5:	J Kennedy, Training Adviser
Evaluator 6:	N E Alan, Training Adviser
Evaluator 7:	K Shiffman, Graduate Trainee

All the evaluators were experienced trainers who had at least one area of specialist subject knowledge. The only exception to this was the graduate trainee. He was on an industrial placement from Loughbrough University where he was studying for a degree in manufacturing management, and for a short time he was seconded to work for me. I was satisfied that he was competent (with guidance) to evaluate packages in the area of engineering design.

Distribution of Products Allocated to the Evaluators

	Evaluator Number (Initials):						
Subject Area	1 (MJC)	2 (MJB)	3 (DW)	4 (HRF)	5 (JK)	6 (NEA)	7 (KS)
Management Training	20						1
Open Learning		10					
Engineering Design	5						4
European Languages		8					
Electronics					7		
Training Planning						5	
Supervisory Training	5						
Quality Systems			1	1			
TOTALS	30	18	1	1	7	5	5

TABLE 38

Table 38 shows how the Open Learning programmes were distributed amongst the evaluators, which was done according to their specialist subject areas. It is worth saying that the evaluators needed to have a reasonable knowledge of their subject in order to be able to make judgements about the technical accuracy of the programmes that they were reviewing. Whilst this is not a specific heading within the Assessment Criteria, it is indirectly raised under "Learning Outcomes Achievable", and "Relevant Product".

5.2.4 Training the Evaluators - Reducing Intra and Inter Evaluator Error

During the evaluation phase of the project it was essential to identify potential sources of evaluator error. The checking process was extensive. The key aspects of the checking system were:

Same written work instructions to all evaluators
Face-to face training
Usage of a common package for demonstration purposes
Discussion of the interpretation in practice
Discussion of the scoring system
Double marking by myself for 37 out of 67 packages
Explanation of database administration
All scores checked for numerical accuracy by administration staff
Negotiation in areas of uncertainty of the interpretation of the Assessment Criteria
Checked for immediate completion of scoring sheets
Discussion of results with the Steering Committee
Analysis of results by Training Agency

Briefly, all orders for preview copies and purchases of the materials were completed by me. Purchase orders were verified, and invoices were authorised for payment. Materials were delivered to me and before issuing them to evaluators they were physically checked for completeness. I previewed all the materials to make a general / first impression assessment of their quality. This was part of the double-checking process to identify evaluations that were erroneous or suspect. Only three sets of evaluation results were found to be inaccurate.These were traced to one particular adviser (Evaluator 3) and it was found that he had previewed the packages with a view to using them in one of his consultancy projects. It was not until some weeks later that he completed the evaluation sheets, by which time he had returned the packages to the producer but had not recorded sufficient details to be able to accurately complete the pro-forma. Consequently evaluation data only exists for two of the original five Quality Assurance programmes that were selected. The double-checking

procedures were applied to the 37 products evaluated by my colleagues. In areas where they were concerned about the interpretation of the criteria, they clarified the position with me. In this way the integrity of my own evaluations was maintained by the continual review and re-assessment of the Assessment Criteria.

5.2.5 Training Objectives & Training Methodology

At the end of training I expected the evaluators to be able to:

1) Identify the key characteristics that indicate compliance with the Assessment Criteria
2) Extract key information from producers about their Open Learning programmes
3) Complete and record the details of the evaluations onto a pro-forma
4) Provide feedback to producers on the results of the evaluations
5) Ensure the accurate transfer of evaluations onto a database

In order to ensure that the technique would be applied consistently by all the evaluators, it was necessary to provide them with some basic instruction and practice in evaluating Open Learning materials. In assessing the training needs of the evaluators the following factors were considered:

1) Method of coaching / instruction of staff
2) General criteria relating to the learning design
3) Criteria relating specifically to Open Learning design
4) Criteria relating to marketing and accessibility of materials

Coaching / Instruction of Staff

It was intended to train the evaluators during a one day training session. This would have included a full briefing on the contractual obligations to the Training Agency together with syndicate work to evaluate a set of specimen Open Learning packages. However, because of their other work commitments it was not practicable to organize for all six of them to be available on the same day for a formal training session at the EITB's Midlands Regional Office. To overcome this logistical problem I arranged to see each evaluator individually. Whilst this was not an effective use of my time (six training sessions instead of one), it did enable the evaluation task to run to schedule. An essential part of the training involved guiding the evaluators in the interpretation of the Assessment Criteria. For these purposes I used a worked example [next section] to illustrate the meaning of each of the twelve criteria.

General Criteria Relating to the Learning Design

The first four criteria were quite straight forward to explain bearing in mind that all the evaluators were competent and qualified trainers[2] . These questions were primarily concerned with communicating the training aims and objectives and the style of the learning between the producer and the trainer or deliverer who wished to use the materials. It is important to stress that the EITB staff were well-versed in developing, writing and assessing standards-based training programmes. This approach was at the core of all EITB field activities relating to the training of craftsmen, technicians and technician engineers.

Criteria Relating Specifically to Open Learning Design

Clarification was needed in respect of specific Open Learning issues such as 'Relevant Learning Design'. Here the main question was "is the learning design appropriate for the target audience?" By way of example I referred to an IV package that I had reviewed in the area of finance for non-financial managers. In this case the need to make calculations and to constantly glance back to previous screens meant that a more appropriate media might have been plain text. The only other guidance given to the evaluators was that I had found producers' promotional literature to be a good source of information about the learning aims and target audience of packages.

There appeared to be no particular concerns amongst the evaluators over the areas of 'Presentation' and 'Relevant Product'. The terminology of 'Diagnosing Learner Needs', the lowest ranked criteria, did however cause some confusion. When it was explained that this was equivalent to a phase test[3] then the evaluators' concerns were eased. In trying to assess a product's compliance with the criteria for 'piloting & usage' and 'tutorial support' it was necessary for the evaluators to make direct contact with the producers. To encourage producers to co-operate, I allowed the evaluators to release the results of individual evaluations, but only to the producers of those materials. It was decided not to release the results of a competitor's evaluations, because one of the parties would undoubtedly have felt aggrieved if they received a lower product score. For similar reasons, I withheld the quality categories of 'good', 'average' and 'poor' (see section 6.1.2) from being released. This strategy

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[2] With the provisos already stated in section 5.2.3 about the competence of the graduate trainee (evaluator 7).

[3] This was EITB *parlance* for an end of training test to assess whether the learning outcomes of Craft training had actually been achieved.

proved successful in that we did not receive one complaint from any of the 39 producers.

Criteria Relating to Marketing and Accessibility of Materials
An area of concern amongst the evaluators was 'accessibility'. This was easily overcome by explaining that this criteria could be wholly met by an entry in the "*Open Learning Directory*" (Training Agency, 1989). Two controlled copies of the Directory were kept at the Regional Office, one held each by myself and Evaluator 2. This system proved to be an invaluable aid to project management in that I was able to discretely monitor the progress of my junior and senior colleagues and to be able to judge when it was an appropriate time to do some progress-chasing.

Together with the producers' literature, the "*Open Learning Directory*" helped the evaluators to assess the remaining three criteria of 'Relevant Product', 'Qualifications' and 'Flexibility'. Of these 'Qualifications' may appear to be an ambiguous area particularly with the changes that are currently (Summer 1992) taking place in the area of National Vocational Qualifications. However, at the time of the evaluations (Autumn 1989) NVQ's were not an issue affecting Open Learning and the sole concern was whether the programme led to, or contributed towards, any nationally recognized qualification.

5.2.6 Worked Example

To demonstrate how the evaluation technique is applied, a product has been chosen to come under particular scrutiny. The package "*CAD1: Computers and the Designer*" was selected because it was an EITB product and that it scored in the middle of the range at 265 out of a possible 460 points. The evaluation was carried out on the 22nd August 1989 by the graduate trainee, Karl Shiffman.

The package had clear aims written in learner-centred terms. The target audience was specified as managers and supervisors seeking an awareness knowledge of Computer Aided Design. The text layout, its tone and style were first rate and were likely to motivate the target audience. A minor criticism was the mix of media. The package was principally video led with text and audio support. The quality of the audio cassette was poor.

The degree of "learner centred provision" within the package did not cater for a variety of learners. "CAD1" was designed to be worked through in a serial manner with only one access point. There were no route maps.

In terms of achieving its aims, the package would certainly enable the target audience to obtain an awareness knowledge of CAD.

The presentation of the EITB's Design Series, of which "CAD1" was one of the first to be released, looks dated when compared to more recent Open Learning materials. For example the plastic packaging became distorted after a period and failed to fit back together. Also, the text could have been colour printed to enhance the many diagrams and figures that are featured in the supporting material. This is an indicator of the fact that the Board did not attempt to use feedback from its clients to enhance subsequent editions to the programmes. As we have already discussed in Chapter 2, the number of units sold and the successful completion rates for the packages were unknown.

In terms of access to the product, an entry in the "*Open Learning Directory*" would have been a useful addition to the entry on MARISNET.

Summary of the Evaluation Carried out on "*CAD1: Computers and the Designer*".

Fully Compliant Learning Aims Clearly Stated. Learning Outcome Achievable. Relevant Product.
Minor Non-Compliances Relevant Learning Design. Accessibility and Product Marketing.
Major Non-Compliances Learner Centred Provision. Presentation. Evidence of Piloting and Usage. Support. Flexibility of Use.
Critical Non-Compliances Qualifications. Diagnosing Learner Needs.

TABLE 39

Tutorial support was available by negotiation with local technical colleges. However, the Board's own national network of approved tutors had broken down. Also, the number of EITB staff capable of providing technical support for the packages had fallen to only four advisers - three of whom (myself and two colleagues) operated solely within the geographical confines of East and West Midlands.

The Board did not issue completion certificates or qualifications for this or any other of its Open Learning programmes. Neither did they provide the learner with any other indication that the course had completed successfully. Consequently, there were critical non-compliances in the areas of "Qualifications" and "Diagnosing Learner Needs". Table 39 summarizes the degree of compliance with the Assessment Criteria.

5.2.7 Carrying out the Evaluations and Ensuring Consistency

The evaluators were verbally informed about the requirements being placed upon them followed by specific instruction on how to carry out the technique. This was done by issuing guidance notes (work instructions which were in the form of an internal memorandum) to each of the advisers followed-up by an individual but informal instruction session. The evaluators were asked to record the results of each evaluation onto a pro-forma (Appendix 21) and to then hand it to one of two administrative staff for entry onto a database. It was my responsibility to check the original pro-forma and a copy of the database entry for arithmetic errors and other inconsistencies (refer back to section 5.2.4).

The database allowed quick access to the number of completed evaluations at any particular point in time and this made the job of progress-chasing that much easier. This monitoring also ensured that the contractual aspects of the project (namely budget and deadlines) were being adhered to. Appendix 22 demonstrates the database output by giving the results of the evaluations on the EITB products. It is important to stress that in principle the technique is a mechanistic one. The polar decisions of "Fully Compliant" and "Unacceptable" are straight forward. The only area of uncertainty that may arise is in the categorizing of major and minor non-compliances (see Chapter 6, section 2). Only three sets of evaluation results were found to be inaccurate. These were traced to one particular adviser (Evaluator 3) and it was found that he had

previewed the packages with a view to using them in one of his consultancy projects. It was not until some weeks later that he completed the evaluation sheets, by which time he had returned the packages to the producer but had not recorded sufficient details to be able to accurately complete the pro-forma. Consequently evaluation data only exists for two of the original five Quality Assurance programmes that were selected.

5.2.8 Collating the Data

The procedures for collating the data involved using the clerical and administrative support facilities available at the Board's Aldridge Office and with the benefit of hindsight the methods used could have been significantly improved upon. Initially it was felt prudent to record the data onto the ICL DRS 20 (Distributed Resource Systems) minicomputer at the Board's Aldridge office rather than getting each adviser to enter the information directly onto an IBM compatible Personal Computer (PC). The reasons for this were; (1) of the eight advisers carrying out the evaluations only two had access to a PC, (2) the advisers were geographically dispersed throughout East and West Midlands, (3) the administrative staff had already had experience of using a database package installed on the DRS. It was felt that the logistics of finding five spare PC's and instructing the advisers on how to install and to input data onto an unfamiliar database would be much more time-consuming than training two regionally based administrative staff to do the same task but on their existing DRS workstations.

5.2.9 Data Analysis

Having transferred the database the first step of the analysis work was to collate the numerical information. Appendix 23 gives a summary of the evaluation scores for the 67 products. From this, a scatter graph of the raw data was produced (see Table 40) and this shows that there appears to be no immediately obvious correlation between the scores of the various products nor any clustering of product scores. This is what was expected for there is no reason why the quality of product A from producer X should be related to the quality of product B from producer Y. The proviso to this being that where products come from the same producer, the house-style adopted is likely to have a considerable influence on the quality of the two packages (for example, the house-style might dictate the presentation and layout and the fact that the material is broken down into discrete units of work finally leading to a producer's certificate of completion).

Scatter Graph
Unsorted Evaluation Scores

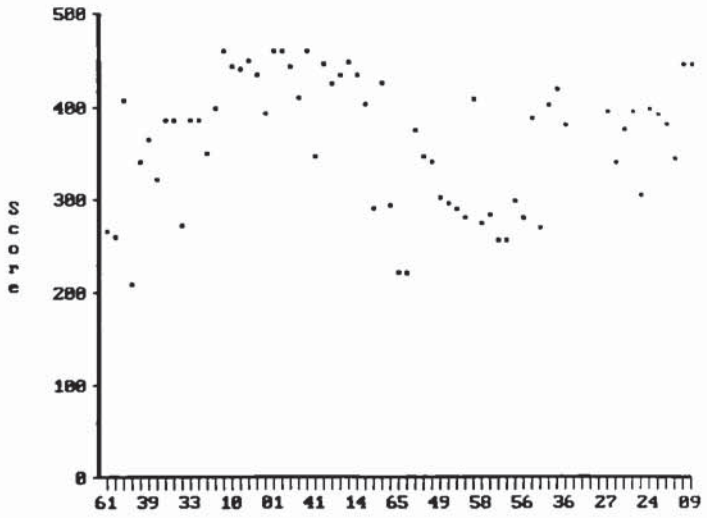


TABLE 40

5.2.10 Rank Order

The next step was to order the data by rank for further analysis. Table 41 shows that with the adopted product scoring scheme the distribution of scores appears to be linear. However, on further examination this can be shown not to be the case.

Scatter Graph
Ordered Evaluation Scores

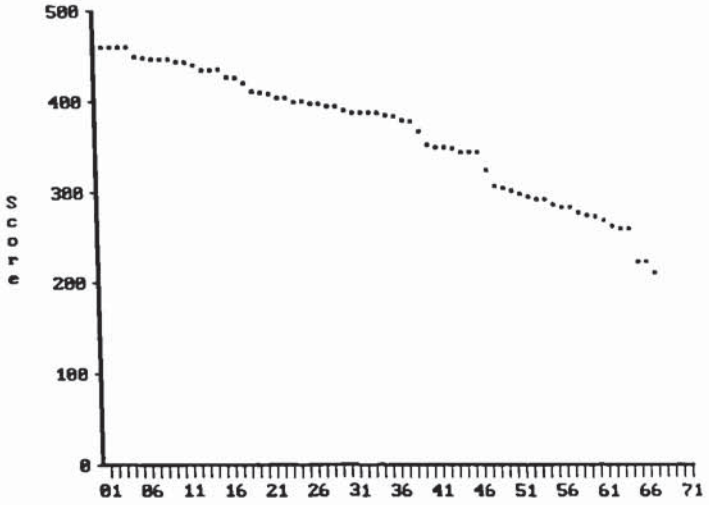


TABLE 41

By drawing a Lorenz Curve (Table 42) it can be shown that there are considerable areas of inequality between the actual frequency distribution and what would be expected in a linear distribution.

Lorenz Curve for Evaluation Data (67 Products Evaluated)

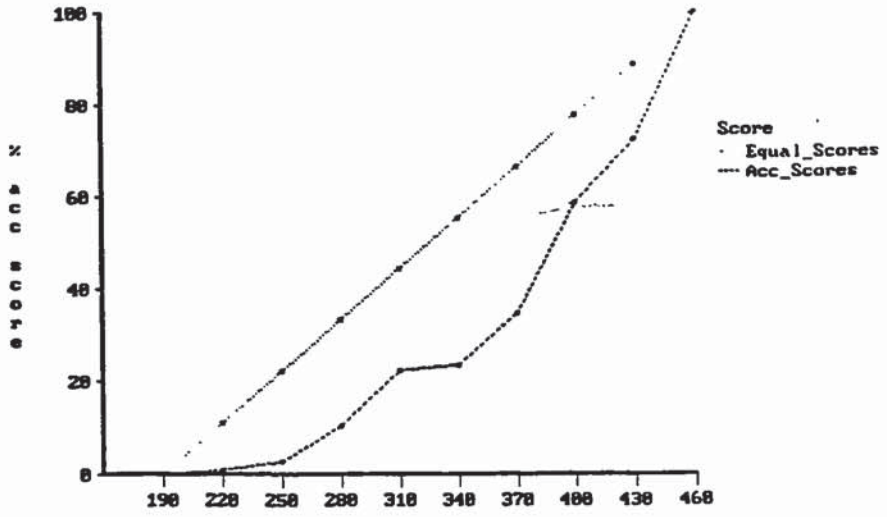
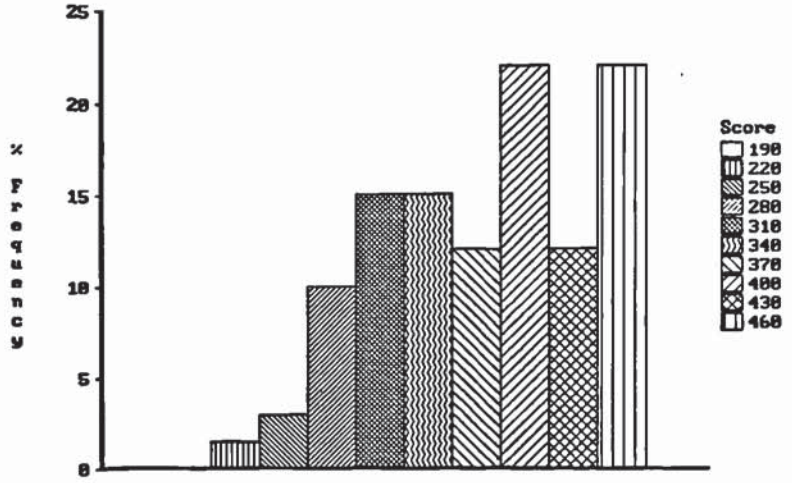


TABLE 42

A frequency distribution chart (Table 43) shows that the distribution of the evaluation scores. It is not immediately obvious whether this is in fact a normal distribution. The standard deviation was calculated and compared with the expected frequencies to be found in a normal distribution at one, two and three σ from the arithmetic mean (Table 44).

Frequency Distribution of Evaluation Scores



Comparing the Frequency Distribution of the Evaluations with that Expected in a Normal Distribution

Range	Number of Products in this Range (Frequency)	Distribution (%) Actual	Expected
$\bar{X} \pm \sigma$	37	55.2	68
$\bar{X} \pm 2\sigma$	64	95.5	95
$\bar{X} \pm 3\sigma$	67	100	99

TABLE 44

The values confirm that σ does have significance in that the values are acceptable close to what would have expected in a normal distribution. The importance of this is that the raw data can be considered as if it were a normal distribution and can be described solely by its standard deviation and arithmetic mean.

5.3 Generating Alternatives

To generate and test alternative rankings against the proposed technique.

5.3.1 Investigating Alternative Scoring Systems

A fundamental question to be asked during the research aspect of this project is whether or not the arbitrary scoring system used in fulfilling the Training Agency contract could be improved upon by the application of sound and acceptable reasoning. To do this the alternative techniques have had to be applied to the existing evaluation data to compare the effects of changing the scoring system upon the ranking, and the differentials between the scores of individual products when subjected to different weightings within the Assessment Criteria. In addition to the three alternatives derived during discussions with the subject specialists, two more were generated. The first gave equal weighting to all the Assessment Criteria and the other allowed only a

polar decision of either "*Fully Acceptable*" or "*Unacceptable*". Appendices 24 & 25 give tabular and graphical representations respectively of each of the product scoring techniques.

5.3.2 Rank Order Correlation

An important aspect of comparing the alternative evaluation weightings was to determine the impact that each had on both the order and the distribution of the products across the range of scores. For these purposes both the standard deviation (σ) and the coefficient of rank correlation (r') are useful statistical measures[4] . In comparing the alternatives it was found that they had very different arithmetic mean values, and direct comparison the absolute magnitudes of the standard deviations was misleading.

Comparing Evaluation Techniques: A, B, and C

Method	Pilot Study (A)	Researcher (B)	Steering Committee (C)
Range of Scores	211	251	267
$\bar{X}$	347	363	376
σ	56.3	69.6	75.6
ν	0.16	0.19	0.20
Median	361	385	395
Ratio of Upper to Lower Limits	2.00	2.20	1.81

TABLE 45

[4] **Rank Order Correlation**

$$r' = 1 - \frac{6\Sigma d^2}{n(n^2-1)}$$

where r' = Coefficient of Rank Order Correlation
d = Difference in Rank Order Positions
n = Number of Comparisons

Comparing Evaluation Techniques: D and E

Method	Equal Weightings (D)	Polar Scoring (E)
Range of Scores	330	415
$\bar{X}$	461	282
σ	267.7	118.9
ν	0.58	0.42
Median	470	300
Ratio of Upper to Lower Limits	2.22	10.22

TABLE 46

Instead the coefficient of variation (ν) was found to be a more useful indicator. Each of the five methods of evaluation were considered and Tables 45 and 46 give the characteristics of each resultant distribution.

Rank order correlation allows us to compare any two sets of ordered data, such that in this situation there are 4! possible cross-correlations. It was decided to investigate the five most relevant comparisons - those between the subject specialists and those between the adopted technique (B) and the two generated alternatives, (Table 47). Appendix 26 compares the rank order of the 67 Open Learning products when subject to each of the five alternative evaluation techniques.

An interesting result of this comparison exercise is that although the Researcher, the Steering Committee and the Pilot Study arrived at three different weighting preferences the resulting evaluations were surprisingly similar with strong positive rank order correlations obtained ($r' > 0.950$). The range, the ratio of the upper and lower limits, and the coefficient of variation of each method were also numerically close. Analysis revealed that methods A, B & C gave results that were similar in both their order and distribution. Method D was found to be statistically closer to Method B than was expected, so that when equal weightings are given to each of the criteria there are no discernible differences in

the order of the evaluations when compared to those found by using the Research method.

Statistical Comparison of the Rank Order of the Evaluation Techniques

Techniques Being Compared	r'
(B + A)	0.996
(B + C)	0.996
(A + C)	0.950
(B + D)	0.992
(B + E)	0.873

TABLE 47

Consequently there appears to be no apparent advantage in adopting any of the other alternative techniques over that used during the contractual part of the project (Method B).

Put simply, products of high quality which fully meet all of the criteria will have a high rank order no matter which of the evaluation techniques is used. Altering the weightings of the criteria indicates the degree to which the evaluator wishes to penalise products that fail to fully comply with that particular criteria.

5.4 Demonstrating Transferability

To demonstrate that the Open Learning methods that have been examined can be used in the evaluation of conventional training.

5.4.1 Introduction

The original purpose of this section was to demonstrate that the evaluation technique could be incorporated into the evaluation of conventional training. However, I have been able to draw more wide-ranging conclusions from this

research which now enable me to present a new and alternative view of conventional training evaluation. In March 1991 I was commissioned to derive an assessment scheme for measuring an organization's ability to evaluate its own training. The work was carried out for Dudley TEC to establish criteria for its Investors in People Award. The approach adopted in presenting the criteria is based upon the use of checklists (see Appendix 27) and is a method that is widely used by training and development workers (see particularly MacKay, 1988).

5.4.2 The CIRO Model

In 1970 a new model for the evaluation of management training was proposed (Warr, Bird and Rackham, 1970). This model was based upon the evaluation of four aspects of training, namely, Context, Inputs, Reactions, and Outcomes. For completeness it is worth reproducing Warr et al's definitions (Table 48).

Context evaluation looks at how the original training need was diagnosed, and how the learning objectives were set. It also examines the organizational context within which the learning takes place. Context evaluation is concerned with how objectives have been identified for each of the following levels:

Level 1 - Ultimate Objectives

These refer to the particular defect or defects in the organization that the trainer is hoping to eradicate.

Level 2 - Intermediate Objectives

These are the desired changes in the employees' work behaviour that will be necessary if the ultimate objective is to be obtained.

Level 3 -Immediate Objectives

These are the new knowledge, skills and attitudes that the employees must aquire before they will be capable of changing their behaviour in the required way.

Input evaluation relates to the inputs to the learning event in terms of the resources available and those that were actually used. For example the personnel, physical and financial resources, time constraints and the abilities and motivation of the learners. Warr et al give typical questions that trainers

might need to ask themselves when deciding on which training solution to adopt:-

- What are the relative merits of different training techniques?
- Is it feasible to run the training within the organization or will the services of some external agency be needed?
- Does the age or background of the trainees suggest the inclusion or exclusion of any particular training method?
- How much time is likely to be available for training?
- What were the results last time a similar programme was run?

The CIRO Model - Definitions

EVALUATION TYPE	DEFINITION
Context Evaluation	Obtaining and using information about the current operational context in order to determine training needs and objectives
Input Evaluation	Obtaining and using information about possible training resources to choose between alternative inputs to training.
Reaction Evaluation	Obtaining and using information about trainees' expressed current or subsequent reactions in order to improve training.
Outcome Evaluation	Obtaining and using information about the outcomes of training in order to improve subsequent training. Three levels of outcome evaluation are in terms of immediate, intermediate and ultimate outcomes.

TABLE 48
Source: Warr, Bird and Rackham, 1970.

Input evaluation is the collection and processing of this information.

Reaction evaluation is the reactions to the learning event by all the parties involved (trainers, trainees and line managers). This is the traditional interpretation of evaluation and a typical example would be an end-of-course questionnaire. The distinguishing feature of this type of evaluation is its reliance upon the subjective reports of trainees.

Outcomes evaluation is the evaluation of the learning event by reference to the original objectives set for it as measured against the outcomes that have actually been achieved. Conventionally this is termed validation. There are three levels of training outcomes which correspond with the three levels of training objectives identified in context evaluation. These are referred to as immediate, intermediate and ultimate outcomes.

Level 1 - Immediate Outcomes

Successful training will produce some change in the knowledge, skill and attitude of the trainee. These changes can be measured as soon as the course has been completed and before the trainee returns to their job.

Level 2 - Intermediate Outcomes

Level 1 outcomes provide the necessary preliminary changes in order that there are changes in the trainee's on-the-job behaviour. Without such basic changes at an immediate level there is little prospect of a change in job performance. To be successful, training must promote some changes in on-the-job behaviour. It is these changes which are the intermediate outcomes of training.

Level 3 - Ultimate Outcomes

Changes in the job behaviour of trainees affect the organization in which they work in some way. Examples given by Warr et al are alterations in departmental output, costs, scrap rates, labour turnover and accident frequency. Changes of this nature are regarded as the ultimate outcomes of the training process.

An observation is that ultimate outcomes are difficult to attribute to particular individuals or particular learning events. For this reason Warr et al have stated that '...it is rarely practicable to evaluate specific training programmes at this ultimate level'. Whilst I would agree with this statement, the extent to which an organization is effective in the whole of its training activities is measurable in terms of the summation of the ultimate outcomes of all the individual learning events.

I would therefore argue that in evaluating a training system, ultimate outcomes are important indicators of success.

"*Training in Britain - Employers' Perspectives on Human Resources*" (Pettigrew et al, 1989) found that employers use 'hard' and 'soft' evaluation criteria (Table 49). These criteria are clearly identifiable with intermediate and ultimate outcomes. Interestingly, the report found that the firms using the 'soft' evaluation criteria were the ones most committed to training.

This consolidates my view that the current thinking is for evaluation to be measured in terms of broader human resource goals.

5.4.3 Current Interpretations of the CIRO Model

The CIRO model was originally proposed for the evaluation of management and supervisory training. Harrison (1989 after Hamblin, 1974) extended the use of the model to training in general and proposed that context evaluation should consist of five levels:

'Level 1 Reactions
Objectives concerned with the sort of reactions that the event is intended to achieve in the learners - for example, satisfaction with the media and methods used, or with the tutors or other mentors involved; commitment to the event itself, and/or to further learning events etc.

Level 2 Learning
Objectives concerned with developing specific knowledge, skills and attitude in the learner.

Level 3 Job Performance

Objectives concerned with changing individuals' work behaviour and job performance.

Level 4 Departments

Objectives concerned with achieving improvements or changes at departmental level.

Level 5 The Organization

Objectives concerned with achieving some overall organizational outcome; or with reinforcing or changing particular organizational values; or with changing the organization's culture and/or structure'.

'Hard' and 'Soft'
Evaluation Criteria

'Hard'	'Soft'
District Sales performance after training.	Ability to meet demand of line departments for trained staff.
Branch performance league position.	Ability to place apprentices.
Ability to meet customer quality standards.	Individual promotability.
Performance speeds after training (eg typing skills)	Improved communication between departments.
Ability to earn maximum bonus on piecerates.	Eliminate need to recruit.
Exam pass rates.	Reduced labour turnover.
Time saved by a particular training method.	Graduate retention rates.
	Improved ability to recruit.
	Maintaining balance in career system.

TABLE 49
Source: Pettigrew et al, 1989.

My opinion is that increasing the number of levels within context evaluation is unnecessary and disjoints the link with the three elements of outcomes evaluation (immediate, intermediate and ultimate). However Warr et al's terminology is not particularly meaningful for context evaluation. My preference is to maintain three levels but to call them Individual Objectives (Harrison's levels 1 - 3), Departmental Objectives and Organizational Objectives.

In their text "*Evaluation of Management Training*", Warr, Bird and Rackham (1970) give clear examples of the uses of their model except that is in the area of ultimate outcomes. In order to review ultimate outcomes it is first necessary to understand organizational objectives and how they are derived.

5.4.4 Organizational Objectives and Ultimate Outcomes

Armstrong (1990) suggests that the overall aims or goals of an organization are defined by top management within the context of strategic planning. This process starts with the mission of the business, from which is derived its values, policies, and the objectives needed to achieve its stated aims:

> *'The mission of an organization expresses its sense of purpose - the business the enterprise is in and the broad direction in which it is going. Missions are described in mission statements which may be supported by guiding principles'.*

An example of a mission statement is given in Table 50. Armstrong also advocates that managers can and should develop functional mission statements for their own functions, for example:

> *'The mission of the personnel department is to develop and promote the highest-quality personnel and human resources practices and initiatives in an ethical, cost-effective and timely manner to support the International Stock Exchange, and to enable the managers to maximise the calibre, effectiveness and development of their human resources'.*

The reasons for adopting the terminology of 'Departmental Objectives' within context evaluation now become apparent.

A value system expresses basic beliefs in the behaviour which is believed to be good for an organization and in what the organization considers to be important. It is expressed in a value statement.

'The purpose of a value statement is to help to develop a value-driven and committed organization which conducts its business successfully by reference to shared beliefs and an understanding of what is best for the enterprise. Value statements are therefore an integral part of strategic planning as a means of guiding the direction of effort in the longer term'.

Mission Statement of the Institute of Training and Development

The ITD Mission is:

To lead in the Development of a learning world.

To serve the professional interests of members.

To uphold the highest ideals in Human Resource Development

TABLE 50
Source: ITD, 1990.

Armstrong defines a policy as '...a statement of principles or common purposes which serve as a continuing guideline and establishes limits for discretionary action by management'. An example might be, 'it is our policy to:

- promote from within.
- strive towards the achievement of equal opportunity.
- seek BS 5750: Part 2 approval'.

The Institute of Personnel Management's Code, "*Continuous Development: People and Work*" (IPM, 1987) provides some specific guidance on training policies. It recommends that they cover such issues as training budgets, authority, awards and scholarships, and study leave.

The Guidance Notes to BS 5750: Part 4 (BSI, 1990) also give advice on the formulation of a Quality Policy: 'The supplier of the product or service should develop and define its total policy, business objectives and commitment in a recorded statement. This statement should be published throughout the

organization and be seen to be supported by management'. It can be argued that these recommendations are equally applicable to a training policy. Harrison (1989) advocates that an organization should have a formal purpose and policy statement and that it should clarify '...the allocation of overall responsibilities for training and matters such as the main types of training to be done, and the resources the organization is prepared to provide to ensure that the training is carried out'. The BSI guidelines are a good vehicle for achieving this.

In summary, mission statements, values and policies help to define the organizational objectives of the enterprise. They can also indicate the 'soft' evaluation criteria referred to by Pettigrew et al (1989). Value and mission statements have clear training implications. According to Armstrong:

> *'Value statements are closely associated with mission statements and like them can be used as levers for change, GETTING PEOPLE TO ACT DIFFERENTLY [my emphasis] in ways which will support the attainment of the organization's mission.'*

Evaluating this type of organizational training is the purpose of ultimate outcomes.

5.4.5 Product and Systems Audits

BS 5750: Part 4 introduces the concept of a systems and a product audit. These have direct parallels with two new concepts - evaluating the training system and with evaluating specific training events. The reason for proposing this alternative view of evaluation is that it presents the CIRO model in a way that enables regular auditing of the whole of the training system. As importantly, it enables the ultimate outcomes of training to be evaluated.

The intended usage of this approach is similar to that used in a BS 5750 Management Review. In a management review every aspect of the system is audited during a given period of time (usually 12 months). Included in this is a review of the overall results of the internal audits.

Interestingly, the CIRO model does not review what engineers would call in-process inspection. There is no facility for the correction of faults during the training process.

The CIRO model only starts to act when the experiences of the course become 'inputs' to the next one.

Another observation is that there is no distinction between internal and external context. The fact is that trainers are not isolated - they network and communicate amongst themselves. They share experiences. As an acknowledgement of this I have included a category of evaluation called 'external context'. Within this are such factors as awareness of local and national training initiatives, government legislation, developments in the education sector, innovations in training technology and so on.

Without these influences a training function would be seriously hindered, and their must be some recognition of this within the evaluation system. It is important to note that neither Harrison nor Warr et al cater for this.

Broadly speaking context and input evaluation form part of the system's audit and reactions and outcomes evaluations form part of the product audit. Appendix 28 gives a Venn Diagram showing the inter-relationship between the CIRO model and product/systems auditing. A fuller description of these relationships is given below.

Sets

E = All evaluation
S = Evaluating the training system
P = Evaluating specific learning events
C = Context evaluation
X = External context evaluation
I = Input evaluation
R = Reaction evaluation
O = Outcome evaluation

Elements:

Immediate outcomes	}	
Intermediate outcomes	}	ε O
Ultimate outcomes	}	
Mission statement	}	
Value statement	}	
Policies	}	ε C
Organizational objectives	}	
Departmental objectives	}	
Individual objectives	}	
Assessment	}	
Costs	}	
Media	}	
Methods	}	
Content	}	
Learning Structure	}	ε I
Training Personnel	}	
Physical/Financial Resources	}	
Learning Ability of Trainees	}	
Time	}	
End of course questionnaires	}	
Informal feedback from trainees	}	
Formal/informal feedback from course leaders	}	ε R
Formal/informal feedback from the line managers	}	
Government legislation	}	
Demographic trends	}	ε X
Local and national education and training initiatives	}	

Relationships between the variables

$O \cap \bar{P}$ = Ultimate Outcomes

and,

$E \cap \bar{P} = S$

Training systems evaluation is all evaluation not related to specific learning events.

and,

$E \cap \bar{C} \cap \bar{O} \cap \bar{I} \cap \bar{P} = X$

All evaluation that is not context, **or** outcomes, inputs **or** related to the evaluation of specific learning events is external context evaluation.

and,

$I \cap P$ = Media, Methods, Cost, Content, Learning Ability of the Trainees.

and,

$I \cap \bar{P}$ = Physical/Financial Resources, Time, Training Personnel

Appendix 29 demonstrates how the evaluation checklists can be incorporated into practical documents and work-instructions. For guidance only, samples are

given of responsibilities and methods that might be adopted for evaluating the training system, together with an annual review programme (Exhibit 1 to Appendix 29).

5.4.6 Summary

Other than context evaluation, the CIRO model concentrates on evaluating specific training events. As Warr et al admit, the consequence of this is that ultimate objectives are not evaluated. My proposal adds to the CIRO model by presenting an opportunity for the cumulative effects of ultimate outcomes to be measured in relation to the evaluation of the whole training system. The methodology that has been adopted is based upon the widely accepted quality assurance concept of systems and product audits. What is new is that it is now being applied to the evaluation of training.

5.4.7 Expected Success Rate for Meeting the Criteria

The report "*Training in Britain*" (HMSO, 1989) identified that only 15% of firms carry out an evaluation of their training and only 2.5% carried out any cost-benefit analysis. Consequently, the expected number of companies likely to meet the criteria is of the order of one-in-forty.

5.5 Concluding Remarks

Subject specialists have been consulted to test the validity of the rank order.

The new technique is based upon a revised Assessment Criteria in which each of the twelve elements of the criteria have been ranked in order of their perceived contribution to quality. My weightings of the Assessment Criteria have been compared with alternatives generated by two other sets of subject specialists.

The proposed technique has been tested on a range of 67 Open Learning products.

The technique can be used in the evaluation of conventional training materials.

The new technique has been incorporated into a set of criteria for use in the evaluation of conventional training. It has been adopted by Dudley Training and Enterprise Council to assess whether member organizations carry out effective evaluation of both their training systems and of specific learning events.

6.1 Analysis of Results

To analyse the results of the evaluations.

6.1.1 Introduction

Chapter 5 examined the validity of the evaluation technique by looking at alternative weightings for the Assessment Criteria. These alternatives were then tested on the results of evaluations carried out on a selection of 67 Open Learning materials. In this Chapter the emphasis is on an the **interpretation** of the results. In particular, to see whether there are any important indicators about the quality of Open Learning materials that can be disseminated to other trainers and Open Learning practitioners.

6.1.2 Categorizing the Results

In section 5.2.5 the procedures for obtaining the evaluations was explained, and a full list of the results was given (Appendix 23). In order to provide a qualitative interpretation of the results, the evaluation scores were then categorized into those of good (460-381), average (380-301) and poor (<300) quality. This revealed some interesting relationships between the quality of the materials, their delivery media, the subject area and the price.

6.1.3 Delivery Media Used

Table 51 shows that the good quality products were predominantly text based (24 out of 34), with the majority of IV products (six out of seven) being of good or average quality. Audio products faired particularly badly in this study with four out of the five products being of poor quality. However, the small sample size may not be a true representation of all the audio materials available. The seven CBT products were generally of average quality. The exception to this was "*1992 MAP*" from the supplier Eurostrat '92 Ltd. In this case CBT was used very effectively as a delivery media.

Distribution of Evaluation Scores According to the Delivery Media Used

Media Used	Range of Evaluation Scores						
	460-421	420-381	380-341	340-301	300-261	260-221	<220
Audio			1		1	2	1
Video Led	2	3	3	2	3	3	
Text Based	15	9	3	1	4		
Interactive Video		4	2		1		
Computer Based Training		1	1	2	3		
TOTALS	17	17	10	5	12	5	1

TABLE 51

6.1.4 Price Range

Table 52 shows that there is a variation in quality that is almost uniform across the price range. Approximately one half of the products were of good quality (51%), a quarter were average (22.5%) and a quarter (27%) were of poor quality (see Table 53). The products of unknown price have been classified as costing more than £250 for the reasons explained in section 4.2.4.

Distribution of Evaluation Scores According to Price Range

Price Range	Range of Evaluation Scores						
	460-421	420-381	380-341	340-301	300-261	260-221	<220
< £50	4	6	1		3		1
£50 - £99	1	1	1		1		
£100 - £249	4	4	2	3	5	3	
£250 - £499	6		2	1	1		
£500 - £999	1	1	1			2	
£1000 +		5	1		1		
Not Known	1		2	1	1		
TOTALS	17	17	10	5	12	5	1

TABLE 52

The £250 threshold suggested by the Steering Committee seems not to be significant. The distribution in the quality of products priced below £250 is similar to those priced above £250. The study also shows that there are a high number (10) of good quality products to be found at under £50.

In the sample of products examined, paying a high retail price was no guarantee that the products would be of high quality. For instance, of the 12 products priced above £500 there were three of poor quality and two of average quality.

Percentage Breakdown of Evaluation Scores According to Price (to the nearest 0.5%)

Price Range	Percentage of Products in these Quality Classifications		
	Good	Average	Poor
< £50	15.0	1.5	6.0
£50 - £99	3.0	1.5	1.5
£100 - £249	12.0	7.5	12.0
SUB TOTAL	30.0	10.5	19.5
£250 - £499	9.0	4.5	1.5
£500 - £999	3.0	1.5	3.0
£1000 +	7.5	1.5	1.5
Not Known	1.5	4.5	1.5
SUB TOTAL	21.0	12.0	7.5
TOTAL	51.0	22.5	27.0

TABLE 53

6.1.5 Subject Area

The areas of management and supervisory training seemed to be well serviced with both good and average products - although there were six poor quality products to be found out of the 26 that were reviewed (Table 54). The lowest scoring product of all (209 out of 460) was in the management category and was an audio based package entitled "*The Secrets of Power Negotiating*" (Nightingale Connant).

Distribution of Evaluation Scores According to Subject Areas

	Range of Evaluation Scores						
Subject Area	460-421	420-381	380-341	340-301	300-261	260-221	<220
Quality Systems			2				
Electronics	7						
Management Training	6	5	3	1	4	1	1
Supervisory Training	2	2	1				
Open Learning	2	3	1		4		
Training Planning		2	1	2			
European Languages		4	1		1	2	
Engineering Design		1	1	2	3	2	
TOTALS	17	17	10	5	12	5	1

TABLE 54

Packages in the two areas of training planning and Open Learning were expected to be of the highest quality, after all these were the areas of expertise of the professional trainer. Surprisingly four of the ten products on Open Learning were of poor quality.

'Example is always more efficacious than precept'.
Samuel Johnson, 1709 - 1784.

Having said that, two of the five fully compliant products (those scoring 460 out of 460) were concerned with Open Learning. Both were produced by Weymouth College and were text based and cost less than £50.

In training planning two of the products were of good quality and three were of average quality.

Language training was an area in which there was quite a range of product scores (221 - 393) and also a variety of delivery media (text, audio, video led and CBT). It was disappointing to find that Linguaphone (who are a well known name in language training) scored so poorly with their audio based packages. This is a subject area that seems to offer advantages for modern Open Learning methods. The CBT and video led programmes were both high scoring

products in this category. Consequently, there would appear to be opportunities for Interactive Video here.

The seven basic electronics packages were sourced from two suppliers (MacMillan Intek and National College of Technology) and scored very highly - 425 and above.

No particular comments can be made about the quality systems packages due to the small sample size (only 2 products).

6.1.6 The Quality of EITB Products

Engineering design was dominated by EITB products (8 out of the 9) which were of average (3) or poor quality (5). Table 55 summarizes these evaluation scores. Because the evaluation technique assesses a product's ability to meet the requirements of Parts 1 & 2 of the Code of Practice, it can be argued that these results confirm the comments made in Chapter Two regarding the EITB's inability to fully meet the Code of Practice.

Evaluation Scores of EITB Products

Product Name	Evaluation Score
SMT - Introducing Surface Mount Technology	364
CAD2: Product Modelling Systems in Design	340
CAD3: Computer Aided Information Systems in Design	321
SMT - Inspection and Rework	283
SMT - Design and Production	274
CAD1: Computers and the Designer	265
Managing Major Change	260
IT In Manufacturing	257
IT In the Product	257

TABLE 55

6.1.7 List of Approved Suppliers

As already stated, it was the intention that the EITB would establish a portfolio of quality Open Learning products that it would then sell and support. In line with the quality assurance theme that runs throughout this project, it was my view that the Board should have an approved list of suppliers.

Eight suppliers were selected (see Table 56) based upon the highest scoring producers in each subject area. The only progress to be made along this route was in establish a trading agreement with Henley Distance Learning. By that time (Spring 1990) it was becoming clear that there would be no further funding from the Training Agency. The management within the EITB believed that Open Learning was not going to be a commercial success, mainly because the Board could not compete with the much lower fees charged for tutorial support by Technical Colleges and other deliverers. Consequently, Open Learning was not incorporated into the EITB's field consultancy services and at that point my position with the Board became redundant.

The Proposed List of Approved Suppliers of Open Learning Materials

Subject Area	Approved Supplier(s)
European Languages:	Eurostrat '92 Ltd
Quality Systems:	BBC Enterprises
Basic Electronics:	National College of Technology
Engineering Design:	Engineering Industry Training Board
Open Learning:	Open Learning Unit, Weymouth College
Training Planning:	SCOTTSU International
Basic Management Training:	Henley Distance Learning Ltd
Basic Supervisory Skills:	Pergamon Open Learning

TABLE 56

6.2 Discussion of Results

To discuss the reliability of the results.

6.2.1 Evaluator Error

Whilst it is not possible to be precise about evaluator error, it is possible to investigate the order of magnitude of error necessary for there to be a significant influence on the results.

In order to assess evaluator error, two questions have to be asked. (a) 'What would have to happen for a product score to cross adjacent quality boundaries (Good to Average or Average to Poor)?' [this section]. And, (b) 'how many of these errors would have to occur for there to be a significant influence on the results?' [next section].

The approach taken in answering (a) was to look at the error required for the mean value in each quality category to cross an adjacent quality boundary (see Table 57). To cause this to happen, it would take an error of between 33 and 42 evaluation points. As discussed in section 5.2.5, the likeliest cause of evaluator error is in the mis-classification of compliance with the Assessment Criteria. That is, in trying to differentiate between "Major" and "Minor Changes Needed". For example, the error that would result from a mis-classification of "Minor Changes Needed" instead of "Major Changes Needed" for the "Qualifications" criteria would be 14 (weighting of qualifications x difference between major and minor changes needed) evaluation points.

> **Put into general terms, it would take at least three mis-classifications by the evaluator to cause a typically good quality product to be wrongly categorized as being of average quality.**

The evaluations required 22 observations to be made, of which 12 were related to the Assessment Criteria. The remaining ten were, the subject area, the EITB product grouping, the title of the package, the name of the evaluator, their EITB grade, the price, the date of the evaluation, a unique reference number and any relevant comments. It was assumed that the procedures for collating and checking the data had detected and corrected any errors in these details at an earlier stage in the evaluation process.

Errors Required for Products to Cross Quality Boundaries

Category of Quality	Mean Value	Distance to Quality Boundary (in Evaluation Points): Good	Average	Poor
Good	422	---	42	122
Average	345	35	---	45
Poor	267	113	33	---

TABLE 57

Consequently, the minimum error rate required to produce a wrongly categorized product would be of the order of about one in four. Under ideal conditions the preferred method of carrying out the evaluations would have been to ask each evaluator to review a given sample of Open Learning packages. These evaluations could then have been statistically compared with a known set of results.

This technique is commonly used in the marking of public examinations, where it is necessary to make adjustments for bias amongst individual examiners (for an example see WJEC, 1991). Here the known set of results comes from a set of scripts marked by the Chief Examiner (the originator of the marking scheme). Unfortunately, commercial pressures did not allow for a similar approach in these studies. The evaluation phase of the contract over-ran by six mandays representing a loss to the Board of £2100 (because the EITB charged the Training Agency a cost-recovery rate of £350 per day for its services). With the benefit of hindsight, my original tender for the contract should have included a greater element of time and money for evaluation.

6.2.2 The Influence of Errors on the Major Findings

Question (b) is more difficult to answer, mainly because the individual errors only become significant when there is a net migration of errors across a quality boundary.

Although it is not possible to be precise about this, the one result that might give a useful indication of the overall effect of the individual errors is that relating to the distribution of the quality within the whole sample. To state the obvious, this is because it covers all the evaluators, the entire price range, all the delivery media and the eight subject areas.

The findings show that the distribution of good, average and poor quality products is in the ratio of 34:15:18 (refer back to Table 53) or approximately 2:1:1. For argument's sake let's examine the number of individual errors that would have led to a different conclusion being reached. Suppose that the errors led to it appearing that the distribution of quality was uniform (say, in the ratio of 23:22:22). To achieve this there would have to be 19 individual errors. That is, 19 mis-classifications - 11 from good to average and eight from average to poor.

The number of errors required to achieve this is somewhere between 57 and 153 (three errors in the mis-classified products and two in the remaining 48 products). That is equivalent to error rate of between 7% and 19%.

It is not possible to be any more specific than this due to the limited and varied sizes of the samples from the individual evaluators.

Examining the Consistency of the Evaluation Results

	Products in these Categories of Quality:		
	Good	Average	Poor
(a) Evaluator 1: (Ratio 2:0.7:1.0)	16	6	8
(b) Evaluators 2 - 7: (Ratio 2:1.0:1.1)	18	9	10
(c) Evaluators 1 - 7: (Ratio 2:0.9:1.1)	34	15	18

TABLE 58

6.2.3 Evidence of Consistency

What is possible is to test whether my evaluations (30 in all) present similar general conclusions to those of the other six evaluators. This can be done by comparing my results with the cumulative totals of the other six evaluators.

Table 58 compares the distribution of quality amongst the products when they are analysed in this way. The interesting finding is that the ratios of the distributions are very similar. In qualitative terms the same conclusions would be drawn from the three sets of data. That is, that there are twice as many good quality products as average and poor quality ones.

> **Whilst this does not provide conclusive proof that the technique was applied consistently by the evaluators it does give added confidence to the results as a whole.**

6.2.4 Concluding Remarks

There are three important conclusions to be drawn from these evaluations. Firstly, that the Steering Committee were right to advise the Board to look at the lower priced products - in their words the 'cheap and cheerful' approach. The evaluation results show quite convincingly that there are good quality products to be found at below £50. However, their suggested threshold of £250 does not appear to be significant.

Secondly, good quality products can be found across the price range - so can average and poor quality products. Across the whole product range the number of good quality products to average and poor quality ones appears to be distributed in the ratio 2:1:1. Interestingly price alone is not an indicator of quality.

Thirdly, text based materials form the majority of the good quality products (24 out of 34), followed by video led (5) and Interactive Video (4). Audio products faired particularly badly in this study with four out of the five products being of poor quality.

6.3 Limitations to the Methodology & the Results

This section discusses the under-lying assumptions of the methodology and considers the type of design that could have been adopted in more favourable circumstances. The four main assumptions are concerned with:

6.3.1 Target Audience

This research is based upon the fact that a target audience is assumed to exist, and that the evaluators have the ability to envisage the design of the programmes as they appear to that audience. The evaluators are also being asked to look at the course design from the specified entry level of prior learning. The individuals best able to judge the correctness of an evaluator's judgements are members of the target audience. Given different operating conditions, these would have been a useful areas to have investigated. In other words, to have assessed how the views of the evaluators correlated with the views of the actual target audiences. Another issue is that the academic level of Open Learning programmes varies quite considerably, although most of the evaluations carried out during this research were based on materials funded through the Open Tech project (whose target audience was technicians and supervisors). An alternative methodology would have been to adopt NCVQ's levels of competence and occupational areas.

6.3.2 Evaluators

Related to the above is the fact that the evaluators used in this research were all subject matter experts in the fields in which they were asked to carry out evaluations. It would have been interesting to have investigated who within organizations are the decision makers when it comes to selecting Open Learning materials. Personal experience suggests that it is actually a combination of technical managers and training staff, depending on the nature and complexity of the training task. Certainly some technical knowledge is required in order to be able to assess whether the learning outcomes are achievable. Equally, an understanding of training technology is needed so that judgements about the learner-centred nature and the learning design of the programmes can be made.

Another potential area of concern is the fact that some evaluators carried out significantly more evaluations than others. This would not have been so important if there had been an opportunity to have first established the degree of

variance solely attributable the evaluators. One way of doing this would have been to have carried out controlled evaluation studies on range of selected Open Learning products. Data regarding the arithmetic mean and standard deviations would be an invaluable aid to assessing the statistical significance of small samples of materials. For instance, added confidence could be placed on the results from the relatively small sample of products carried out by evaluators 3, 4, 6 and 7 if they were able to demonstrate consistency in their evaluations of a controlled sample of products. Another area of investigation could have been to have examined whether there is any drift in the scores given by the evaluators with time.

6.3.3 Selection of Materials

The materials reviewed in this study were carefully selected on the basis of their ability to be delivered by EITB staff. Whilst this was not a study of randomly selected products it would have been useful to have compared the results with a random sample of Open Learning products. As already stated, greater emphasis on a wider range of materials from different disciplines would have been useful. Having said that, the study contains sufficient evaluations from which to be able to draw meaningful conclusions.

6.3.4 Delivery Media

Very much linked to this is the type of delivery media used. Assumptions have been made by the evaluators about the suitability of the delivery media for the target audience (under 'Relevant Learning Design'). Again it would have been useful to have compared the opinions of evaluators with those of actual target audiences.

Meaningful interpretations about the quality of materials according to delivery media can only be made when other sources of variance have been identified. This applies equally to the other main variables of evaluators, learners and subject areas.

In summary, training of evaluators is the main area in which changes would have been made. In particular to have established the variance in scores solely attributable to evaluators.

7. MAIN CONCLUSIONS TO THE RESEARCH

There are six main outcomes to this research project:

7.1 A New Definition of Open Learning

This research has shown that the existing definitions of Open Learning have weaknesses. The entirely learner-centred approaches of the formal definitions (NEC, 1985 and CET, 1986) do not acknowledge the needs that exist in industrial training situations. Employers require both flexibility and control from their Open Learning. In terms of flexibility, there is strong anecdotal evidence to suggest that the main benefit of Open Learning to employers is that training can take place without the need to release key employees. Evidence from employers also suggests that there is a need for control over the learning process because totally open and uncontrolled patterns of learning do not succeed. The empirical 'time/place/pace' definition also has limitations. A strict interpretation excludes the more modern delivery methods which require sophisticated hardware (like Computer Based Training and Interactive Video) on the basis of inflexibility in the place of delivery. In this research flexibility is interpreted as applying to the convenience afforded to either the learner or the trainer. This philosophy is at the heart of the new definition of Open Learning. It challenges the conventional, learner-centred approach and extends the existing definitions to accommodate the needs of employers and industrial trainers:

> **Open Learning** *is education or training designed to meet an identified need. The learning is flexible in the time, place and pace of its delivery. It is characterised by the facility to be externally controlled or monitored.*

From this definition, Open Learning has the following implied characteristics:

- It is education or training.
- It is flexible in the time, place and pace of learning.
- It has the facility to be externally controlled or monitored.
- It meets an identified education or training need.
- It has a target audience.

7.2 A Set of Guidelines for Producers

During this research, the Open Learning Code of Practice, "*Ensuring Quality in Open Learning*" (MSC, 1987), has been shown to be related to the Quality Assurance Standard BS 5750 (BSI, 1987). It has also been shown that the Code is written in general terms in order to be able to cover the variety of

delivery media available. Specific recommendations have been formulated which give practical advice to the producers of text based Open Learning materials. The importance of this is that the majority of the other Open Learning delivery media (IV, CBT and Video led) contain at least some elements of text - to which the guidelines are applicable.

The guidelines have been derived from an analysis of the requirements of the Code of Practice together with consultancy experiences in developing text-based materials for the Intruder Alarm Industry. This was a joint project between the EITB, the British Security Industry Association (BSIA) and Modern Alarms Ltd to produce training resource material to meet the requirements of BS 4737 - Installation and Specification of Intruder Alarms (BSI, 1986).

The fourteen guidelines give advice on the following aspects of Open Learning:

- Clearly Stated and Achievable Training Aims and Objectives.
- Statement of the Target Audience and Pre-Requisite Knowledge.
- Allocation of Tutor
- Guide Study Times
- Modular Design
- Resources Required
- Route Maps
- Text Layout
- Graphics
- Margins & Binding
- Activities and Self Assessment Questions
- Phase Test and Tutor's Signing-Off
- Packaging
- Tone and Style

7.3 A New Technique for Evaluating Open Learning Materials

A new technique for the evaluation of the quality of Open Learning materials has been proposed. It is based upon quantifying the degree of compliance with which a package meets Parts One and Two of the Open Learning Code of Practice (MSC, 1987). Packages are assessed against an abbreviated checklist known as the Assessment Criteria (Stuart, 1989) which covers 12 key areas relating to the production and delivery of Open Learning materials. The criteria have been weighted according to their perceived contribution towards quality. Subject specialists have been consulted about these weightings and their views used as a basis against which to test the research technique.

The decisions taken in constructing this technique have been explained and shown to contain characteristics that are well established in other methods, notably:

- the assessment of compliance through the use of Likert Scales (Likert, 1961)
- the use of a quantitative scoring system similar to that used in Failure Mode and Effect Analysis (EITB, 1986)
- the documentation of the evaluation as found in Kepner Tregoe Decision Analysis (Kepner et al, 1963).

7.4 A Study of 67 Open Learning Products

A range of eight subject areas were selected for evaluation. Theses were chosen on the basis of their suitability for incorporation into a new portfolio of Open Learning products and services to be delivered by EITB staff in the Midlands.

70 products were selected for evaluation in the areas of European Languages (8), Quality Systems including SPC (5), Training Planning (5), Open Learning (10), Basic Supervisory Skills (5), Basic Management Training (21), Basic Electronics (7) and Engineering Design (9).

67 evaluations were successfully carried out by seven EITB staff in the period August - December 1989. From these evaluation scores, the results were categorized into three quality types - good, average and poor. The conclusions drawn were firstly that there are good quality products to be found priced at under £50. Secondly, good quality products can be found across the price range as can average and poor quality ones. Across the whole price range the number of good quality products to average and poor ones appears to be distributed in the ratio 2:1:1.

Thirdly, text based materials form the majority of the good quality products (24 out of 34), followed by video led (5) and Interactive Video (4). Audio products faired particularly badly in this study with four out of the five products being of poor quality.

7.5 Quality Assurance can be used as a Vehicle for Identifying Training Needs

A case-study carried out at a small sub-contract machining company demonstrated that quality assurance can be used as a vehicle for identifying training needs. As part of the implementation of BS 5750 Part 2 (BSI, 1987) it was possible to construct a training policy (derived from the business objectives), a set of training aims and objectives (stating performance, standards and conditions), and a rolling training plan.

The procedures for identifying non-compliances in the quality assurance system were used as inputs to a formalised system for identifying training needs.

Quality records (such as Corrective Action Notices, written procedures and process documentation) formed the basis of the company's system for keeping training records.

An added and immediate benefit that this project brought to the company was an increased robustness to external customer quality audits.

7.6 An Alternative Method for the Evaluation of Conventional Training

The established technique for evaluating conventional training was proposed by Warr, Bird and Rackham (1970), and is known as the CIRO model. Warr et al acknowledge that one of the weakness of the model is that the ultimate outcomes of training are not usually measurable. This research has shown that current thinking is for evaluation to be measured in terms of these ultimate outcomes referred to as broader human resource goals (Harrison, 1989) or 'soft' evaluation criteria (Pettigrew et al, 1989).

This research proposes that the cumulative effects of ultimate outcomes can be measured by examining both the training system and specific learning events.

7.7 Proposals for Further Work

The proposals for further work are based upon developments that are now emerging in industrial training and which might influence Open Learning in the future. The presentation of the proposals is similar to that used in the setting of the original research objectives:

1. To investigate the degree to which Open Learning producers and deliverers succeed in achieving BS5750 registration.

2. To study the distribution of quality amongst Open Learning products supplied to other industry sectors (apart from engineering).

3. To investigate whether audio materials possess characteristics that make them inherently poor quality Open Learning, or whether the sample used in this research was unrepresentative of the range of quality to be found in audio products.

4. To examine the influence of the proposed European Code of Practice (Haldane, 1991) on the quality of Open Learning in the UK.

5. To study the impact of National Vocational Qualifications on the quality of Open Learning in the UK.

GLOSSARY OF TERMS

Competence, a description of something which a person who works in a given occupational area should be able to do. It is a description of an action, behaviour or outcome which the person should be able to demonstrate.

Training Agency, 1988.

Decision Analysis is a systematic putting together of information and judgement to arrive at a committed course of action.

Kepner and Tregoe, 1963.

Education is described as activities which aim at developing the knowledge, skills, moral values and understanding required in all aspects of life rather than knowledge and skill relating to only a limited field of activity.

MSC, 1981.

Evaluation looks at the total value of a learning event, not just at whether and how far it achieved its learning objectives. It thereby puts the event in its wider context, and provides information essential to future planning.

Harrison, 1989.

An **Instructional Objective** is a statement that describes an intended outcome of an instruction. An objective is meaningful to the extent it communicates an instructional intent to its reader, and does so to the degree that it defines the terminal behaviour expected of the learner.

Mager, 1962.

Learning is a relatively permanent change in behaviour that occurs as a result of practice and experience.

Bass and Vaughan, 1967.

Quality is the totality of features and characteristics of a product or service that bear upon its ability to meet a given need.

Fittall, 1990.

Vocational Education and Training (VET) is taken as covering all post-16 education and training outside the school system. This includes training by employers, by private training providers, Further and Higher Education, but excludes recreational courses for adults.

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LIST OF APPENDICES

Development Grant:

Assignment for

Duport Harper Foundries

Development Grant - Assignment for Duport Harper Foundries.

This assignment describes how as a Board Adviser I was able to help a company with what at first appeared to be a quality problem. In 1989, Duport-Harper Foundries, at Tipton, W. Midlands, introduced a new casting process for the production of automotive components. To save costs, and to remain competitive, they wanted to reduce the number of machining operations that they had to do after casting, and reduce the number of casting stages for complicated components like turbochargers. The company operates in the area of foundry technology known as precision casting. The principle is as follows: from an original pattern an impression or master mold is made. Into this a second pattern of expendable material is cast. This is embedded in a molding material of green-sand. The mold is then melted out so that there is a cavity into which the casting metal is poured.

The most widely used precision casting technique is the 'lost wax' or 'investment molding' process. Under their Technical Director. Ron Turvey, the company were investigating the use of polystyrene molds in the 'lost-foam' process. This offered the potential for high dimensional accuracy, high surface finish, single-stage casting, and a reduced number of finishing operations. The problem was that during production trials it became apparent that the castings were outside dimensional tolerance, and were showing signs indicating that the molds had been damaged prior to casting. Further examination showed that the molds were subject to distortion during compaction in the molding box, and that the brittle polystyrene was being damaged during handling. This turned out to be caused by operator error. Consequently, a significant amount of training was required. The training programmes could not be purchased off-the-shelf, nor could they be developed easily, as the estimated training period was for three weeks on-the-job training per employee (involving about 22 operators and technicians).

This represented a large financial burden to the company, and for which they sought financial assistance. They appeared to meet the Option 5 criteria, but at that time local Training Agency funding had been exhausted. The Board were asked to help and were able to fund 50% of the £13,000 costs through a Development Grant.

Research Aims and Objectives

Aims

To research into the evaluation of the quality and promotion of Open Learning materials.

Objectives

Terminal Behaviour:

- To review current definitions of Open Learning and to select (or construct) a definition which gives boundaries within which the research project can operate.
- To examine existing methods of evaluating Open Learning materials, and to analyse the strengths and weaknesses of each technique.
- To prepare a new quantitative method for evaluating both the quality and openness of Open Learning materials.
- To select a range of Open Learning packages, and to examine their differing levels of quality and openness.
- To carry out studies to examine whether providing sales and consultancy services in the area of Open Learning is a commercial success or failure.
- To provide industry with the results of the research studies, and to promote methods of 'Best Practice' arising from the project, and to act as an exemplar or model scheme for other organisations.

Standard:

- To the satisfaction of the internal and external supervisors, and of the external examiner.

Conditions:

- In collaboration with Aston University and the EITB. To be completed within three years.

The Open Learning

Code of Practice

Part 1: Requirements of Producers

The Open Learning Code of Practice: Part One

Researching and Planning

1. Make every effort to find out and pay constant regard to the learning needs of the intended Learners and to the expectations of any Sponsors.
2. Employ the most appropriate learning media (eg print, audio, video) in terms of what is cost-effective for your Learners, and their Sponsors, and most suited to the subject-matter and learning objectives.
3. Bear in mind the range of learners who wish to use your materials for different purposes, and build in features that will enable them to exercise maximum choice.

Designing for Effective Learning

4. Make your Open Learning materials totally self- explanatory, so that at any point within them Learners always understand what they are supposed to be doing, and how they should be doing it.
5. Design your materials so that Learners must interact with them - actively using the ideas being presented rather than merely being told about them.
6. Build in frequent opportunities for Learners to obtain feedback that will enable them to assess their progress.

Piloting and Improving

7. Before releasing your materials for general use, pilot them - and improve them in the light of the resulting feedback.

Informing Users

8. In publishing your materials, provide full printed information stating exactly what they aim to achieve with what kind of learners, and what demands are likely to be made both on the Learners themselves and on the support services.

Training the Deliverers

9. Provide training where appropriate, whether in recorded form or face-to-face, for deliverers and anyone else who may be involved in supporting your intended Learners and operating the Open Learning Programme.

Improving and Updating

10. Issue improved and updated versions of your materials when feedback from users indicates that they have become necessary.

Guidelines for Producers of Text Based Open Learning Materials

Fourteen guidelines are given to producers, and they are not meant to be prescriptive but to be read as key questions that should be thought about when designing materials. The assumption is made that before any material is written, the market research and training need have been identified (and confirmed), and the decision has been taken that Open Learning is the most appropriate solution.

The requirements of the Code of Practice are admirable; the guidelines which follow give practical advice for success. The guidelines, which are not in any special order of importance, are:-

Fourteen Guidelines

Clearly stated and achievable training aims and objectives

Clarity assists the producer, the deliverer and the trainee. Clarity helps in the production process: it facilitates the correct selection of materials: it assists the validation of training.

Express training aims and objectives in learner-behaviour rather than trainer-oriented terms. It makes the learner feel the text is written for them.

State training objectives in active, performance terms with the main verb in the present tense. This is easier for skills training than for knowledge training, such as management and supervisory subjects. Verbs like assemble, name, list, identify, calculate, grind, mill, turn, fit are acceptable. Less desirable verbs are, understand, know, appreciate, be aware of, have a working knowledge of.

Objectives must give performance, standards and conditions.

Statement of the target audience and pre-requisite knowledge

The intended target audience must be stated, and the entry requirements (including coverage of previous or related modules) need to be given. These enable the deliverers to advise learners on their suitability for a particular training programme.

They also ensure that learners do not partly completed a programme only to find they don't have sufficient knowledge to finish it.

The producer's research will need to identify the target audience and their level of pre-entry knowledge. This is vital information when determining the tone, content and structure of the text.

Allocation of tutor

Within the Introduction to a training programme, a valuable element is a section for both the learner and the tutor to complete at the start of the training. This ensures that: the learner knows who the tutor is, and they have made contact; there is an agreed start date, which aids external validation; and most importantly secures the tutor's commitment to monitoring the learner's performance.

Guide-times for study

Open Learning offers the learner the opportunity to study at a pace to suit themselves. A guide-time for study will allow the learner and the tutor to plan a study programme. Agreed milestones can be set that will enable the tutor to monitor the learner's progress.

A study plan can always be renegotiated, but its existence allows both the learner and the tutor to see whether the pace being set is realistic for the trainee to achieve. It is also useful when a final completion date for the training is fixed. For instance, where an examination date is set.

Modular Design

The flexibility of use of materials can be greatly enhanced by adopting a modular format. where discrete areas of learning are grouped into separate modules. The size of the module will largely be determined by the target audience but the over-riding concern is that the motivation of the trainees should be maintained. Modules that are so large that they are likely to make the trainee feel swamped with seemingly endless material are to be discouraged.

Our experiences are that each module should be broken down into elements made up of learning likely to take the target audience about two to two and a half hours to complete. This helps the trainee to allocate a period of undisturbed period equivalent to an afternoon or evening of study.

Resources Required

At the beginning of the module it is helpful for the learner to know in advance what resources will be required. These might be a quiet room, pen and paper, specific tools or reference books.

Route Map

A route map is a graphical representation of the study programme. It helps learners to visualise their progress. A modular design can be used to construct a route map. A non-modular design cannot. Modular route maps can show entry points into the training programme, as well as the links between the modules. The learner can also see the preferred completion order of the modules.

Text Layout

The text should be laid out to the producer's house-style, and should be pleasing to the eye. The needs of the learners will dictate the compactness of the text. Too much text on a page can be distracting, as can too many changes in font styles. With the availability of Desk Top Publishing (DTP), producers must not be tempted to be over adventurous in their layout design.

We suggest between five and ten identifiable blocks of text per page, including headers and footers. On this page there are ten. With font changes, we recommend no more than twelve per page (include bold, italics, font style, font size and capitals as seperate changes). There are nine font changes on this page.

Portrait format (upright) is preferred to landscape (sideways). Changing formats within a text is undesirable, but where it is necessary the landscape format should obey the convention of being read upright when the text is turned clockwise through ninety degrees.

An A4 size page is recommended because it is a standard within the publishing industry, and because it is physically convenient to handle.

Graphics

DTP allows the use of graphics to break up the text, but like changes in font styles, too much can be distracting. Use graphics to illustrate a specific point. Do not use them to fill space - each one must convey a relevant message.

An effective use of graphics is to display icons indicating that the trainee should do something, such as: take a break; contact your tutor; do a Self Assessment Question (SAQ); carry out an activity.

Margins & Binding

A 2" right hand margin is useful for the trainees to make notes. It is good practice for trainees to be given their own workbook that they can keep for future reference.

Cumbersome volumes of text are daunting to trainees, and text should be broken down into workbooks containing no more than about 40 pages of 80 gramme A4 text. The binding should not be too flimsy and should enable the workbook to stay at any page. The left-hand binding margin should be sufficiently wide so as to allow unhindered reading of the text.

Activities and Self Assessment Questions

In constructing these the producer must give consideration to all possible learning situations. The solitary, individual must be catered for as must a group of learners. It is strongly recommended that producers check that deliverers can provide the learning opportunities.

Phase Test and Tutor's Signing-Off

At the end of each module there should be a comprehensive SAQ or 'phase test' to consolidate the learning points from the whole module. The learner should be advised to contact their tutor if there are any concerns. When the learner has completed the module to the satisfaction of the tutor, both parties should sign a

section at the end of the workbook saying this.

This assists external validation of the training and helps to identify those learners who have only superficially covered the work.

Packaging

Packaging is usually the first impression a client has of a producer's material. Poor packaging can undermine the credibility of the training programme. For example, a frustrating experience is to open a briefcase and examine the contents, only to find that they are so tightly packaged that they will not all go back in.

Tone & Style

The tone of the text will be dependant on the target audience. It must be neither patronising nor too high-brow. Consider whether to use formal or informal styles of grammar, and whether the choice might irritate or motivate the trainee. Variety is needed in the length of sentences. Short sentences can be used effectively to create an impact but this only happens when they are interspersed amongst longer more complex sentences. Like that.

Vocabulary and sentence construction can both have a great effect on the tone of text, and can also help to create a style of writing. For instance, academic texts are characterised by long and complex sentences using technical vocabulary. This can be used to good effect when a precise message needs to be conveyed from one scientist to another. For example:-

"On perfectly elastic homogeneous material the settlements under rectangular areas uniformly loaded at the same intensity are proportional to the width of the loaded area."

Avoid using too many subordinate clauses. Subordinate clauses are sub-sections of the main sentence. Their effect is to distract the reader's attention. By the time the reader reaches the end of the sentence they have forgotten what it was about. Sometimes they are deliberately used to fudge an issue. A classic example was given in the BBC series "Yes, Prime Minister", when the Permanent Secretary to the Cabinet, Sir Humphrey Appleby, was asked for a straight answer. His reply was:-

'As far as we can see, looking at it by and large, taking one thing with another, then in the last analysis it is probably true to say, at the end of the day, you would find in general terms that, not to put too fine a point on it, there was not very much in it one way or another'.

There are several ways of assessing the effectiveness of written communications. One technique is to use the Fog Index. This is simple measure of the sophistication of the sentence structure. It is obtained by taking a sample of text (at least 200 words) and calculating the following:-

Fog Index = 0.4 (A + B)

Where A is the number of words per sentence, and B is the percentage of three or more syllable words (excluding proper nouns and suffixes) to the total number of words. The acceptable range for effective communication is between 9 and 12. The upper-most limit is 16, and anything above this can only be justified in legal, technical and academic texts.

The use of too many acronyms can also hinder good written communication, as can latinisms and abbreviations.

Another indicator of clarity is the number of subordinate clauses per sentence (nine in Sir Humphrey's reply). Combined with the Fog Index it can be used to judge the sophistication of written material.

An everyday example is given in Figure 1, where leading articles from The Sun and Financial Times are compared. The target audience for these two newspapers is quite different, but nevertheless they are both legitimate and effective means of communication within their own niches of the market. The same principle applies to Open Learning materials - what works with operators, won't necessarily work with managers. The key message to producers and deliverers is to know your Target Audience.

Sample Text of Open Learning

Exhibits 1-4 are taken from an Open Learning programme prepared by Modern Alarms Ltd in conjunction with the British Security Industry Association (BSIA) and the EITB. Its target audience is technicians who are being trained to install intruder alarms to a British Standard. The course assumes that trainees have no prior knowledge of the subject.

Exhibit 1 shows the front cover to a section of the material covering "Detection Circuits and Wiring". This indicates that the material is broken down into discrete units of learning and is characteristic of a modular design.

At the start of the section the graphic symbols being used in the text are displayed and explained.

Exhibit 2 demonstrates that there are arrangements for certification and tutorial support. Note also the clearly stated training objectives. They give terminal behaviour and are written in a learner-centred style. Precise present tense verbs are used: state, sketch, terminate, describe.

Comparing Leading Articles in the Sun & Financial Times

	Fog Index	Total Number of Words	Subordinate Clauses per Sentence	Number of Acronyms
The Sun	8.0	220	1.1	0
Financial Times	16.7	241	3.8	7

Publication Dates: 6th October 1990
Subject of both Editorials:
Entry into the European Exchange-Rate Mechanism

FIGURE 1

Exhibits 3 and 4 give the four pages of text from Section 2 of Unit 2. Note how elements of learning are broken down into managable sections.

Graphics are used to good effect. They reinforce the learning points being made in the text. Icons are used sensibly to draw attention to particular elements of the text.

The text is written in a friendly style using short sentances. It is learner-centred, for example 'we say...', 'let us...'.

Notice also the low fog index (less than eight for this whole Unit). There are no abbreviations or unexplained technical terms.

There is a 2" right hand margin in which the trainees can make their own notes.

In Exhibit 4b shading is used to give depth to a single colour reproduction.

The general layout of the text is pleasing to the eye.

The Open Learning

Code of Practice

Part 2: Requirements of Deliverers

The Open Learning Code of Practice: Part Two

Attracting Clients

1. Publish clear information about the services you offer and the cost to the client, whether an individual or an organisation.

2. Make it easy for potential clients to contact you and to discuss their concerns.

Clarifying Clients' Needs

3. Help potential clients to clarify their educational or training needs and the extent to which Open Learning methods might enable them to meet those needs.

Choosing a Package

4. In helping clients choose particular Open Learning materials, aim to identify those that fit in best with the Learner's preferences for what, how, where, when and at what pace they wish to study.

5. Once an Open Learning package has been agreed, make sure that your clients fully understand what it consists of and what they might expect to gain from it.

6. Make sure also that the Learners and/or the Sponsors are fully aware of what the package will demand of them.

Agreeing the Support System

7. Agree with your Learners the nature and amount of tutorial and other support that Learners are likely to need while working on the package and how this support will be provided.

Operating the System

8. During the programme, provide the Learners with individual support and regular opportunities to test their developing competencies and get feedback on their progress.

Evaluating and Improving

9. Evaluate the operation and outcomes of the programme both while it is in progress and when it is completed.

10. Use the results of the evaluation both to improve your own support services and to give feedback to Producers about the effectiveness of their learning materials and any unexpected problems (or opportunities) that may have become apparent while using them.

The Open Learning Code of Practice Part 3:

Requirements of Producers & Deliverers

The Open Learning Code of Practice: Part Three

Staff Competence

1. Ensure that you have staff with the particular range of competencies needed in your operations and provide appropriate training as and when required.

Structures and Plans

2. Establish clear management structures and plans by means of which to operate effectively and efficiently.

Monitoring and Correcting

3. Constantly monitor the quality of your operations in the light of your plans, taking corrective action where necessary.

Dealing with Complaints

4. Set up a procedure for dealing with possible complaints from Sponsors, Learners or others about aspects of your operations, products or services.

Liaising with Others

5. Establish a system by which you can regularly liaise with other Producers or Deliverers, and with Sponsors and Learners, in order to benefit from one another's experience in producing, *delivering and updating Open Learning* programmes of the highest possible quality.

The Revised Assessment Criteria for Open Learning (Stuart, 1989)

Open Learning Assessment Criteria - Revised Criteria List

1. Learning Aims Clearly Stated

- Do they lead to increased knowledge, competences and skills?
- Have they been pre-tested to review if they meet the learning objectives?

2. Relevant Learning Design

- Are assessment activities built in?
- Is the volume of inputs appropriate to the target audience?
- Is the language level appropriate?
- Are there sufficient activities?
- Are the stated learning times accurate?

3. Learning Outcomes Achievable

- Does the package encourage:
  - Aquisition of knowledge?
  - The development of competences?
  - The broadening of skills?
- Does it include visual clues?

4. Learner Centred Provision

- Will the product motivate the target audience?
- Can the learning be self-planned?
- Are there time and routing constraints?
- What do the activities achieve?

5. Presentation

- Does it attract the main target audience?
- Will it help to motivate the learners?
- Does it demonstrate value for money?
- Is there evidence of cost benefits?
- Is the media mix appropriate?

6. Relevant Product

- Will the contents meet the needs of the target audience accurately?
- Is the reading level appropriate?

7. Evidence of Piloting and Usage

- How was the piloting managed? (size, student mix, feedback, evaluation)
- How was the market research organised?

8. Support

- Can the material be support free?
- Does the producer organise support?
- Do support guides exist?
- Are the instructions clear?
- Does the producer refer to a national support network?

9. Flexibility of Use

- Is a customising service available?
- Is it a fixed course?
- Can learners choose from a modular mix?

10 Qualifications

- Is the product oriented towards a qualification?
- Can material be used for a variety of qualifications?
- How will qualifications be recognized?
- Are course routes and tutor guides available?

11. Accessibility and Product Marketing

- Is the product marketed locally or nationally?
- How do learners or sponsors aquire the product?
- Is there access to media and practical facilities?

12. Diagnosing Learner Needs

- What ensures that the learners have the right product?
- Are the results of the learning evaluated?

Matrix Comparing the Open Learning Code of Practice with the Training Agency's Assessment Criteria

ASSESSMENT CRITERIA	PART ONE REQUIREMENTS OF PRODUCERS						PART TWO REQUIREMENTS OF DELIVERERS						PART THREE REQUIREMENTS OF DELIVERS AND PRODUCERS					
	Researching and Planning	Designing for Effective Learning	Piloting and Improving	Informing Users	Training the Deliverers	Improving and Updating	Attracting Clients	Clarifying Client's Needs	Choosing a Package	Agreeing the Support Systems	Operating the System	Evaluating and Improving	Staff Competence	Structures and Plans	Monitoring and Correcting	Dealing with complaints	Liaising with others	
LEARNING AIMS CLEARLY STATED		✓									✓							A
RELEVANT LEARNING DESIGN	✓																	B
LEARNING OUTCOME ACHIEVABLE		✓										✓						C
LEARNER CENTRED PROVISION		✓																D
PRESENTATION		✓																E
RELEVANT PRODUCT	✓					✓												F
EVIDENCE OF PILOTING & USEAGE			✓			✓												G
ACCESSIBILITY & PRODUCT MARKETING				✓			✓		✓									H
SUPPORT					✓					✓								I
FLEXIBILITY OF USE	✓																	J
QUALIFICATIONS																		K
DIAGNOSING LEARNER NEEDS												✓						L
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	

Matrix for Comparing the Open Learning Code of Practice with the Training Agency's Assessment Criteria

Quality Policy for
Patelmo Engineering Limited

PRECISION AND GENERAL ENGINEERS

PATELMO
Engineering Ltd

Registered Office
BASSETT ROAD, PARK LANE INDUSTRIAL ESTATE, HALESOWEN, WEST MIDLANDS, B63 2RE
Telephone (0384) 637707 · Telex 336712 SHELTN G · Fax (0384) 410308
(Ref. P1930)

STATEMENT OF QUALITY POLICY

It is the policy of Patelmo Engineering Ltd to carry out sub-contract machining that meets the needs and expectations of our customers.

To ensure consistent conformance to the standards specified by our customers, it is the company's policy to implement a quality system meeting the requirements of BS 5750: Part 2: 1987, during 1991.

The company will identify and endeavour to provide the training needs to obtain the stated objective.

Mr M D Parish (Managing Director) will act as the Quality Manager and Mr R Hadley (Works Manager) will act as Quality Systems Controller.

Financial Director .....

Managing Director .....

Sales & Commercial Director .....

Date .....

Consultancy Project at

Patelmo Engineering Limited

Training Aims and Objectives

Training Aims and Objectives

Training Aims

To implement a Quality Assurance System to meet the requirements of British Standard 5750: Part 2: 1987.

Training Objectives

Performance

1. To operate the Management Review System
2. To operate the Internal Quality Audit System
3. To operate the Instrumentation and Calibration System.

Standard

To the satisfaction of British Standards Institution Assessors.

Conditions

Place - within Patelmo Engineering Limited

Time - training to be completed by the end of April 1991.

Patelmo Engineering Limited

Training Plan for the

Implementation of BS 5750: Part 2

Patelmo Engineering Limited - Training Plan

Training Objectives: To operate the Instrumentation and Calibration System

Date: 11.03.1991

Review or Audit Ref No	Date	Enabling Objectives	Personnel	Priority	Type and Method of Training	Time Scale for Training	Completion Date
007	01.03.91	Sub-contract the re-calibration of	Calibration Technician	Major	Off-the-job; Counselling and instruction from the QM	Phase 1: 31.03.91 Phase 2: 31.05.91 Phase 3: 31.07.91	
007	01.03.91	Specify the traceability requirements	Ditto	Major	Ditto	Ditto	
007	01.03.91	Verify acceptance of sub-contracted re-calibrations	Ditto	Major	Ditto	Ditto	

Patelmo Engineering Limited - Training Plan

Training Objectives: To operate the Instrumentation and Calibration System

Date: 11.03.1991

Review or Audit Ref No	Date	Enabling Objectives	Personnel	Priority	Type and Method of Training	Time Scale for Training	Completion Date
Note 1	01.03.91	Maintain an Instrument Register	Quality Mgr	Major	On-the-job; Assistance from In-Comm	Phase 1: 31.03.91 Phase 2: 31.05.91 Phase 3: 31.07.91	12.03.91
Note 1	01.03.91	Maintain Instrument Record Cards	Calibration Technician	Major	Off-the-job; Counselling & Instruction from the QM	Ditto	12.03.91
007	01.03.91	Recall Instruments for Calibration Checks	Ditto	Major	Ditto	Ditto	
007	01.03.91	Colour Code Instruments to indicate their Calibration Status	Ditto	Minor	Ditto	Ditto	
012	01.03.91	Maintain a set of Standard blocks and measuring rods	Ditto	Critical	Ditto	Ditto	

Patelmo Engineering Limited - Training Plan

Training Objectives: To operate the Instrumentation and Calibration System Date: 11.03.1991

Review or Audit Ref No	Date	Enabling Objectives	Personnel	Priority	Type and Method of Training	Time Scale for Training	Completion Date
004	11.03.91	Establish a 12 month Audit Plan	Internal Auditor	Critical	On-the-job; Assistance from In-Comm	31.03.91	12.03.91
004	11.03.91	Carry out Product Audits	Ditto	Major	Ditto	31.03.91	12.03.91
004	11.03.91	Construct Checklists	Ditto	Major	Ditto	Ditto	
004	11.03.91	Verify Procedures	Ditto	Major	ditto	Ditto	12.03.91
004	11.03.91	Identify that all process operations have written QP's	Ditto	Major	Ditto	Ditto	12.03.91
004	11.03.91	Issue Audit Reports	Ditto	Major	Ditto	Ditto	25.02.91
004	11.03.91	Confirm Corrective Actions have taken Place	Ditto	Major	Ditto	Ditto	*25.02.91*
004	11.03.91	Process Audit Reports	Ditto	Major	Ditto	Ditto	25.02.91

Patelmo Engineering Limited - Training Plan

Training Objectives: To operate the Instrumentation and Calibration System — Date: 11.03.1991

Review or Audit Ref No	Date	Enabling Objectives	Personnel	Priority	Type and Method	Time Scale for of Training	Completion Training
----	15.02.91	Establish a 12 month Review Plan	Quality Mgr	Critical	On-the-job; Counselling	By 28.02.91	19.02.91
----	15.02.91	Review the current status of:					
		1. BS5750: Pt 2: 1978	Quality Mgr	Major	Ditto	By 28.02.91	19.02.91
		2. BS5750: Pt 4: 1990	Quality Mgr	Major	Ditto	Ditto	19.02.91
		3. BS5781: Pt 1: 1981	Quality Mgr	Major	Ditto	Ditto	19.02.91
		4. BS5781: Pt 2: 1981	Quality Mgr	Major	Ditto	Ditto	19.02.91
		5. QAS/3289/17 (Lot Traceability)	Quality Mgr	Major	Ditto	Ditto	19.02.91
		6. QAS/3284/16 (Machining & Metal forming process)	Quality Mgr	Major	Ditto	Ditto	19.02.91
----	15.02.91	Liaise with the Internal Auditor to ensure the Review & Audit give complete coverage of the QA System	Quality Mgr and Internal Auditor	Major	Ditto	By 15.03.91	12.03.91

Patelmo Engineering Limited - Training Plan

Training Objectives: To operate the Instrumentation and Calibration System Date: 11.03.1991

Review or Audit Ref No	Date	Enabling Objectives	Personnel	Priority	Type and Method	Time Scale for of Training	Completion Training
----	15.02.91	Authorise a Quality Policy	Quality Mgr & Directors	Major	Ditto	By 28.02.91	11.03.91
----	15.02.91	Carry out a Systems Audit	Quality Mgr /Works Mgr	Major	On-the-job; Counselling and Instruction	By 31.03.91	12.03.91
----	15.02.91	Write QP's	Quality Mgr	Major	Ditto	Ditto	12.03.91
----	13.02.91	Process Corrective Action Notices	Works Mgr/ Quality Mgr	Major	Ditto	Ditto	12.03.91
----	15.02.91	Amend the QM	Quality Mgr	Minor	Ditto	Ditto	
----	01.03.91	Re-issue the Calibration Manual	Quality Mgr	Critical	Ditto	ditto	
----	01.03.91	Maintain a 'Live File' for CAN's	Quality Mgr	Major	Ditto	Ditto	
----	01.03.91	Quarantine non-conforming products	Quality Mgr	Critical	Ditto	Ditto	

Patelmo Engineering Limited - Training Plan

Training Objectives: To operate the Instrumentation and Calibration System Date: 11.03.1991

Review or Audit Ref No	Date	Enabling Objectives	Personnel	Priority	Type and Method	Time Scale for of Training	Completion Training
----	01.02.91	Train the Calibration Technician	Quality Mgr	Critical	Off-the-job; Counselling and Instruction	By 31.03.91	

Patelmo Engineering Limited - Training Plan

Note 1

The Instrumentation and Calibration system comprises the following devices (which are classified according to how they will be phased-in to the documented system):-

Phase 1 - Immediate

Micrometers : inside/outside/depth
Vernier Calipers
Bed Vernier
Engineers Squares

Phase 2 - Short Term

Sine Bars
Slip Gauges
Dial Gauges Dial Test Indicators
Dividing Heads
Marking Out Tables
Internal Comparators

Phase 3 - Medium Term

Adjustable Tapes
Engineers Parallels
Thread Gauges
Large Indexing Fixtures
Machine Readouts
Steel Rules
Feeler Gauges
Customer Fixtures
Surface Finish Machine
Box Levels

Investors in People Award:
Printers Draft of the Results
of the Extended Case-Study

Investors in People

Using Quality Assurance to Identify Training Needs

The Challenge

According to their Sales and Commercial Director, Maurice Stevens, Patelmo's most pressing business need for 1991 was to implement a Quality Assurance system to meet the requirements of BS 5750 Part II. In mid-1988 the Company had used a consultant to help them to design a system. Recent commercial pressure from customers have added a greater degree of urgency to the need for implementation.

The Approach

An immediate need was to invoke the Management Review and Internal Audit procedures which categorised non-compliancies as either critical, major or minor. The value of this process was that it identified and then prioritised the Company's training needs, and introduced a discipline and rigour into the production of a rolling training plan. The business objective of achieving and then maintaining a Quality Assurance system also allowed the Company to introduce a formal process for identifying its training needs. The audit and review programmes ensure that all aspects of the business are reviewed during the course of any twelve month period.

Immediate Benefits

An increased robustness to external, customer quality audits.

Name of Company	Patelmo Engineering Limited
Nature of Business	Precision Sub-Contract Machining
Number of Employees	16

Cross Referencing BS 5750: Part 1 with Parts 1 and 3 of the Open Learning Code of Practice (Requirements of Producers)

Cross-Referencing BS 5750: Part 1 and the Open Learning Code of Practice Parts 1 and 3

Requirements of BS 5750: 1987, Part 1	Code of Practice Part One: Requirements of Producers						Code of Practice Part Three: Requirements of Producers and Deliverers				
	1	2	3	4	5	6	13	14	15	16	17
Management Responsibility								✓			
Quality System								✓			
Contract Review	✓							✓			
Design Control	✓	✓	✓			✓		✓			
Document Control								✓			
Purchasing								✓			
Purchaser Supplied Product								✓			
Product Identification										✓	
Process Control								✓			

APPENDIX 13

Cross-Referencing BS 5750: Part 1 and the Open Learning Code of Practice Parts 1 and 3

Requirements of BS 5750: 1987, Part 2	Code of Practice Part Two: Requirements of Deliverers						Code of Practice Part Three: Requirements of Producers and Deliverers				
	7	8	9	10	11	12	13	14	15	16	17
Inspection and Testing						✓		✓		✓	
Inspection Equipment											
Inspection and Test Status	✓							✓			
Non-conforming Product			✓					✓			
Corrective Action						✓		✓		✓	
Handling and Packaging	✓										
Quality Records	✓										
Internal Quality Audits								✓			

APPENDIX 13

Cross-Referencing BS 5750: Part 1 and the Open Learning Code of Practice Parts 1 and 3

Requirements of BS 5750: 1987, Part 1	Code of Practice Part One: Requirements of Producers						Code of Practice Part Three: Requirements of Producers and Deliverers				
	1	2	3	4	5	6	13	14	15	16	17
Training					✓		✓				
Servicing						✓		✓			
Statistical Techniques											

LEGEND

PART ONE

1. Researching and Planning
2. Designing for Effective Learning
3. Piloting and Improving
4. Informing Users
5. Training the Deliverers
6. Improving and Updating

PART THREE

13. Staff Competence
14. Structures and Plans
15. Monitoring and Correcting
16. Dealing with Complaints
17. Liaising with Others

Cross Referencing BS 5750: Part 2 with Parts 2 and 3 of the Open Learning Code of Practice (Requirements of Deliverers)

Requirements of BS 5750: 1987, Part 2	Code of Practice Part Two: Requirements of Deliverers						Code of Practice Part Three: Requirements of Producers and Deliverers				
	7	8	9	10	11	12	13	14	15	16	17
Management Responsibility								✓			
Quality System								✓			
Contract Review		✓		✓				✓			
Document Control				✓				✓			
Purchasing					✓			✓			
Purchaser Supplied Product					✓			✓			
Product Identification										✓	
Process Control					✓						

APPENDIX 14

Cross-Referencing BS 5750: Part 2 and the Open Learning Code of Practice Parts 2 and 3

Requirements of BS 5750: 1987, Part 2	Code of Practice Part Two: Requirements of Deliverers						Code of Practice Part Three: Requirements of Producers and Deliverers				
	7	8	9	10	11	12	13	14	15	16	17
Inspection and Testing								✓		✓	
Inspection Equipment											
Inspection and Test Status					✓			✓			
Non-conforming Product						✓		✓			
Corrective Action						✓		✓		✓	
Handling and Packaging					✓						
Quality Records											
Internal Quality Audits								✓			

Internal Survey:

Voluntary Questionnaire

Cross-Referencing BS 5750: Part 2 and the Open Learning Code of Practice Parts 2 and 3

Requirements of BS 5750: 1987, Part 2	Code of Practice Part Two: Requirements of Deliverers						Code of Practice Part Three: Requirements of Producers and Deliverers				
	7	8	9	10	11	12	13	14	15	16	17
Training							✓				
Statistical Techniques						✓		✓			

LEGEND

PART TWO

7. Attracting Clients
8. Clarifying Clients' Needs
9. Choosing a Package
10. Agreeing the Support System
11. Operating the System
12. Evaluating and Improving

PART THREE

13. Staff Competence
14. Structures and Plans
15. Monitoring and Correcting
16. Dealing with Complaints
17. Liaising with Others

VOLUNTARY QUESTIONNAIRE

EITB OPEN LEARNING PACKAGES

1. Are you aware of the existence of the following EITB Open Learning packages?

Information Technology in the Product	YES/NO
Information Technology in the Company	YES/NO
Information Technology in Manufacturing	YES/NO
Design for the Market	YES/NO
Design Methods & Creative Design	YES/NO
Design for Economic Manufacture	YES/NO
Design in Industry	YES/NO
Management of Engineering Design	YES/NO
CAD1: Computers and the Designer	YES/NO
CAD2: Product Modelling Systems in Design	YES/NO
CAD3: Computer Aided Information Systems in Design	YES/NO

2. Do you know whether the standard prices for the above are:

£100 ? ☐

£150 ? ☐

£200 ? ☐

£250 ? ☐

£300 ? ☐

Please tick appropriate box.

3. Have you sold any EITB packages in the last year? YES/NO

If YES please tick appropriate box

1-5 ☐

5-10 ☐

10+ ☐

4. Did you know that the Board operates a 30 day sale or return facility to allow companies to preview materials?

YES/NO

5. Are you aware that the Board has external delivery agents for it's materials?

YES/NO

If yes which ones are you aware of?

.....

.....

.....

6. Do you believe that the Board's packages meet either

i) the NEEDS of it's clients? YES/NO

ii) the WANTS of it's clients? YES/NO

iii) Don't know (if appropriate please tick) |__|

7. What proportion of your contacts in companies are aware that the EITB produces Open Learning Materials?

Less than 20% |__|

20-40% |__|

40-60% |__|

60-80% |__|

80% + |__|

Please tick appropriate box.

8. With the last EITB Open Learning package you sold:

i) Did it meet an identified training need YES/NO/ DON'T KNOW

ii) Did it have an appointed mentor or tutor? YES/NO/ DON'T KNOW

iii) Did the trainee complete the course? YES/NO/ DON'T KNOW

iv) Did it end up being used solely as resource material YES/NO/ DON'T KNOW

THANK YOU FOR YOUR HELP IN COMPLETING THIS QUESTIONNAIRE

Quantifying Compliance with the Assessment Criteria

Quantifying Compliance with the Assessment Criteria

Assessment Criteria	Characteristics of a Compliant Product
1. Learning Aims Clearly Stated	Aims and objectives stated in learner-behaviour terms giving performance, standards and conditions. A statement of pre-requisite knowledge and the target audience.
2. Relevant Learning Design	Appropriate mix of media. Guide study times. Sufficient activities and SAQ's. Use of graphics and icons in the text with a pleasing page layout. Statement of resources required.
3. Learning Outcome Achievable	An indication that the programme will fulfil the aims and objectives.
4. Learner Centred Provision	Route maps and access points together with an appropriate style and tone of text.
5. Presentation	Attractive presentation, (including binding and packaging).
6. Relevant Product	Must meet a training need that is likely to be faced by the target audience.

Continued...\

Continued.../

Assessment Criteria	Characteristics of a Compliant Product
7. Evidence of Piloting and Usage	A proven track record for the product including endorsements from existing customers.
8. Accessibility	Trainers and individuals must reasonably be able to locate the product. An entry in the "*Open Learning Directory*" would be expected.
9. Support	The existence of a network of support. At the start of each programme a tutor should be allocated. At the end, a phase-test and tutor's signing-off.
10. Flexibility of Use	Modular design made up of discrete sections of learning.
11. Qualifications	Preferably, a nationally recognized qualification or a part-contribution towards one.
12. Diagnosing	A check to see whether the trainee has achieved the learning aims and objectives - if not a diagnosis of the remedial action that would be necessary.

Sample of a
Failure Mode and Effect Analysis
Pro-Forma

Kepner Tregoe Worksheets

Selection Algorithm


Aston University
Illustration removed for copyright restrictions

Names and Sources of the Products Selected for Evaluation

Names and Sources of the Products Selected for Evaluation

Product Name	Supplier
OPEN LEARNING	
1. Being an Open Learning Student	Lancaster and Morecombe College
2. Developing Open Learning	Birmingham Open Learning Devel't Unit
3. How to Organise a Tutor Skills Course: A Trainers Guide	Weymouth College
4. NEC Guide to Open Learning	National Extension College
5. Open Learning in Industry - A Guide for Practitioners	Flexible Learning
6. Open Learning Study Guide	Highways Open Tech
7. Open Learning Tutor Skills Course	Weymouth College
8. Training Course in Adapting Materials for Open Learning	Scottish Open Tech Support Unit
9. Tutoring on Open Learning Programmes	Construction Industry Training Board
10. Training Course in Writing Open Learning Material	Scottish Open Tech Support Unit
TRAINING PLANNING	
11. A Training Course in Training Needs Analysis	Scottish Open Tech Support Unit
12. A Systems Approach to Training	Lasermedia
13. Getting to Grips with Training	ITS
14. Get in There	Trainee Support Services
15. But I Told 'Em How to Do It	Daedel Training
BASIC SUPERVISORY SKILLS	
16. A Matter of Time	Interactive Information Systems
17. Face-to-Face (4 Modules)	Interactive Information Systems
18. Leading Your Team (4 Modules)	Interactive Information Systems
19. NEBSM Superseries	Pergamon Open Learning
20. Open Learning for Supervisors	MISTA Open Learning

Product Name	Supplier
BASIC MANAGEMENT TRAINING	
21. Business Courses	Ivy Software
22. Computer Aided Learning for Managers	Maxim Training Services
23. COMTECH Programme and Certificate in Business Administration	TRACE
24. Control Data Plato Series	Control Data
25. Effective Management	Henley Distance Learning
26. Finance for Non-Financial Managers	Interactive Information Systems
27. Information Management	Henley Distance Learning
28. Management Development Through Supported Open Learning	Road Transport Industry Training Board
29. Management Milestones	Maxim Training
30. Management Training	Training Products
31. Managing Major Change	Engineering Industry Training Board
32. Managing People	Open Business School
33. Professional Selling: A Product	Interactive Information Systems
34. Professional Selling: A Service	Interactive Information Systems
35. The Certificate in Management Studies	NRMC
36. The Effective Manager	Open Business School
37. The New Manager	Oxford Hallmark
38. The Oxford Open Certificate in Management Studies	Wolsey Hall
39. The Secrets of Power Negotiating	Nightingale Connant
40. Updating for Business Series	BTEC MacMillan
41. We're On the Same Team	Rank Training
EUROPEAN LANGUAGES	
42. Linguaphone Minilab French Course	Linguaphone
43. Linguaphone Minilab Italian Course	Linguaphone
44. Learn Spanish with PILL	World of Learning (Bristol)
45. Linguaphone German Travel Pack	Linguaphone
46. 1992 MAP	Eurostrat '92
47. Accelerated Learning - French	Accelerated Learning Systems
48. Japanese Simplified	Hugo's Language Books
49. Deutsch Direkt	BBC Enterprises

Product Name	Supplier
QUALITY SYSTEMS	
50. Crosby on Quality	BBC Enterprises
51. Journey into Excellence	BBC Enterprises
52. Technician Training	Engineering Industry Training Board
53. Statistical Process Control	LaserMedia
54. Meeting Quality Standards	Pergamon Open Learning
ENGINEERING DESIGN	
55. CAD1: Computers and the Designer	Engineering Industry Training Board
56. CAD2: Product Modelling Systems in Design	Engineering Industry Training Board
57. CAD3: Computer Aided Information Systems in Design	Engineering Industry Training Board
58. IT in the Product	Engineering Industry Training Board
59. IT in Manufacturing	Engineering Industry Training Board
60. Surface Mount Technology - Introducing SMT	Engineering Industry Training Board
61. SMT Design and Production	Engineering Industry Training Board
62. SMT Inspection and Rework	Engineering Industry Training Board
63. The Professional Guard	British Security Industry Association
BASIC ELECTRONICS	
64. Digital Circuits Vols 1 & 2	National College of Technology
65. Electronic Circuits Vol 1	National College of Technology
66. Basic Analogue Electronics: Devices - A Switch in Time	MacMillan Intek
67. Basic Digital Electronics: Memories are Made of This	MacMillan Intek
68. Introduction to Electronics (A) Diodes and Transistors	MacMillan Intek
69. Introduction to Electronics (B) Stabilizers and Amplifiers	MacMillan Intek
70. Introduction to Electronics (C) Basic Analogue Fault Finding	MacMillan Intek

Evaluation Sheet for Open Learning Programmes

OPEN LEARNING **Ref:**

EVALUATION SHEET

Name of Assessor: Grade:

Supplier: Date:

Cost (+ VAT Y/N) EITB Product Group
BS,Tech, PS or Trg :

Medium Used (IV, VL, TEXT, AUDIO, CBT):

Performance Criteria	**Score (5, 4, 2, 0)**

1.	Learning Aims Clearly Stated
2.	Relevant Learning Design
3.	Learning Outcome Achievable
4.	Learner Centred Provision
5.	Presentation
6.	Relevant Product
7.	Evidence of Evaluation
8.	Accessibility of Product Marketing
9.	Support
10.	Flexibility of Use
11.	Qualifications
12.	Diagnosing Learner Needs

Comments:

Evaluation Sheets

For EITB Open Learning

Products

EVALUATING OPEN LEARNING MATERIAL

Assessor: KS 5 Group: 6 Date: 31/08/89

Title of Material: CAD 2: PRODUCT MODELLING SYSTEMS IN DESIGN

Cost: £ 150.00 + VAT Supplier: EITB

EITB Product Group: TECHNOLOGY Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	5	Fully Acceptable
2. Relevant Learning Design	10	5	Fully Acceptable
3. Learning Outcome Achievable	9	5	Fully Acceptable
4. Learner Centered Provision	9	5	Fully Acceptable
5. Presentation	9	4	Minor Changes Needed
6. Relevant Product	8	5	Fully Acceptable
7. Evidence of Piloting & Usage	5	2	Major Changes Needed
8. Accessibility and Product Marketing	5	4	Minor Changes Needed
9. Support	9	2	Major Changes Needed
10. Flexibility of Use	8	2	Major Changes Needed
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	4	Minor Changes Needed
Product Score (Max 460)	340		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

EVALUATING OPEN LEARNING MATERIAL

Assessor: KS 7 Group: 6 Date: 04/09/89

Title of Material: CAD 3: COMPUTER AIDED INFORMATION SYSTEMS IN DESIGN

Cost: £ 150.00 + VAT Supplier: EITB

EITB Product Group: TECHNOLOGY Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	5	Fully Acceptable
2. Relevant Learning Design	10	4	Minor Changes Needed
3. Learning Outcome Achievable	9	5	Fully Acceptable
4. Learner Centered Provision	9	2	Major Changes Needed
5. Presentation	9	4	Minor Changes Needed
6. Relevant Product	8	5	Fully Acceptable
7. Evidence of Piloting & Usage	5	2	Major Changes Needed
8. Accessibility and Product Marketing	5	4	Minor Changes Needed
9. Support	9	4	Minor Changes Needed
10. Flexibility of Use	8	2	Major Changes Needed
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	4	Minor Changes Needed
Product Score (Max 460)	321		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

EVALUATING OPEN LEARNING MATERIAL

Assessor: MJC 46 Group: 9 Date: 23/10/89

Title of Material: SMT DESIGN & PRODUCTION

Cost: £ 350.00 + VAT Supplier: EITB

EITB Product Group: TECHNOLOGY Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	2	Major Changes Needed
2. Relevant Learning Design	10	4	Minor Changes Needed
3. Learning Outcome Achievable	9	4	Minor Changes Needed
4. Learner Centered Provision	9	4	Minor Changes Needed
5. Presentation	9	4	Minor Changes Needed
6. Relevant Product	8	5	Fully Acceptable
7. Evidence of Piloting & Usage	5	2	Major Changes Needed
8. Accessibility and Product Marketing	5	2	Major Changes Needed
9. Support	9	2	Major Changes Needed
10. Flexibility of Use	8	4	Minor Changes Needed
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	0	Unacceptable
Product Score (Max 460)	274		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

EVALUATING OPEN LEARNING MATERIAL

Assessor: MJC 48 Group: 9 Date: 23/10/89

Title of Material: IT IN MANUFACTURING

Cost: £ 150.00 + VAT Supplier: EITB

EITB Product Group: TECHNOLOGY Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	5	Fully Acceptable
2. Relevant Learning Design	10	4	Minor Changes Needed
3. Learning Outcome Achievable	9	4	Minor Changes Needed
4. Learner Centered Provision	9	5	Fully Acceptable
5. Presentation	9	2	Major Changes Needed
6. Relevant Product	8	4	Minor Changes Needed
7. Evidence of Piloting & Usage	5	2	Major Changes Needed
8. Accessibility and Product Marketing	5	4	Minor Changes Needed
9. Support	9	0	Unacceptable
10. Flexibility of Use	8	2	Major Changes Needed
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	0	Unacceptable
Product Score (Max 460)	257		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

EVALUATING OPEN LEARNING MATERIAL

Assessor: MJC 47 Group: 9 Date: 23/10/89

Title of Material: SMT INSPECTION AND REWORK

Cost: £ 350.00 + VAT Supplier: EITB

EITB Product Group: TECHNOLOGY Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	2	Major Changes Needed
2. Relevant Learning Design	10	4	Minor Changes Needed
3. Learning Outcome Achievable	9	4	Minor Changes Needed
4. Learner Centered Provision	9	4	Minor Changes Needed
5. Presentation	9	5	Fully Acceptable
6. Relevant Product	8	5	Fully Acceptable
7. Evidence of Piloting & Usage	5	2	Major Changes Needed
8. Accessibility and Product Marketing	5	2	Major Changes Needed
9. Support	9	2	Major Changes Needed
10. Flexibility of Use	8	4	Minor Changes Needed
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	0	Unacceptable
Product Score (Max 460)	283		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

EVALUATING OPEN LEARNING MATERIAL

Assessor: KS 6 Group: 9 Date: 05/09/89

Title of Material: SMT - A COMPANY TRAINING PROGRAMME - INTRODUCING SMT

Cost: £ 300.00 + VAT Supplier: EITB

EITB Product Group: TECHNOLOGY Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	5	Fully Acceptable
2. Relevant Learning Design	10	5	Fully Acceptable
3. Learning Outcome Achievable	9	5	Fully Acceptable
4. Learner Centered Provision	9	2	Major Changes Needed
5. Presentation	9	4	Minor Changes Needed
6. Relevant Product	8	5	Fully Acceptable
7. Evidence of Piloting & Usage	5	2	Major Changes Needed
8. Accessibility and Product Marketing	5	4	Minor Changes Needed
9. Support	9	5	Fully Acceptable
10. Flexibility of Use	8	5	Fully Acceptable
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	4	Minor Changes Needed
Product Score (Max 460)	364		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

EVALUATING OPEN LEARNING MATERIAL

Assessor: KS 1 Group: 6 Date: 22/08/89

Title of Material: CAD 1: COMPUTERS & THE DESIGNER

Cost: £ 150.00 + VAT Supplier: EITB

EITB Product Group: TECHNOLOGY Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	5	Fully Acceptable
2. Relevant Learning Design	10	4	Minor Changes Needed
3. Learning Outcome Achievable	9	5	Fully Acceptable
4. Learner Centered Provision	9	2	Major Changes Needed
5. Presentation	9	2	Major Changes Needed
6. Relevant Product	8	5	Fully Acceptable
7. Evidence of Piloting & Usage	5	2	Major Changes Needed
8. Accessibility and Product Marketing	5	4	Minor Changes Needed
9. Support	9	2	Major Changes Needed
10. Flexibility of Use	8	2	Major Changes Needed
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	0	Unacceptable
Product Score (Max 460)	265		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

EVALUATING OPEN LEARNING MATERIAL

Assessor: KS 2 Group: 5 Date: 22/08/89

Title of Material: MANAGING MAJOR CHANGE

Cost: £ 150.00 Supplier: EITB

EITB Product Group: PEOPLE SKILLS Medium Used: VIDEO LED

Criteria List	Weighting	Score	Comments
1. Learning Aims Clearly Stated	8	4	Minor Changes Needed
2. Relevant Learning Design	10	5	Fully Acceptable
3. Learning Outcome Achievable	9	5	Fully Acceptable
4. Learner Centered Provision	9	5	Fully Acceptable
5. Presentation	9	4	Minor Changes Needed
6. Relevant Product	8	4	Minor Changes Needed
7. Evidence of Piloting & Usage	5	0	Unacceptable
8. Accessibility and Product Marketing	5	4	Minor Changes Needed
9. Support	9	0	Unacceptable
10. Flexibility of Use	8	0	Unacceptable
11. Qualifications	7	0	Unacceptable
12. Diagnosing Learner Needs	5	0	Unacceptable
Product Score (Max 460)	260		

Scoring System:
Fully acceptable: 5 points
Minor changes needed: 4 points
Major changes needed: 2 points
Unacceptable: 0 points

Summary of the Evaluation Data for the Selected Open Learning Products

Summary of the Evaluation Data for the Selected Open Learning Products

Product Name	Product Score	Media Used	Price (exc VAT)
OPEN LEARNING			
1. Being an Open Learning Student	270	Text	£60
2. Developing Open Learning	425	Text	£49.50
3. How to Organise a Tutor Skills Course: A Trainers Guide	460	Text	£25
4. NEC Guide to Open Learning	346	Text	£6.95
5. Open Learning in Industry - A Guide for Practitioners	293	Text	£110
6. Open Learning Study Guide	299	Text	£10
7. Open Learning Tutor Skills Course	460	Text	£25
8. Training Course in Adapting Materials for Open Learning	403	Text	£21.11
9. Tutoring on Open Learning Programmes	290	Text	£6.60
10. Training Course in Writing Open Learning Material	403	Text	£26
TRAINING PLANNING			
11. A Training Course in Training Needs Analysis	395	Text	£30
12. A Systems Approach to Training	340	CBT	£495
13. Getting to Grips with Training	376	Text	£150
14. Get in There	396	Text	£110
15. But I Told 'Em How to Do It	305	Text	£120
BASIC SUPERVISORY SKILLS			
16. A Matter of Time	350	IV	£3120
17. Face-to-Face (4 Modules)	385	IV	£3120
18. Leading Your Team (4 Modules)	385	IV	£3120
19. NEBSM Superseries	460	Text	£10.95
20. Open Learning for Supervisors	443	Text	£32

Product Name	Product Score	Media Used	Price (exc VAT)
BASIC MANAGEMENT TRAINING			
21. Business Courses	302	CBT	N/K
22. Computer Aided Learning for Managers	290	CBT	£145
23. COMTECH Programme and Certificate in Business Administration	398	Text	£175
24. Control Data Plato Series	290	CBT	N/K
25. Effective Management	460	Video Led	£350
26. Finance for Non-Financial Managers	271	IV	£3120
27. Information Management	460	Video Led	£350
28. Management Development Through Supported Open Learning	440	Text	£60
29. Management Milestones	280	CBT	£145
30. Management Training	341	CBT	N/K
31. Managing Major Change	260	Video Led	£150
32. Managing People	409	Video Led	£520
33. Professional Selling: A Product	385	IV	£3120
34. Professional Selling: A Service	385	IV	£3120
35. The Certificate in Management Studies	395	Video Led	£120
36. The Effective Manager	443	Text	£630
37. The New Manager	450	Text	N/K
38. The Oxford Open Certificate in Management Studies	374	Text	N/K
39. The Secrets of Power Negotiating	209	Audio	£45
40. Updating for Business Series	435	Text	£171
41. We're On the Same Team	346	IV	£845
EUROPEAN LANGUAGES			
42. Linguaphone Minilab French Course	221	Audio	£554
43. Linguaphone Minilab Italian Course	221	Audio	£554
44. Learn Spanish with PILL	388	Text	£96
45. Linguaphone German Travel Pack	281	Audio	£9.95
46. 1992 MAP	420	CBT	£1421
47. Accelerated Learning - French	380	Audio	£92
48. Japanese Simplified	398	Text	£40
49. Deutsch Direkt	393	Video Led	£149

Product Name	Product Score	Media Used	Price (exc VAT)
QUALITY SYSTEMS			
50. Crosby on Quality	345	Video Led	£225
51. Journey into Excellence	273	Video Led	£225
52. Technician Training	---	IV	£750
53. Statistical Process Control	---	IV	£750
54. Meeting Quality Standards	---	Text	£57
ENGINEERING DESIGN			
55. CAD1: Computers and the Designer	265	Video Led	£150
56. CAD2: Product Modelling Systems in Design	340	Video Led	£150
57. CAD3: Computer Aided Information Systems in Design	321	Video Led	£150
58. IT in the Product	257	Video Led	£150
59. IT in Manufacturing	257	Video Led	£150
60. Surface Mount Technology - Introducing SMT	364	Video Led	£300
61. SMT Design and Production	274	Video Led	£350
62. SMT Inspection and Rework	283	Video Led	£350
63. The Professional Guard	408	Text	£12
BASIC ELECTRONICS			
64. Digital Circuits Vols 1 & 2	446	Text	£199
65. Electronic Circuits Vol 1	446	Text	£199
66. Basic Analogue Electronics: Devices - A Switch in Time	425	Text	£264
67. Basic Digital Electronics: Memories are Made of This	446	Text	£268
68. Introduction to Electronics (A) Diodes and Transistors	448	Text	£312
69. Introduction to Electronics (B) Stabilizers and Amplifiers	434	Text	£257
70. Introduction to Electronics (C) Basic Analogue Fault Finding	434	Text	£209

Comparing Product Scores Using Alternative Evaluation Weightings

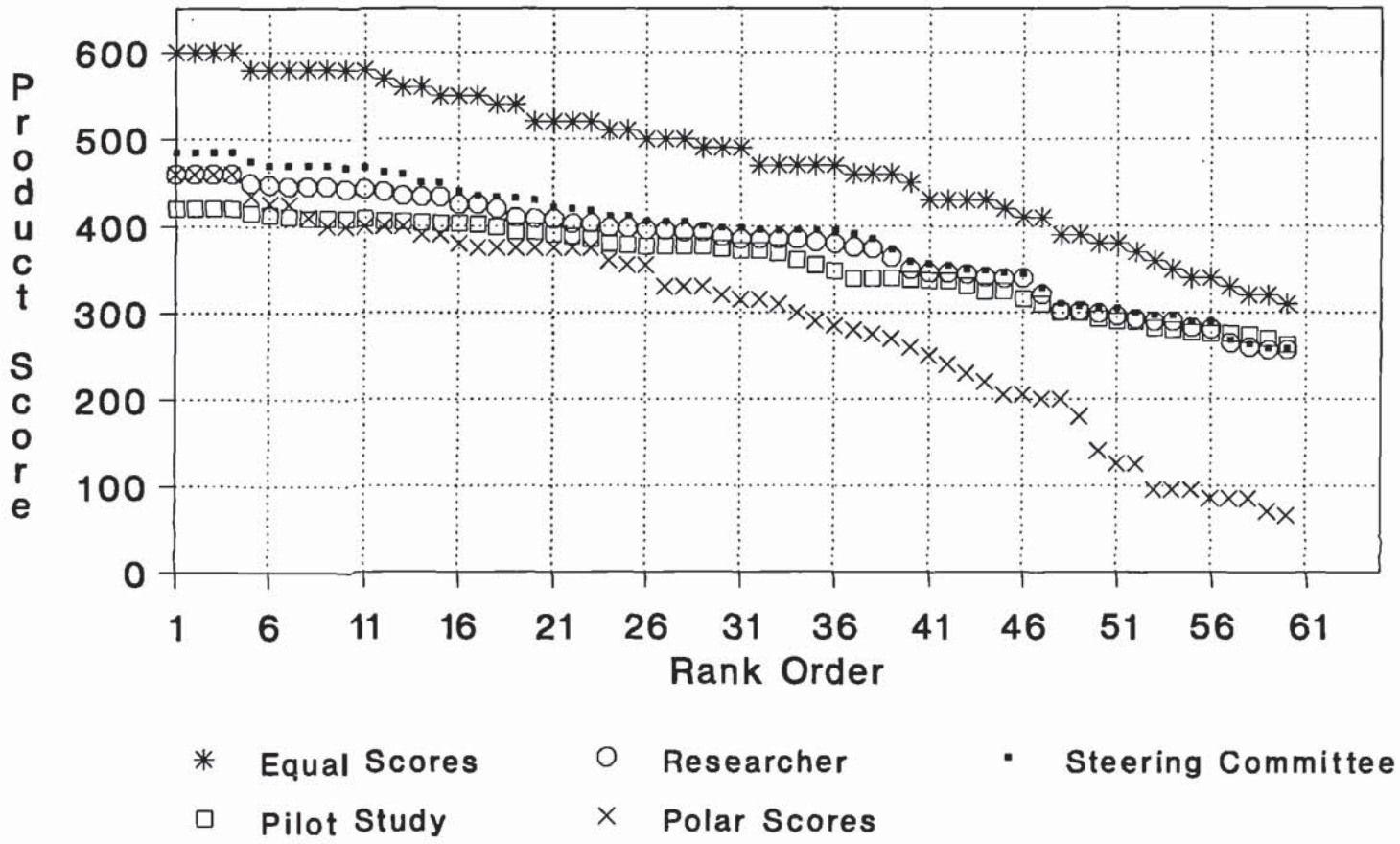
Comparing Product Scores Using Alternative Evaluation Weightings

Product Reference	Equal	Polar	Researcher	Steering Committee	Pilot Study
1	600	460	460	485	420
2	600	460	460	485	420
3	600	460	460	485	420
4	600	460	460	485	420
5	580	410	450	475	411
6	580	400	448	470	415
7	580	426	446	470	409
8	580	390	446	470	413
9	580	390	446	470	409
10	580	375	443	468	402
11	580	375	443	468	406
12	570	360	440	462	403
13	550	435	435	460	385
14	560	400	434	450	409
15	560	400	434	450	409
16	550	425	425	435	405
17	550	355	425	440	404
18	540	400	420	430	403
19	520	400	410	420	399
20	540	285	409	434	372
21	510	300	408	432	380
22	520	315	403	412	394
23	520	315	403	412	394
24	520	380	398	405	390
25	500	250	398	422	348
26	500	330	396	406	372
27	490	375	395	405	378
28	510	355	393	400	388
29	490	275	393	418	337
30	500	320	388	398	369
31	470	375	385	395	377
32	470	375	385	395	377

Product Reference	Equal	Polar	Researcher	Steering Committee	Pilot Study
33	470	375	385	395	377
34	470	375	385	395	377
35	470	310	382	392	374
36	490	180	380	396	361
37	460	330	376	385	355
38	460	230	374	398	316
39	460	260	364	373	337
40	430	200	350	359	340
41	430	280	346	355	325
42	430	290	346	356	338
43	450	205	345	349	340
44	410	205	341	350	331
45	420	330	340	345	339
46	430	220	340	346	340
47	410	125	321	329	310
48	380	65	305	311	290
49	340	270	302	312	300
50	390	95	299	308	290
51	360	240	296	305	301
52	390	95	293	300	280
53	350	200	290	297	293
54	380	70	290	297	263
55	340	85	283	290	277
56	370	95	281	290	270
57	340	150	280	287	283
58	330	50	273	274	267
59	340	155	271	278	301
60	360	100	270	276	267
61	330	125	265	269	274
62	310	140	260	264	282
63	320	85	257	259	276
64	320	85	257	259	276
65	280	65	221	225	241
66	280	65	221	225	241
67	270	45	209	218	209

Comparing Evaluation Techniques Using Rank Ordered Product Scores

Comparing Alternative Scoring Techniques
(in Rank Order Format)



Comparing the Rank Order of Products Using Alternative Evaluation Weightings

Comparing the Rank Order of Products Using Alternative Evaluation Weightings

Product Reference	Equal	Polar	Researcher	Steering Committee	Pilot Study
1	1	1	1	1	1
2	1	1	1	1	1
3	1	1	1	1	1
4	1	1	1	1	1
5	5	8	5	5	7
6	5	9	6	6	5
7	5	6	7	6	8
8	5	14	7	6	6
9	5	14	7	6	9
10	5	17	10	10	17
11	5	17	10	10	12
12	12	24	12	12	15
13	15	5	13	13	23
14	13	9	14	14	8
15	13	9	14	14	8
16	15	7	16	17	13
17	15	25	16	16	14
18	18	9	18	20	15
19	20	9	19	22	18
20	18	36	20	18	31
21	25	34	21	19	24
22	20	31	22	24	19
23	20	31	22	24	19
24	20	16	24	27	21
25	26	41	24	21	36
26	26	28	26	26	31
27	29	17	27	27	25
28	24	25	28	29	22
29	29	38	28	23	42
30	26	30	30	30	33
31	32	17	31	33	26
32	32	17	31	33	26

Product Reference	Equal	Polar	Researcher	Steering Committee	Pilot Study
33	32	17	31	33	26
34	32	17	31	35	26
35	32	33	35	37	30
36	29	49	36	32	34
37	37	28	37	38	35
38	37	43	38	30	46
39	37	40	39	39	42
40	42	48	40	40	37
41	42	37	41	42	45
42	42	35	41	41	41
43	40	45	43	44	37
44	46	45	44	43	44
45	45	27	45	46	40
46	41	44	45	45	37
47	46	51	47	47	47
48	50	64	48	49	51
49	55	39	49	48	49
50	48	55	50	50	51
51	53	42	51	51	48
52	48	54	52	52	54
53	54	47	53	53	50
54	50	63	53	53	60
55	55	56	55	55	55
56	52	53	56	55	63
57	55	51	57	57	54
58	57	66	58	54	61
59	55	50	59	56	48
60	53	55	60	55	61
61	61	56	61	61	63
62	64	54	62	62	57
63	62	60	63	63	60
64	62	60	63	63	60
65	65	64	65	65	65
66	65	64	65	65	65
67	67	67	67	67	67

Checklist for Evaluating the Training System and Specific Learning Events

1. Evaluating the Training System

1.1 Within the organization there should be an appointed management representative who is responsible for training. The representative should have the authority to ensure that the training system is implemented. There must be:

- Management Responsibility

1.2 External factors affecting training should be regularly reviewed, for example:

- Government legislation
- National and local training initiatives
- Changes in the education system
- Demographic trends
- Industry Codes of Practice

1.3 The organization should clarify its policies and practices on the following:

- Training budgets
- Authorities to approve training plans and expenditure
- Facilities for study during standard working hours including paid/unpaid leave
- Financial assistance with travel, books and other facilities
- Awards and scholarships
- Coaching and tutorial resources

1.4 The competence of those staff involved in the training system should be regularly reviewed, for example:

- Trainers
- Evaluators
- Coaches
- Mentors / Tutors
- Instructors

1.5 The system for identifying training needs to cater for objectives set at the following levels:

- Level 1: Organizational Needs
    - Mission statement
    - Value statement
    - Policies
- Level 2: Departmental Needs
    - Functional mission statement
- Level 3: Individual Needs
    - Task analysis

1.6 Training should be evaluated against broader organizational objectives. Generally speaking these factors are not directly attributable to any specific training event. Examples are:

- Labour turnover rates
- Accident rates
- Staff morale and commitment
- Customer satisfaction
- Industrial relations
- Productivity
- Scrap and wastage rates
- Profile of employee qualifications

1.7 The training policy should be:

- Documented
- Widely publicized
- Related to business objectives
- Specify all aspects of the total training policy

2. Evaluating Specific Learning Events

2.1 Evaluation should be carried out before, during and after the learning event.

2.2 Before the commencement of training there should be:

- Clarification of the training need

2.3 Training objectives should be learner-centred and written in behavioural terms. They should state:

- Performance
- Standards
- Conditions

2.4 Prior to the commencement of training, the training solution should be assessed for:

- Clearly stated aims and objectives
- Relevant learning design
- Learner centred approach
- Achievable learning objectives
- Presentation
- Evidence of piloting and usage
- Relevant qualifications
- Flexibility of use
- Diagnosing learner needs

2.5 During training, provisions must be made for:

- Monitoring progress
- Correcting shortfalls

2.6 Post-training evaluation consists of three elements immediate, intermediate and ultimate. (although evaluation is usually confined to activities immediately after the learning event).

- Immediate
    - Validation (internal / external)
    - End of course questionnaires
- Intermediate (6 months after)
    - Cost benefit analysis
- Ultimate (12 months or more after)
    - Longer term changes in behaviour

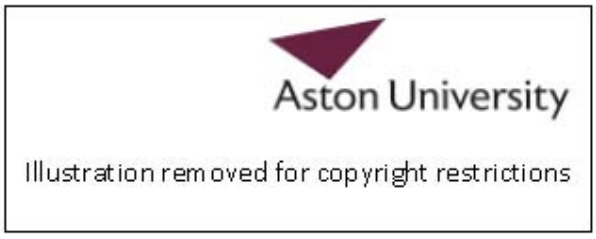
2.7 Immediate evaluation includes validation, and end of course questionnaires.

2.8 Cost-benefit analysis can only be measured some time after the event when sustained financial benefits become apparent making it is an intermediate evaluation activity.

2.9 Ultimate evaluation is often associated with the less-tangible benefits of training such as changes in attitudes and social behaviour. These longer term benefits are measurable and are general indicators of the whole training system (see 2.6).

Venn Diagram Showing the Relationship Between the CIRO Model and Product/Systems Auditing

Venn Diagram Showing the Relationship Between the CIRO Model (Warr, Bird and Rackham, 1970) and Product / Systems Auditing (Cooper, 1991)



Sample Company Procedure for Evaluating the Training System

Sample Company Procedure for Evaluating the Training System

The company responsibilities and methods are as follows:

1. The Training Director [or nominated representative] shall conduct reviews of the overall training system.

2. For such reviews a programme shall be prepared using Exhibit 1 to this section.

3. The main areas of the review are listed in the 'Items' column.

4. The frequency of each audit will be entered on the programme, and in the main this will be quarterly or half-yearly.

5. All reviews of the training system shall be recorded and non-compliances classified as either 'CRITICAL', 'MAJOR' or 'MINOR'. The following examples are for guidance:

CRITICAL	a) The evaluation of specific learning events has stopped or become ineffective.
	b) The system for identifying training needs has stopped or become ineffective.
	c) Clearly defined authorities to approve training plans and training expenditure have broken down.
MAJOR	a) Ultimate outcomes are not evaluated.
	b) There is no clearly stated training policy.
	c) Staff competence has not been reviewed.
MINOR	a) There is no external liaison on training issues.

Appendix 29

Exhibit 1.

EVALUATING THE TRAINING SYSTEM

Annual Review Programme

A = Annually

H= Hall Yearly

Q = Quarterly

ITEMS	Freq	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Ultimate Outcomes	Q												
Labour Turnover													
Accident Rates													
Absenteeism													
Staff Morale													
Scrap & Wastage													
Identifying Training Needs	Q												
Level 1													
Level 2													
Level 3													
Management Responsibility	H												
Training Policy	A												
Staff Competence	H												
External Context	Q												