

# Vocational Training at the Reading Information Technology Centre

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## Introduction

Reading Information Technology Centre (ITeC) is one of a network of similar centres throughout Great Britain. The centre was opened in 1983 with the following two aims:

- to provide vocational training in new information technology for young school leavers under the Youth Training Scheme (YTS);
- to act as a resource for the local community by increasing their understanding of it and its potential.

In 1983 the ITeC was chosen to host a training scheme for nine disabled adults providing vocational training in the application of computers to business and commerce. This course was to have been an extension of the activities of the Interface Project of the European Network of District Projects, but the Manpower Services Commission realised that this type of training would be a useful addition to their local training provision, and quickly adopted it, funding the running costs and trainee allowances. The supervisor was recruited as a member of staff of the ITeC, but strong links were maintained between Interface and the ITeC throughout the research period.

## Course Development

For the purpose of this chapter, the practical details of the course will be explained as it was operating at the end of October 1987, and an explanation will be given to show why each aspect has subsequently evolved. It is important to bear in mind the primary aim of the course, which was to prepare adults for open employment in any field where computers can be applied. This was achieved by offering each individual a course based on their individual needs, with a modular programme of the required length for them to achieve their required skills. Two points should be noted. The course was conceived as a piece of research aimed at finding the most appropriate solution to the training needs of local disabled people in the field of new information technologies. It was felt to be important to try to gain experience of as wide a client group as possible, and to try to offer

as wide a range of training as possible, so as to find the best answers and to make the most comprehensive recommendations for wider adoption.

The supervisor recruited to set up and run the course was furthermore entirely new to the field of disability, having spent eighteen months as a technical author in a large commercial organisation following his graduation from university. Whilst this introduced a steep learning curve on behalf of the ITeC staff and the supervisor in particular, it proved to be invaluable in seeing disability from the point of view of the client trying to find help, and from the point of view of the employer encountering disabled people for the first time. With this in mind, the course is run in such a way as to prepare an individual for work in an organisation unprepared for disabled people. The assumption is made that no-one in the eventual employment will know how to communicate with deaf people using a sign language, so no sign language is used whilst they are being trained. It is recognised that this may not be the best way of training disabled people, but it was beyond the scope of the resources of both the ITeC and the Interface project to work in any other way, and it is notable that this approach produced very few barriers to a successful training course or placement.

## Client Group

The ITeC was already established as a vocational training centre when it was approached to host the training. In order to disrupt the existing successful culture as little as possible it was decided to follow the existing selection levels as closely as possible. These required competence in numeracy and use of the English language, and the motivation to succeed on the course with the aim of seeking employment based on the acquired skills. The existing YTS trainees are intelligent young people who are more interested in gaining practical vocational skills than in achieving a high level of academic qualifications, and it was felt that this would also be the attitude of many disabled adults. We therefore offered training to people with the following needs:

- Younger adults above the age of 18 years who had no previous vocational training and were therefore unable to find work. This included those people who had had a restricted education because of their disability.
- Older adults who were unable to continue to follow an existing career, or continue in their existing employment due to the handicapping effects of their disability. These people could be retrained to follow a new career, preferably, but not necessarily, based in some way on their previous experience.
- Adults who were returning to work following a period away from it for whatever reason. In order to improve their potential for further employment they need to have their existing skills brought up to date using the latest information technology. We were willing to consider anyone in the working age range, i.e., 18 to 65 years although in practice we would have to consider very carefully an application from anyone over the age of 55 years. All disabilities within the broad spectrum of

physical handicap or mental illness would be considered in assessing for eligibility, as we were keen to elicit the particular problems that a disability type posed, and to find solutions.

### Interview

Applications for places on the course were made through the Disablement Resettlement Officer at the client's local Job Centre. An interview procedure evolved which enabled us to assess the suitability of each applicant for a place on the course. The primary selection criteria were that the potential trainee:

- has a physical disability or a mental illness;
- will benefit from the course, in that they will leave with tangible vocational skills;
- has a genuine interest in seeking employment following the course;
- is likely to benefit from the course in the time available such that they will be employable by the end of the course;
- this course is the right course of action for the individual to take at this time in their rehabilitation.

In order to answer these questions the following system has been devised.

1. Applicants are seen at half-hourly interval throughout a day of interviews held once every two to three months. They are each sent a questionnaire to complete and bring with them so as to supplement the information that we have from their application and referral papers. Each interview day has between six and ten applicants. They are met at reception and given an elementary mathematics paper and a simple English paper, the latter consisting of a picture depicting a situation about which the applicant comments by suggesting possible scenarios. The applicant has half an hour to complete these papers.
2. The applicants are interviewed by an ITeC supervisor, and a representative from the Manpower Services Commission. At this stage they are asked about their background, and how they feel the course would benefit them. This part of the interview lasts for about a quarter of an hour.
3. The applicants then meet an Employment Medical Advisory Service Doctor, who looks at the medical implications of their application. In this stage the applicant often reveals aspects that may have implications for their training, e.g. medication. This part of the interview takes about a quarter of an hour. The applicant is now free to leave.
4. At the end of the day when all the applicants have been seen, the three members of the interview panel meet together and discuss the suitability of each individual for a place on the course. The applicants are informed of the decision within a few days, and if it is not felt that this is the appropriate course for them, alternative recommendations are

made. If refused it is seen as important to contact the agency responsible for the referral, and explain why the application was not successful.

Having been offered a place on the course, trainees join the course when places become available as trainees leave. They then follow a three-week assessment programme designed to highlight the particular abilities of the individual so that a course may be tailored to match their abilities and expectations. It is rare for this assessment to determine whether an individual is suitable for a place, although this is possible in some unusual instances. The assessments take the following form.

### Week 1 Mornings – Assessments

This phase is designed to find the level of ability that an individual has in the following areas:

- Numeracy and Mathematics. The trainee is given three papers which they complete at their own speed. They look at numeracy, arithmetic and elementary mathematics, up to the level of basic trigonometry and formula manipulation.
- English and Written Communication. This takes the form of a multiple choice spelling and grammar test, and two free text writing papers, one as a descriptive exercise, and one as a report on a given subject.
- Computer Aptitude Test. This is based on the tests given by business, commercial and government organisations during interviews for jobs in data processing and programming. This is strictly timed.
- Keyboard Skills Test. This is conducted using a computer based typing tutor, and merely yields a working figure of accuracy and speed on a keyboard.

### Week 1 Afternoons – Games

Because many of the trainees have not been in a pure learning situation for a considerable period of time, and many of them have been unemployed for long periods, the first week at the ITeC could be tiring, and even a bit bewildering. We found that by letting the trainees play computer-based games in the afternoons of the first week, they were better able to cope in the new situation. We did however find two additional bonuses of this scheme:

- the trainees learn, often completely invisibly, many important basic and general lessons about how to treat and to use computers, as well as the differences between types of computers.
- by observing how the trainee copes with a range of games, important lessons can be learnt about them as individuals, which may be important when it comes to choosing working environments or possible careers.

## Week 2-3 – Foundation Skills

The second and third week were spent giving the trainees an opportunity to try different applications of computers to help them to see what is involved in these fields. The field chosen represented the most common applications that they are likely to meet in a job, and show the disciplines required to do these tasks successfully over a long period of time. They included: Computer Aided Graphics; Word Processing; Data Base Manipulation; Spreadsheet Manipulation; Use of an Office Calculator; Use of a Financial Package – Cashbook; Elementary Programming Techniques.

Various training methods were used during this period, and a detailed record kept of the trainees progress.

## Introduction to Computers

At some stage during their first three weeks on the course, the trainee was given a comprehensive series of lectures on subjects including: History of Computers; Structure of Computers; Application of Computers; Safety and Care of Computers.

## Course Selection

At the end of the third week, the trainee and the supervisor discussed progress and the trainee was asked to list their preferences for study, based upon their chosen career or employment fields. These choices were then checked against the trainees' performance during the assessment, and against local employment opportunities, bearing in mind that all the trainees lived locally and would be seeking employment locally. It was our intention to focus on some existing skill or experience that the trainee had, as this was more attractive to a potential employer. Once agreement had been reached on the areas of study, a course timetable was outlined and the course length finalised.

## Course Coverage

It is important to outline the evolution of and the philosophy behind the training. The course was introduced into the centre to run parallel to the existing YTS course, and for the first three months covered a very similar spectrum of training, laying a good general foundation of computer literacy and applications experience. It soon became clear however that the adult course must have a significantly different emphasis to that adopted for the YTS course. This difference stems both from the ages of the trainees and the expectations of the employers. The YTS trainees had significantly greater mental agility, allowing them to have a much increased level of self-teaching through experience and learning from their mistakes. This, however, was not the case in general with the adults who became frustrated if left on their own to explore for any length of time. This meant that we had to adopt a much more formal approach, using directed teaching through set exercises.

When it came to the content of the courses we realised that an employer's expectations from a young person and an adult are significantly different. In the case of a young person, the employer is keen to find a young person who is intelligent, has a good general education and knows how to behave in a work-place, so that he can then mould the person into a job. For this reason a young person can only expect to be paid according to their experience. In the case of adults however, they often have significant financial overheads which are being met through statutory benefits. An employer expects an adult to be trained and experienced and able to perform a specific task with the minimum of training, and is prepared to pay accordingly. We therefore could not afford to only give the adults a general computer literacy education, but had to focus on one or two tangible marketable skills that met local skill shortages and were appropriate to the wishes and abilities of the individual. For this reason, we looked at the wide spectrum of potential applications of computers, throughout industry and commerce, and created a modular framework embracing these applications in a logical way. Since then we have developed comprehensive training modules to allow us to teach these and, where we did not have time to derive our own module, we used any other training package that we felt to be appropriate, thereby gaining good experience of a variety of delivery methods. (This modular structure became the backbone for course development throughout the ITeC.)

## Course Modules

As an ITeC, we developed a broad range of course modules covering all aspects of Information Technology. The overall list of modules available is given below.

We chose at an early stage not to offer hardware training to the group, as we felt that the demands of working in a hardware environment would be beyond the physical abilities of the majority of many of the disabled trainees, unless we confined ourselves to the lower levels of assembly and the higher levels of design. In addition, it would have stretched the resources of the ITeC too much to offer hardware training in addition to the application of computers and programming of computers, and there are other agencies in the area better able to offer this type of training for disabled people.

Over the lifetime of the research project, we recorded the demand for the various modules that we offered and this led us to reconsider the requirement for computer programming in a course such as this. The demand for computer programmers as a percentage of the population as a whole is not large, and only approximately five per cent of the trainees who started a course at the ITeC were trained as programmers. An additional problem is that employers expect programmers to be university graduates, with a strong academic background and preferably some relevant employment experience. Consequently, the course concentrated on the Applications of Computers, the top level breakdown of which is shown below.

Because each trainee is on a course tailored to their individual needs, we decided that it would also be an advantage to be able to adjust the length of the course. We were therefore able to offer training from between four weeks and 36 weeks, with the average length of course being 24 weeks.

## Work Experience

Towards the end of the course the trainees were required to spend four weeks on a work experience placement, either in a local commercial organisation or government department. The host employer was found by the trainee choosing at least ten organisations from a local company directory and contacting these by letter, explaining the work experience that they were looking for. This approach was found to yield at least one positive contact amongst the ten letters. If, however, no organisations came forward, there were some employers, principally the sponsors of the ITeC, who could help us with an appropriate placement. This placement was intended to confirm and reinforce the training, and followed a series of tasks agreed upon beforehand between the ITeC supervisor and the employer. Whilst on the work experience, the ITeC supervisor visited the trainee to ensure that everything was working out as planned. Such work experience placements resulted in several full-time placements, as well as proving to be an invaluable part of the course.

## Job Search Skills

Whilst on the course, it was one of the responsibilities of the ITeC to teach the trainees how to find jobs, and how to improve their overall presentation skills, to enable them to create the correct impression at interviews. A system was devised to enable us to run mock interviews, where the trainees applied for one of a selection of jobs, and were filmed whilst being interviewed. This could be analysed, enabling strengths and weaknesses to be highlighted, for the benefit of all the trainees. Film sessions were run every three months and in addition a ten-week rolling programme was operated covering all aspects of searching for a job.

## Training Methods

A flexible approach to the training was adopted, focusing on the needs of the individuals. The primary method used was a one-to-one explanation, followed by supporting exercises, this giving a high degree of practical learning. The exercises were chosen to cover various practical aspects of the associated job, in such a way as to simulate the working situation. For example, the purchase ledger exercises used actual orders, invoices, delivery notes and so forth.

Many software packages are supplied with a 'hands-on' tutorial, based on pre-prepared exercises and a tutorial book, including in some cases a supporting video. Some concepts can be introduced using videos or computer-based training packages but on the whole it was found that the supervisor must resist the temptation to leave the trainees for long periods to learn for themselves, as it was essential to maintain a good ratio of staff/trainee contact time as they quickly lost motivation on their own.

## Administration/Review

Because of the complicated nature of the course, with each person following their own individual programme, care had to be taken to ensure that little time or effort was wasted and each person was getting the attention that they need. Obviously computers played an important part in this process, primarily in an effort to maximise the time available to the supervisor to attend to the trainees.

As soon as the trainee started at the ITeC, the breakdown of their assessment and foundation skills activities were entered into the computer, alongside the rest of the courses of the other trainees. Once their assessment was over, and their course breakdown had been decided upon, this too was entered into the computer. Trainee and staff time available for each activity were then entered, as too were the machines required for each task. This then allowed the supervisor to predict machine requirements and to plan in advance any practical difficulties such as resource allocation conflicts.

The course was reviewed weekly with the trainees, so that they could see where they were going, and what their aims for the coming week were. This ensured that problems did not have time to build up and it helped the supervisors to know what their priorities were when preparing training materials and equipment.

## Exams/Vocational Qualifications

An area of particular concern on this course was that we were not able to find good suitable vocational qualifications for the trainees. Difficulties included:

- We found that there were no exams available to assess some of the practical subjects such as stock control or bill of materials. Any exams covering these subjects tended to be part of a wider course, and unsuitable for trainees trying to return to work following a disabling accident or illness.
- The academic education of many of the disabled people who went through the course was for a variety of reasons fairly low. They might be perfectly able to learn a new skill, but very poor at proving this skill in an academic type of examination.
- The field of high technology is growing and changing so fast that many of the exams do not reflect the currently available hardware and software advances. However, employers expected newly trained people to be up-to-date, so we found it better to give practical, contemporary training rather than spend time preparing for exams which might well be dated.
- The courses did not allow much time for activities other than their direct training. As the administration and preparatory work involved in exams required a large amount of time, we had to be very sure that the effort of gaining a qualification would genuinely improve their prospects of employment.

Having said this, there were clearly some exams that were beneficial, and we entered those trainees for whom it was appropriate, with good results.

### Outcomes

The course was open to people with a physical disability or a 'mental illness', but not to people with a learning disability. The trainee population divided as shown below.

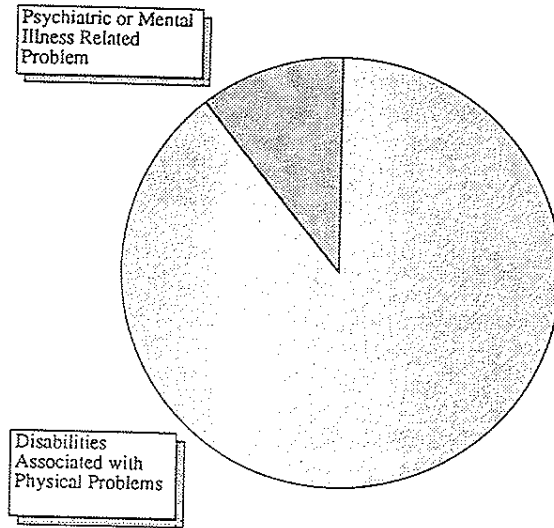


Figure 5: Proportions of psychiatric to physical disabilities

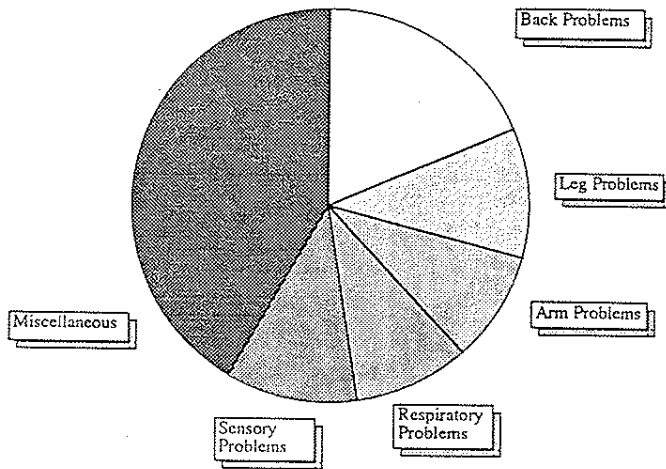


Figure 6: Types of problems resulting from disability

The detail of disabilities is as below.

It is interesting to note the various causes of the disabilities as seen in the figure below:

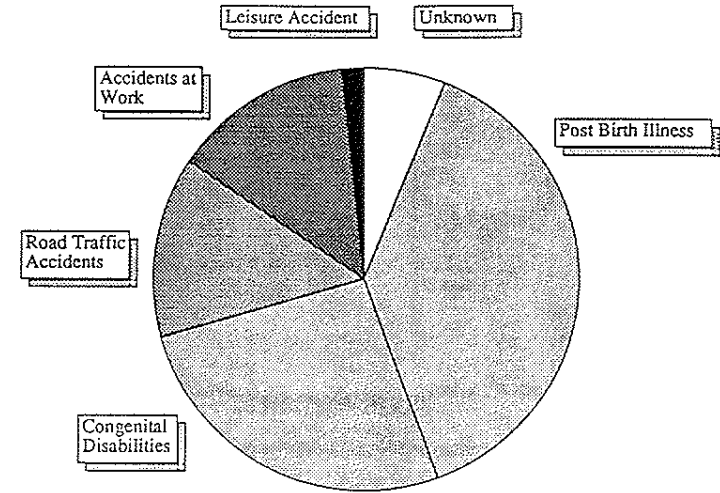


Figure 7: Causes of disabilities

The following figure shows the distribution of ages of the trainees and it can be seen that the numbers tend towards the under 30 age range. Successful placements have been made up to the age of 56.

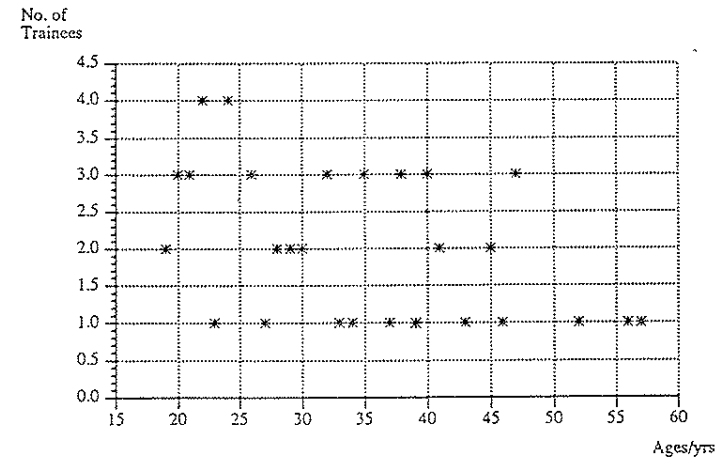


Figure 8: Distribution of trainees across the age range

As can be seen from the following figure, there was a much larger proportion of men taking places on the course than women.

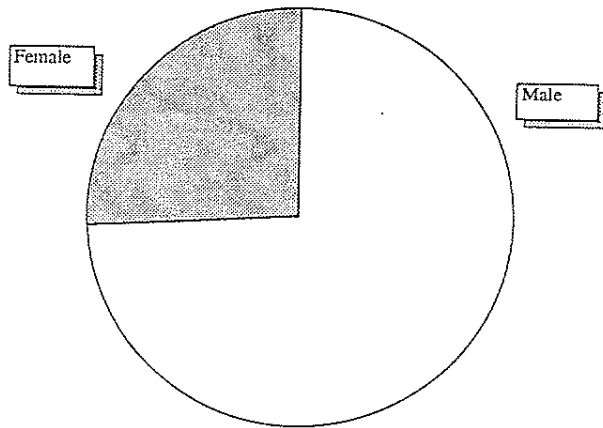


Figure 9: Male/Female

**Geographical Distribution**

The following figure shows the population centres from which the trainees come.

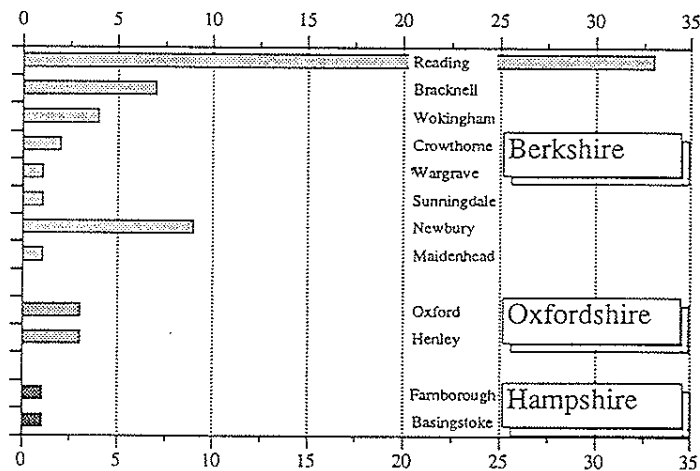


Figure 10: Trainees per home town

Attendance was on a daily basis, and trainees received reimbursement for all travel cost. Whilst this ensured that no trainee experienced financial hardship as a result of travelling to the ITeC, it did not ease the problem of time and effort spent in travelling. Reading is at the centre of a good communications network of roads and railways, but over the lifetime of the project, the catchment area spread outside East Berkshire to bring in people from towns on a 30 mile radius. This was not satisfactory for a variety of reasons, but principally because the course was conceived as providing an opportunity to people from a local

geographical area who for one reason or another were not able to take advantage of one of the residential facilities available to disabled people. The working day for some people started at 7.00 am and ended at 7.00pm, and they were obviously not able to give of their best whilst at the ITeC, or they had to forgo all social activity for the duration of their course. As the reputation of the course spread, we restricted advertising so as to avoid too long a waiting list but this obviously meant that trainees that could benefit from the course were not able to have the opportunity. Now that the value of the training has been established and proved, it is our opinion that similar courses should be established at population centres, where possible serving an area with a radius of not more than fifteen miles.

**Course Coverage**

The following figure gives a breakdown of the principal areas of training covered by the trainees, and shows the vocational nature of the training, with its emphasis on the application of the computer as a tool rather than on specialist computer skills.

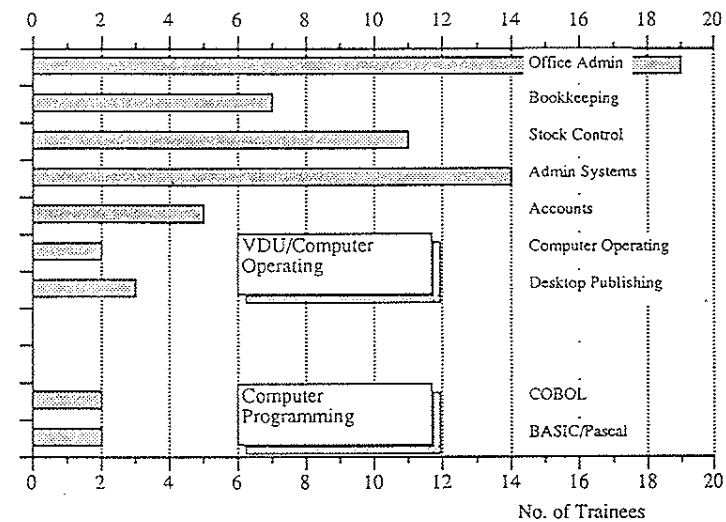


Figure 11: Courses covered by trainees

**Placements and History**

The following figure shows a proportional representation of the career of all the people who came forward for a place on the course. The large numbers that dropped out before interview is a reflection of the fact that many people put in speculative applications, especially in the early days of the course, and subsequently found alternative training or employment. The large numbers not offered a place reflects the misconceptions that surround any new venture offering a future for disabled people, where many people come forward hoping

that it will be a solution to their particular problems. That is particularly true for those who have been 'in the system' for a long time.

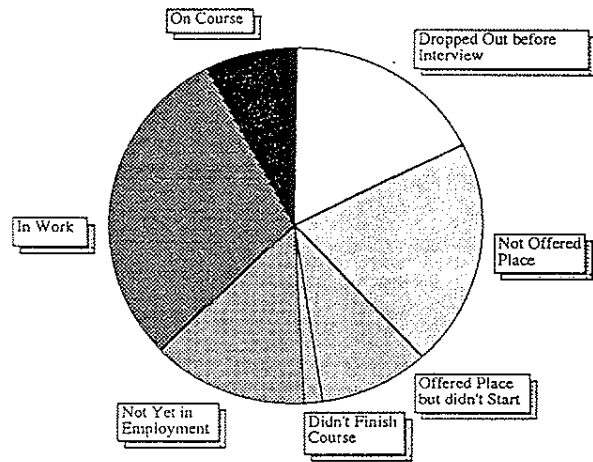


Figure 12: History of all people contacted

Of those people who have commenced training, and who have completed a course, about 70 per cent of these have found careers based on the skills learnt at the ITeC. This figure has fluctuated within 5 per cent during the duration of the project and continues to do so. The likely causes for this and possible solutions will be discussed below.

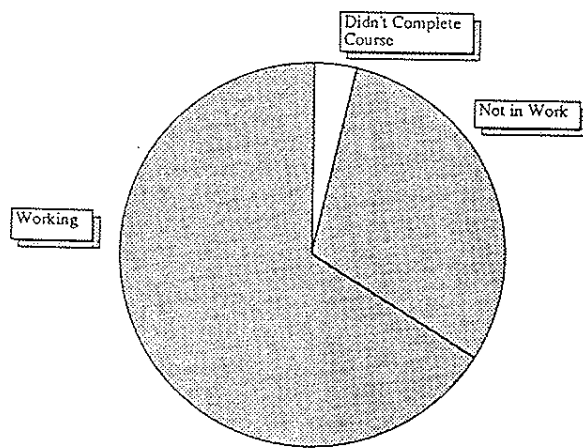


Figure 13: History of trainees following a course

## Conclusions and Recommendations

### Assessment

One of the critical factors in determining the successful outcome of a course at the ITeC has been the careful assessment of the trainees. It is imperative that the trainee's initial level of ability and expertise is accurately ascertained, and that the trainee is then given the opportunity to sample the various major skill areas available to them. Only then can a realistic programme be drawn up to meet their particular needs. It must be remembered that the only common factors between the trainees is that they have a disability and are seeking retraining as a means to find work. They have widely differing educations, experiences of life and employment, intellectual powers and disabilities. Careful and sensitive assessment is therefore seen as an essential element of a training programme of this type.

### Course Structure

One of the principle foundations on which the course was built is the flexibility available in a modular course. Each trainee is an individual case, and requires an individual programme. This is readily available within the framework of a modular course, allowing modules to be mixed and matched to give an optimum solution for each trainee. Flexibility is therefore seen as an essential ingredient for anyone considering implementing a similar project.

A major benefit is that as employment needs, skill shortages, and available skill areas change and develop, new modules can be readily integrated into the training programme.

### Staffing

Because of the broad scope of the modules available, and because of the high demands made upon tutor time by some disabilities (e.g. hearing impaired or partial sight), a staff student ratio of 1:5 is recommended. If this ratio is exceeded, the trainees will not receive the staff input that they require and will quickly lose motivation. It is recommended that tutors have some practical experience of work in the business and commercial world, and preferably specialise within the programme – with one tending towards the financial and administrative skills, and one tending towards the more technical and applications generation type skills.

Additional staff input is recommended for the areas of recruitment and placement to assist the trainees to search for jobs, and social skills training. The latter is particularly important if a large proportion of the trainees have a history of psychiatric or behavioural problems, or if their experience is limited because of a sensory disability, or if they have lead a sheltered life as a consequence of being disabled.

### Reviews

One of the most important factors in ensuring that such a flexible programme works, is to have regular and meaningful progress reviews. Once a week clear



and attainable goals must be worked through with the trainee, so that everyone knows where they are going and why they are working in a particular way. In addition, each trainee should take part in a monthly course review to reconsider the direction that the training is taking and to ensure that expected progress is being made, and to introduce changes where necessary. This review should also consider wider employment issues such as travel and mobility, social problems and progress, progress in overcoming handicaps etc. This system was found to be the dominant factor affecting morale on the course at the ITeC, and as a result it was strengthened by the introduction of various social skills activities.

#### *The Appropriateness of IT Training*

The overall conclusion is that disabled people have found employment that they would not have found without the opportunity provided by the ITeC course. The essential point is that the skills offered are required by business and commerce, and as a result the trainees are able to compete for jobs on an equal footing with their able-bodied peers, often with more direct success because their skills are up to date. As companies introduce technology into new areas, they will need new staff who are of the right calibre to be able to integrate with their existing workforce, often working in very traditional functions such as stores and inventory work or drafting. The solution is often not to introduce a young genius, but rather to integrate a retrained mature person who can help to motivate a suspicious and conservative workforce to accept change. Essentially the training is successful when it meets the needs of employers.

It is important to note that all functions within the commercial world are introducing technology in some form or another. There is, therefore, a need for people who are able to use the technology as a tool to achieve a task, be it an obviously computer based one such as data analysis, or as an incidental tool available to an architect. For this reason we feel strongly that the course is not successful merely because it is in a prosperous area. Any location where there are people will have services and goods, and any business that is to survive will have to make the most efficient use of the tools available, and they will require people who know how to use these tools.

#### *Implications of Unsuccessful Trainees*

Whilst 70 per cent of the trainees found employment, 30 per cent did not, and we have sought to identify the weaknesses in the course to redress this situation.

1. **Disability.** There are some disabilities that are perceived to be difficult to handle (eg. multiple sclerosis or epilepsy), and employers seem to be reluctant to consider a person with such a condition. Any hint of unreliability seems to cause problems for employers, perhaps understandably. We feel that this is often due to ignorance of the true implications of a particular disability, and we tried to work with other placement services to educate them, and to act as a resource where employers could find advice based on practical experience.
2. **Prejudice.** This still exists amongst employers, particularly when a simple practical effort is deemed to be beyond the resources of the organisation.

Discrimination is particularly evident when the disability in question is highly visible (e.g. cerebral palsy). This again is largely due to ignorance and can be tackled through education and dissemination of experience.

3. **Productivity.** Various schemes exist under the overall description of the sheltered placement services, whereby an employer is able to employ a disabled person at a cost to them proportionate to the individual's productivity, the salary being topped up by government funding. Once this system becomes more widespread, it should begin to provide an effective answer to the employment problems of low productivity trainees.
4. **Benefits.** It is sometimes difficult for trainees to move from benefits to salary, as they are required to achieve unrealistically high earnings if they are not to lose out financially, particularly considering that they are seeking a job in a new career with little practical experience and only six months training. For this reason the ITeC opened a Computer Services Bureau offering commercial services to local companies, ranging from word-processing and desktop publishing to accounts and even the supply of computer equipment. Up to six ex-trainees could be employed for up to one year, being paid close to the market rate, whilst they gained valuable experience for later job applications. (The money that the bureau brought into the Centre enabled us to increase our services to disabled people by funding additional projects)
5. **Appropriate Provision.** Some have taken a place on the training course and it has subsequently become apparent that this is the wrong provision for that person at this stage in their rehabilitation. As we built up experience and became aware of other opportunities and provisions in the area, we were able to ensure that only those applicants with a realistic expectation of being in a position to take up a job following their training, would be considered for a place at the ITeC. It was too demoralising for a disabled person to fail because of incorrect guidance from providers for us to risk an inappropriate recommendation.

#### **Summary**

The Reading ITeC Course for disabled adults was merely one provision in a long sequence that is experienced by a disabled person working through a programme of rehabilitation. It is not a stand-alone provision, as disabled people rarely require just work skills to enable them to return to work, and the successful outcome of a training programme will depend on the effectiveness of the rehabilitation that went before, and successful solutions being found to peripheral issues such as housing, mobility and ongoing medical treatment. As far as disabled people are concerned, they often do not have the time, energy or inclination to work their way through the bureaucracy that separates these various issues and provisions. We were aware of people who would have benefited from the ITeC course, if some of these other factors had prevented them. We see that the biggest single need in service provision for disabled people is a



client-oriented assistance service that co-ordinates all the other services, whatever their status and governing body, to enable a disabled person to more effectively negotiate a programme of rehabilitation, in a logical sequence so that each step is anticipated and preparations made for it.

Over the lifetime of the Interface Project the ITeC course evolved and proved itself to be one of many effective solutions to the training needs of disabled people. One can say with certainty that their quality of life improved as a result of this opportunity, but within the framework outlined above, it would no longer be a provision that people stumble upon as if by chance, but would become part of a recommended suite of provisions available to disabled people at the correct stage in their rehabilitation.