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THE USE AND COST EFFECTIVENESS OF
COMPUTER BASED TRAINING IN THE
INSURANCE INDUSTRY

by

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A thesis submitted in fulfillment of the requirements of the degree
of

MASTER OF COMMERCE

in the
Faculty of Business and Law
at
Deakin University

Submitted April 1998
I certify that the thesis entitled

THE USE AND COST EFFECTIVENESS OF COMPUTER BASED TRAINING IN THE INSURANCE INDUSTRY

submitted for the degree of

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is the result of my own research, except where otherwise acknowledged, and that this thesis in whole or in part has not been submitted for an award including a higher degree to any other university or institution.

Name .................. Thomas Gordon MacDonald .........................

Signature ........................... ...........................................

Date ...........................1 February 1997 .................................
## CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Abstract</td>
<td>vii</td>
</tr>
<tr>
<td>-</td>
<td>Summary page</td>
<td>x</td>
</tr>
<tr>
<td>1.</td>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Definitions</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>Training and the place of CBT in training.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Benefits to employer</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Benefits to employee</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Training in Australia</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Training Methods</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Training motivation</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Training Cost</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Computer Based Training</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Advantages of CBT</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Disadvantages of CBT</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Summary</td>
<td>24</td>
</tr>
<tr>
<td>3.</td>
<td>Training in the Insurance Industry</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Insurance Companies</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Insurance Agents</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Insurance Brokers</td>
<td>27</td>
</tr>
</tbody>
</table>
Loss Assessors, Adjusters, Surveyors 28
Type of Training 28
Company size 30
Large Companies 30
Small Companies 31
Factors affecting training 32
Industry Training needs analysis 32
External training 33
Certification courses 34
Australian Insurance Institute 34
Financial planning Association 34
TAFE 35
Universities 35
Continuing education and other courses 35
Conclusion 35

4. Evaluation of CBT - The literature survey 37
Evaluation of CBT 40
Learning and retention differences 40
Cost effectiveness 44
Time saving 46
Costs in the cost comparison 49
Relevant costs 51
Industry Trends 52
Technology 54
Internet 55
Conclusion 56

5. The Industry Survey 57
Purpose of questionnaire 58
The Survey Instrument 58
6. The trial program

A trial CBT program and the market response 78

The project 79

Program development 79

Time 79
Materials 80
Distribution cost 82
Total cost 82
Student response 83
Insurance market response 84
Suitability for the need 84
Price range 85
Conclusion 85

7. Conclusion 86

- Appendix 89
- References 97
ABSTRACT

Training is essential to the growth and economic well-being of a nation. This need for training pervades all levels of industry, from a national level where a country’s well being is enhanced by training, to each company where productivity is improved, down to the individual whose skills are enhanced and as a result improve their position in the employment marketplace.

The Australian Bureau of Statistics report “Training and Education Experience - Australia” (ABS 1993) indicates that training in Australia is undertaken at a significant level with some 86% of employers undertaking some form of training. This is slightly higher in the Finance industry at a little over 89%. On the job training is undertaken by 82% of employers and off the job training is used by 47% of employers. In 80% of the off the job cases these courses were conducted in a conventional manner using an instructor. The remaining 20% of cases were either self paced (14%) or instructor based (6%). These latter cases could involve Computer Based Training (CBT).

The report, referred to in the last paragraph, also indicates that a significant aspect of business in Australia is that 95% of businesses have less than 20 staff. This poses significant problems in that the ability to deliver effective training is limited. With businesses as small as these their size does not permit them to carry specialist training personnel so this role falls to the senior staff. These people already have a full workload and their ability to be able to take on training duties is limited. In addition these people were employed for their technical skills, not training. It may be that their ability to fill the role of a trainer is not good and as a result the training may not be very effective. In addition, small business has difficulty in releasing staff for training. The difficulties faced by small business were recognised by the Australian National Training Authority in their 1995 report which indicated that there was a need to develop a ‘training culture’ among small business
employers. The authority made a commitment to provide flexible delivery strategies. This includes Computer Based Training (CBT).

CBT has existed since the 1970's. It came on to the scene with a flourish and tended to provide 'page turning' programs or 'drill and practice programs'. In limited areas this form of training became popular but its popularity waned in the 80's. With the advent of better graphical displays, larger and faster memory, and improved programs in the 1990's the quality of CBT today is superior to those offered in the 70's and has greater appeal. Today, still photographs and video clips can be displayed and made interactive. Because of this CBT is making a comeback and starting to have a greater impact.

The insurance industry covers a wide range of companies in Australia. These companies vary in size from companies with employees in the thousands to companies with less than five staff. While the needs of the employees of each are similar the ability of these companies to deliver the training varies significantly.

Any training can be divided into two parts. Internal or on the job training and external. External training deals with those aspects that concern the industry as a whole whereas internal training affects the individual company. Internal training would deal with matters like company procedures, company products and the like. External training deals with matters such as legislation, products generally, and the like. In the insurance industry the major problem arises with the small companies. Insurance companies would tend to be large in size and able to cover their training costs but the insurance brokers who would make up, numerically, the major number of companies would have a significant number of companies that fall into the 20 staff or less category. In fact many would have a staff of less than 5. While CBT can benefit all companies it is these small companies that could benefit from it the most.

This thesis examines:

- The place of CBT in training, its cost and effectiveness.
• The incidence of CBT in the insurance industry and how the industry determines its effectiveness.

• If a program that meets an industry need is able to be produced at a realistic price?
SUMMARY OF THESIS CONTENTS

The thesis examines the importance of training and the role filled by Computer Based Training in general terms and then moves to look at the training needs of the insurance industry and the role played by computer based training in that industry.

The results of a literature survey conducted in relation to the use and cost effectiveness of Computer Based Training (CBT) are discussed as a prelude to conducting a survey within the insurance industry.

The survey examined the extent and type of training undertaken, and in more detail the use and cost effectiveness of Computer Based Training.

A trial program was undertaken to ascertain if cost effective programs could be developed. This produced a positive response and the thesis discusses this in detail.
The thesis concludes that CBT has an effective place in the trainer's toolkit. In the right situation it can be a cost effective training medium. Further, that appropriate software can be produced at a realistic price.
CHAPTER ONE

INTRODUCTION
The insurance industry employs some 50,000 people in Australia. The type of companies that employ those people range from large organisations that employ thousands to small companies with as few as two people.

As with many other industries training has always presented a problem. This has been accentuated in recent years with economic pressures placed on companies, greater regulation and a more demanding public. Computer Based Training (CBT) is a means of filling some of that training need.

This thesis examines:

- The use and cost effectiveness of computer based training in the Insurance Industry.
  
  In doing so it will examine:
  
  - Training in general and specifically the place for CBT in filling that training need. The advantages, disadvantages, effectiveness and cost will be considered in an effort to see where this form of training can effectively be used.
  
  - Training in the insurance industry and the evaluation of that training.
  
  - By means of a literature survey, the effectiveness and cost of CBT can be established. A CBT program for use in the insurance industry was developed and costed to gauge the ability to produce appropriate cost effective programs.
  
  - Following an industry survey, the use of CBT at present, where used, what it is used for and how its effectiveness is determined.

Definitions

There is a need to establish at the outset the meaning of terms used in this thesis. Training through the use of computers is given a variety of names and different meanings. A brief discussion is made here of the main terms used and their meaning for the purpose of this thesis.
Computer Based training
This is the general term used to refer to training where a computer is used as the training medium. There are a number of applications that come under the heading of computer based training that need to be clarified before going further. The principal applications will be discussed following the distinctions developed by Kearsley (1983).

Computer Managed Learning also referred to as Computer Managed Instruction. These terms are used to describe applications that control and manage the training process. These applications will contain student records, students test results and their progress through the training program. The important point is that this is not a training program itself but is a program to manage the training.

The next type is referred to as Computer Assisted Instruction. This refers to applications that actually instruct the trainee. These invariably take the form of “drill & practice” sessions, some of the earlier programs were simply “page turning” exercises. Some use a combination of both. For example the student is given information about a topic over several screens and then given a series of multiple choice or true false questions that relate to the material they covered in the preceding screens. Another approach is to relate the questions to a text that the student is to review. The student is to achieve a minimum level - say 80% - in order to “pass” and thus proceed on to the next section. This approach is often referred to as mastery learning. Its purpose is to indicate to the student their level of understanding of the topic. The questions are framed in a way that tests the students understanding of the topic and the pass level is set at a point that ensures that the student must have a good understanding.

The third category is referred to as Computer Assisted Learning (CAL). With this approach the student is more in control of the process. The most common method associated with CAL is simulations or games. Programs can be designed to simulate a business environment. The student can experiment with that business environment and can see from inputs the way the business environment reacts to those decision (Lawrence
& McDonald 1995, 1996). These reactions are "real life" and provide the students with an excellent learning experience.
CHAPTER TWO

TRAINING AND THE PLACE OF CBT IN TRAINING
TRAINING AND THE PLACE OF CBT IN TRAINING.

Training is the investment an employer makes in an employee to enhance the employees skills thereby improving the employees productivity. Training and development has a positive impact for the individual, the organisation and the nation (Smith 1992).

BENEFITS TO THE EMPLOYER

Effective training benefits everyone. The employer, generally the initiator of the training, is the party that benefits immediately. A new employee will commence with a specific set of skills. The employer has made a reasonably large investment in the employee - apart from the wages paid there are a range of "on costs" (Superannuation, workers compensation, office space, etc) which for clerical employees can add considerably to the salary paid. In return for this outlay the employer has the services of that employee. Through training the employer can increase the skills of the employee so that they are able to undertake a wider range of tasks and/or carry out the tasks more efficiently. Ultimately the expectation of the employer is that the productivity of the employee will be increased. In this way the employer receives a "return", increased productivity, on the funds invested - "the cost of the training".

The quality of output is enhanced through training as the employees will be more competent in their job. Training also enables an organisation to cope with changes encountered such as new technology or new products. Training gives the employees the skills to be in a position to adapt to the new circumstances.

BENEFITS TO THE EMPLOYEE

Benefits to the employee come through

- increased knowledge and skills which will enhance the employees opportunities
• increased prospect of promotion and can also produce a more "contented" employee as they have a better understanding of their job and are better able to cope with the more stressful aspects of it.

The cost to the employee is the time and effort put into the training - the rewards are the earnings and job security it produces.

The benefits from the company's viewpoint lie in enhancing their competitiveness and performance. Research in the UK has shown that the better performing companies are those that have higher spending on training (Sparrow & Pettigrew 1985). Technology can be purchased, as can productive capacity, but teams of people that are skilled, committed and experienced do not occur by chance. They are planned, developed, and come about as a result of systematic long term investment (Prior 1994).

It is interesting to note that in the UK, because it was perceived by employers that they lagged behind their international competitors in the area of management training, a National training forum was established - The National Forum for Management Education. The aim of the forum is to improve the quality of management in the UK and increase the nations competitive advantage. The UK has established a national standard for the investment in people (Prior 1994) which has as its aim the encouragement of all employers to raise their performance through the effective development of their workforce. It is interesting to view the main parts of this standard, which are:

• making a public commitment from the top to develop all employees to achieve business objectives;
• regularly review the training and development needs of all employees;
• taking action to train and develop individuals on recruitment and throughout their employment; and
• evaluate investment in training and development to assess achievement and improve future effectiveness.
The importance of this approach is to see this being done at a national level by employers on the one hand and government on the other which emphasises the importance each holds training in for their future successes. There appears to be consensus among employers, governments and trade unions that training is important at a national level. In the publication “Training and Development in Australia” (Smith 1992) reference is made to a large volume of literature related to this topic and employer, employee associations and government have advocated higher levels of training as a means of solving the countries economic problems (Dawkins 1988). In the developed countries government is usually active in the area of training with a government department having specific responsibility for the area of training.

In general the more successful trading countries are those that have made a considerable investment in training and have well developed training systems.

Forlenza (1995) observes “Regulatory requirements for retraining, ongoing refresher and training reflect the importance of continuous learning”, and quoting Drucker (1993) in Post Capital society he states, “Productivity demands that we build continuous learning into the job and the organisation”.

Expanding further for the benefits of training John Adair (Adair 1983), in his model of “action-centred leadership” has summarised these. Adair identified three leadership aims. These are the development of the management task, the team and the individual. The benefits seen under each of these headings are:

**The Task**
- sufficient skills for the company to survive,
- the ability to cope with change,
- increased productivity,
- task expertise,
• reduction in mistakes,
• standardisation.

The Team
• Recruitment - with training an employee can improve their employment prospects
• Exchange - Training courses can be forums to exchange views and information.
• The Hawthorne effect - when employees are selected for special attention this has a positive effect on the employee and their output.
• Ideas - coming through the use of training and development of staff as a way of generating ideas.

The Individual
• Motivation of the employees
• Stimulation - a training program removes an employee from the pressures of work and take a wider perspective and can help the individual realise their role in the organisation
• The enhancement of employees presentation skills
• The increase of an employees knowledge and skills.

TRAINING IN AUSTRALIA
In looking at the pattern of training in Australia there are some interesting facts revealed in the Australian Bureau of Statistics report on “Training and Education Experience - Australia” Some highlights are:
• during the preceding 12 months some 86% undertook some form of training which was an increase over the previous survey.
• Of those undertaking training the largest component related to on the job training (82%) compared to external courses at 47%.
• By industry sector in the Finance, property and business services (which includes insurance) 89.2% of the employees in the industry undertook some training.

• Within the Finance industry 85.8% of employees undertook in house courses and 51.5% undertook external courses. The participation rate for “on the job training” being undertaken remained constant regardless the size of the firm and whether the firm was in the public or private sector. The position changed with external training where the participation rates diminished as the size of the company’s workforce diminished to a point where under 10 employees showed a participation rate of 36.4%.

This contrasts sharply with an earlier ABS (Clare & Johnson 1993) report which draws on a survey done in the September quarter of 1990 that showed that only 18% of small business (20 employees or less) in the private sector reported undertaking any training expenditure compared to 62% in medium firms and 92% in large firms (100+ employees). This could only be put down to the effects of the training Guarantee scheme which had only just come into effect at the time of the survey.

TRAINING METHODS
The way the course was conducted was similar for both on and off job training but there is an interesting breakdown. Eighty percent of the courses were conducted with an instructor in the “conventional” manner. Twenty percent were conducted either self paced(14%) or no instructor (6%).

TRAINING MOTIVATION
In examining the reasons that employees undertake training two stand out. Promotion and retraining. Table 2.1 sets out the distribution of reasons.
Table 2.1
Reasons for employees undertaking training (a), 1993

<table>
<thead>
<tr>
<th>Reason for Training</th>
<th>In House Training</th>
<th>External Training</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Retraining to do different duties to do</td>
<td>35.9</td>
<td>37.4</td>
<td>36.2</td>
</tr>
<tr>
<td>same job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary to obtain a promotion</td>
<td>21.4</td>
<td>8.6</td>
<td>18.2</td>
</tr>
<tr>
<td>To help in obtaining a promotion</td>
<td>16.6</td>
<td>11.9</td>
<td>15.4</td>
</tr>
<tr>
<td>Retraining to get a different job with</td>
<td>13.1</td>
<td>12.9</td>
<td>13.0</td>
</tr>
<tr>
<td>the same employer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retraining to change employers</td>
<td>7.3</td>
<td>14.7</td>
<td>9.1</td>
</tr>
</tbody>
</table>

(a) Percentages do not add to 100% because employees may have had more than one reason for undertaking training.
Source: Australian Bureau of Statistics 1993

An interesting point to emerge from the survey is the employees perception of the training in that 84% of employees felt that the training improved their job performance and near 75% of the employees felt they had received adequate job training. In those businesses with less than 10 employees 22% believed they had no need for training compared to 8% of employees in businesses with 100 or more employees.

TRAINING COST
Between July and September 1993 employers spent $1.1 billion ($4b in the full year), an average of $192 per employee (ABS 1995) which was 3% of total wages and salary. This is well above the 1.5% required by the training guarantee legislation and could well be due to a more significant outlay by large companies. The object of the levy was to force small companies into training. In the Finance, Property and Business services 89.2% of employees undertook training and the industry spent 3.2% of wages on training.
Further education and training is seen as critical for sustained economic growth and transforming that growth into social progress (OECD 1992). Greater economic significance in education and training is driven not only by technological change but in increasing international competitiveness, greater globalisation of trade changing marketing, production strategies and flatter management structures increase the importance of skills and competencies in the workplace.

To remain competitive nationally and internationally quality must continue to improve and innovation must continue. This can be achieved through training. In recognition of this the government through various programs have provided resources to show how ‘best practices’ can achieve this (ANTA 1997). In the publication “Working for the Future” (AGPS 1992 p21) the role of education and training is described as “The role of education and training in developing employment-related skills and competencies is recognised, worldwide as a key element in determining a nation’s competitive advantage”.

In the US employers spend, annually, US$250 per worker on formal training compared to Australia at US$120 (OECD 1992). In Japan 9.2% of payroll was spent on training by the private sector in 1989 compared to 2.2% in Australia (OECD 1992). Aggregate spending on education in Australia is around 4.8% of the GDP, which is around the OECD average (Clare & Johnston 1993).

A point to be borne in mind, and cited in The Economic Planning Advisory Council (EPAC) publication Education and Training in the 1990’s (Clare & Johnston 1993), is the fact that the full extent of workplace training is difficult to measure as much training is internal and informal. New employees are taught by experienced employees and in other cases new employees bring new skills to the workplace that can be disseminated to other employees. Because of this type of informal training the associated costs are not recorded and it makes informal training hard to quantify.
In a survey conducted for the Australian Chamber of Commerce and Industry in 1995 which involved 700 employers over 80% said that they expected that training would improve the efficiency and effectiveness of their employees (Bryce 1995). This was confirmed by 80% of employers in an ABS survey.

Improved skills and abilities and recognition of the competencies people achieve that will result from training will help bring:

- increased profits,
- better morale among staff in the workplace,
- more options to improve performance through structural change as the workforce becomes more flexible,
- increased ability for enterprises to become more competitive than they now are,
- support for all the improvements to the business (Bryce 1995).

Small business faces particular problems in relation to training. In 1994 95% of Australian businesses have less than 20 employees (ABS 1994a). A survey conducted by the ABS of small businesses showed that only 25% had any management training. The survey showed that 60% had some form of tertiary training only 28% had specific small business qualifications or training in small business management. An interesting point to emerge from the survey is that only 12% said that they intended to send employees on training courses in the six months following the survey. A small business was defined as a non agricultural based industry with fewer than 20 employees. In all there were 794,700 small businesses operated by 1.25 million people. Fiftyone percent of those businesses were run by two people. A quarter of the businesses were home based (The Age 1996).

Small businesses experience difficulties in releasing staff to attend external training. Flexible delivery strategies, while not the complete answer certainly help with this problem. These strategies include but are not limited to CBT. To this end the Australian National Training Authority (ANTA) report in May 1995 made a
commitment to providing flexible delivery strategies as one appropriate response (ANTA 1995). Other points made by the report was that there is a need for the development of a “training culture” among small business employers and that there is a need for small business management training.

**COMPUTER BASED TRAINING**

The role of computer based training is a secondary one. In the ABS report on Training referred to earlier (ABS 1993) the vast majority of the main training course was undertaken by an instructor. Only a very small portion was undertaken using flexible learning strategies such as Computer Based training. Two points emerge from this. The first is that the survey only asked for the main training course. From discussion with trainers in a number of different companies they indicated that CBT would often fill the role of supplemental training rather than the main training course. It would often be used in conjunction with instructor based training as a follow up to reinforce or apply what has been learned in the course. The other thought in relation to the survey question is the way in which a question is perceived. Take two scenarios - the first where the employee is sent on a week long instructor led internal course at the company’s head office. The second is a flexible delivered course, a CBT program, that the employee completes as time permits along with other duties. Even if the CBT course gave the employee more knowledge it is quite likely that the employee would regard the instructor led course as the main course because of the prominence it received rather than the knowledge acquired.

With improved computer technology the quality of CBT has improved over the last 10 years in relation to speed and graphic presentation. The quality available 10 years ago was not particularly appealing and to that end did not prove attractive to the trainee. In addition the scope of teaching that could be achieved was limited. CBT appeared as a novelty but this wore off as its limitations became apparent and it quietly moved to the background. The 90's saw a resurgence with systems that provided improved abilities and quality in presentation.
One of the greatest benefits of CBT is its flexibility in that the training can be undertaken at any time convenient to the user. There is not the need to incur travel costs to some central point where the training is conducted. The cost of the trainers also is a saving and there is not the need to have additional staff to cover for those who are away at the training. Offsetting this is the cost of the CBT package. These costs will be covered in more detail in a later topic.

The National Training report (ABS 1993) mentioned flexible training as one of its priorities. Computer based training fills this role well and is particularly suited to the problems faced by small business.

From the forgoing it is apparent that Training is a very important factor in the growth and development of any company or for that matter any country.

Training needs to be continually reviewed to ensure effectiveness and cost effectiveness. Different training situations may call for different methods for the training to be most cost effective.

One area that offers promise is the effective use of Computer Based Training. Computer based training has been available for over 30 years. The first major step in this area was with a system called PLATO (Smith 1992) which emerged in the 1960’s and was usually designed for a dedicated hardware system so its widespread use was limited. Since that time both hardware and software have developed enormously to the point that very portable and stimulating interactive programs are available today (Florenza 1995).

To consider the suitability of Computer based training the advantages and disadvantages need to be considered.
ADVANTAGES AND DISADVANTAGES OF CBT

ADVANTAGES:

1. CBT can employ economies of scale. Once the program is developed it can be easily reproduced and distributed to many locations. The larger the organisation the greater the benefit that can be achieved (Florenza 1995)

2. The very nature of CBT allows for the immediate feedback to the student (Webr 1988). This immediate feedback speeds up the learning process and this in turn improves the trainee's performance (Hays 1987; Levine 1989).

3. CBT was found by all reviewers to be cost effective (Levin 1983; Dunn 1990; Perez & Willis 1989; Florenza 1995). As there is quite an amount of discussion on this point, this particular aspect will be dealt with later where a more in-depth review of the articles will be provided (Wetherall 1988).

4. With CBT the cost of classrooms facilities can be reduced or eliminated. As well travel expenses can be eliminated. CBT can be made available at a terminal at a location many miles from the mainframe or if a PC is the medium used a disk sent to each location will enable the program to be run. With instructor based training either the instructor will need to travel to the site, or the student, or it may even be that both will travel (Kirvan 1991; BASF 1996; Caudron 1996; Garry 1996). Trainees are away from their workplace for a minimum amount of time.

5. The student is able to progress at their own pace with CBT. With instructor led training it is necessary for all to progress at the same pace. For the quick this can lead to boredom and result in lack of interest and attention. For the very slow this may mean that they cannot keep up (Webr 1988;
Kirvan 1991). Another important aspect to consider is that with the flexibility of CBT students can complete the units whenever they like, as often as they like and in whatever order they like. The students are taking responsibility for their own learning. Because of the individualised nature of CBT savings can be achieved. With CBT the trainee can progress at their own speed. A student who takes longer to understand something is not "left behind". Equally CBT recognises prior learning in that a student can start at the level that suits his existing knowledge. CBT has been said to offer a saving of 30% over conventional training in these areas alone (Hart 1987).

6. With CBT the training can be done in the work place. It can be done at any time and to that end can fit in conveniently with the trainee's other duties. (Wetherall 1988; Ganger 1989; Webr 1988). It can be done before and after work or during free periods thus maintaining productivity (Kirvan 1991). One example cited a laptop being used on a commuter train (Demmerly 1996). It enables time and resources to be used effectively.

7. With instructor based training the quality of delivery and the thoroughness with which the material is developed will vary from one instructor to another and indeed, with the same instructor, can vary from one session to another. CBT ensures the same quality to all students and this quality can be the best.(Ganger 1989; Pollack 1989; Perez & Willis 1989; Kirvan 1991; Caudron 1996, Kay 1996). In one example (Pastore 1993) Union Pacific railroad, who were moving from a heavily regulated environment to a competitive one found that their 60 trainers were not consistent in conveying skills or corporate attitude. This was remedied by using a CBT program available on 260 terminals in locomotive crew changing rooms across the USA. With instructor led training bias in relation to age, race or gender can arise in any presentation by an individual instructor. The development of a program free of bias overcomes this problem because the
program makes the same presentation each time it is run. Instructors presentations can vary. With CBT management can be assured of a high degree of consistency (Florenza 1995)

8. CBT provides the advantage of always being available. Where appropriate it can be available 24 hours a day (Florenza 1995). It is simply a matter of turning on the computer and the program is there irrespective of time. With instructor based training it is necessary to wait until the next course is available before the trainee can receive instruction. CBT therefore allows the trainee to become effective for the company more quickly. This advantage is particularly useful in high turnover areas such as life insurance agents and it allows the new agents to become productive more quickly (Webr 1988, Ganger 1989).

9. With CBT there is no need for supervisors. The program is all inclusive and does not involve the time of the trainer or any other company personnel. (Ganger 1989). There is not complete agreement on this point. Some point to the fact that their learning process stimulates more questions and in an instructor based situation these questions would most likely be handled by the trainer. In a CBT environment the student would seek out someone else in the organisation, be it trainer, supervisor, etc to ascertain the information. The time taken by these people to respond to these queries becomes an indirect cost of CBT. To this end it could not be said that CBT is exclusive of any supervisor costs.

10. The CBT program can incorporate testing of the trainees and record their progress (Florenza 1995). Feedback can also be provided where the correct answers are not achieved explaining the correct answer. A facility can also be incorporated to keep track of which trainees have completed the program and how they are progressing with it (Ganger 1989). From discussion with trainers and trainees, particularly in the insurance industry
there is little effective testing done in training education. In many cases the sessions are run as lectures with no testing following. This factor is well known to trainees so if they want to, they can coast through the course with little or no learning taking place. To an extent this experience is borne out by Kilmarry & Lambert (1989) when they indicated that their search of literature produced very little on the evaluation of learning on management education.

11. Instructor based training, to be cost effective, requires minimum size groups. By comparison, CBT, once set up, can be provided for an individual. In fact it can go further and provide for a specific topic out of a session. If a trainee had proven proficient in all but one area of a course, then with CBT this could be done by going to that specific area which would have its own testing facilities. With instructor based training it would be necessary to re-do the entire course or leave the employee deficient in that area. (Pollack 1989). Banks and Insurance companies have available on line product information that is easily accessible for staff to familiarise themselves with specific products. This can be accessed by employees whenever they need to. As an example Banc One (Pastore 1993) introduced a new strategic banking system in a 24 month period using a CBT program. On analysing the results of the project they claimed an increase in retention rate of 40 - 50% over instructor based programs and the error rate in the first 3000 trained was down 30%. There are an increasing number of articles reporting savings achieved by business through the use of CBT (Way 1996). When a global warehouse company used CBT to train warehouse employees they claimed that not only was CBT 33% quicker and cheaper than instructor led training but there was also a 33% improvement in the retention of the knowledge (Adams 1996).

12. The fact that training time is reduced with CBT is reported widely (Borger 1989; Mulder 1991, Webr 1988, Kirvan 1991) with time savings of 30 to
40% being reported. This point is separate from the absorption of knowledge. This fact is tied in very much with point 2 earlier, the cost effectiveness of CBT and will be discussed more under that heading.

13. Trainers and instructors are more enthusiastic about CBT (Mulder 1991). This is gauged from surveys at the end of sessions and it falls into the category of Kirkpatrick’s Reaction Evaluation (Kirkpatrick 1959). It is suggested (Clark 1983) that the positive reaction towards CBT as an instructional media could relate to the novelty of it. A review of literature did not reveal any discussions on evaluations that have been made after CBT has been in operation for quite some period of time and the trainees have had quite some extensive exposure to it. Invariably the testing appears to be in relation to a newly implemented program. Positive responses are received. No further testing is done (Mulder 1991; Webr 1988).

14. A number claim that learning has improved with CBT (See 1990; Mulder 1991; Perez & Willis 1989; BASF 1996). A study undertaken by Ernst & Young of 100 employees showed that those who used interactive multimedia products fared better than those using instructor led training. By using pre and post training tests those using CBT did 33% better in the tests and finished in 50% less time (Demery 1996). There is quite some discussion in relation to learning improvements and some quite detailed studies question the approaches and methods used (Fletcher 1987). These will be discussed in more detail later.

15. CBT can be highly interactive ‘liberating learning from the linear tyranny of a textbook’ (Marx 1995) and can allow ongoing reinforcement (Florenza 1995). In this form it can be a very powerful training medium. It can be used to simulate real life situations and have trainees solve the problems. It is important that the interactive nature of CBT be used fully. In one
situation this interactive aspect was used to train cashiers with a program that simulated typical and difficult customer situations. It was found that when the trainees were exposed to real customers they handled them as well as seasoned cashiers (Garry 1996). A consulting company was able to train new employees to solve clients problems through simulation programs (Marx 1995). The US department store J C Penney replicated a customer service environment using interactive CBT to train customer service representatives. The key benefit they found was that not only did the employees acquire skills but they also learned how to perform them. In their experience even role playing in a classroom did not have the unpredictability of the real world. CBT was able to achieve this (Marx 1995).

16. While more an observation than an advantage a view increasingly expressed is that the current generation of trainees have grown up with TV and Video games and the thought is that this medium will gain their interest and attention more than instructor led training will (Way 1996). One writer referred to this group as the Nintendo generation when discussing CBT to train supermarket employees. CBT was seen as the logical training medium because ‘the young people employed are from the MTV generation. This is how they are used to learning’ (Kapner 1996).

DISADVANTAGES:

1. The set up costs for CBT are very high compared to instructor based training. Some of these costs can be offset where the technology can be used for other purposes, which invariability is the case (Kapner 1996). Indications are that the costs are something like five times that of instructor based training (Levin 1983; Webr 1988). Development times are often quoted and while these vary they appear in the order of 180 - 200 hours of development time to 1 hour of CBT time (Schulman 1989).
2. There can be a certain amount of anxiety suffered by those new to computers and this does definitely affect their performance. Studies on this aspect, however, indicate that after the first 30 hours of use of CBT, the effect of the anxiety on performance disappears (Cushall 1989).

3. The "available at any time" nature of CBT can act as a disadvantage. With instructor based training the trainee must attend at a set time. If there are other matters that seem pressing these must be left until after the training session. Because of the flexibility of CBT, these pressing matters invariably are attended to and the CBT left aside (Wetherall 1988).

4. CBT is not suited to all situations. There will be highly specialised jobs or operating procedures that apply in a local area that may not be cost effective to replicate using CBT (Jones 1995). The following questions can help establish those situations where CBT can be of value (Schulman 1989):
   - Are the people who need training geographically dispersed?
   - Must the same training be delivered repeatedly?
   - Is the subject matter relatively stable?
   - Are computers and other delivery equipment already in place?
   - Is standardisation and consistency an important factor?
   - Is record keeping for attendance performance results and certification a critical task?
   - Is the audience diverse?
   - Will privacy and self pacing enhance learning?
   - Is scheduling training a frequent problem?
   - Does training involve hazardous activities or expensive equipment?

A yes to any of these questions indicates that CBT should be considered as a training medium.
5. The quality of the CBT is extremely important. This is significant in both presentation and instructional design. Often the quality does not measure up. Good quality is important from both the view of student interest and effectiveness of the program. Three problems found with self-paced training are (Harbaugh 1997):

- It does not provide the same depth of understanding that instructor-led training provides.
- The material is more forgettable than instructor-led material.
- Greater discipline is required to start and maintain self-paced training.

The first two of these points relate to the quality of the material presented and could occur in either medium. The final point is a problem as there are not set times at which the student must attend making it easy to delay the running of the program.

6. There must be a firm commitment to the use of the medium. With conventional training a time is set at which the training takes place. With CBT, because of its flexibility, it is very easy to put off to a "more convenient time" when the training will be done. In this way the training can be seriously delayed or put off altogether.

7. Some trainees may feel isolated since they are working on their own. They may prefer and are better able to learn in a group environment.

8. CBT should not be relied on to the exclusion of human interaction, particularly in institutions where trainees are dealing with people (Garry 1996; Kapner 1996; Marx 1995).
SUMMARY
Training is vital at all levels in industry. For the employee it enhances their skills and improves their earning capacity. For the employer, increases in productivity will usually flow. For the nation the enhanced skills improves the countries economic performance.

In Australia those companies that engage in the least amount of training are those with less than 20 staff. Because of their size they lack the ability that larger organisations have to spread their costs over their operations. The problem of training for small companies was highlighted. CBT holds promise in this area as its flexible nature will answer many of the problems these companies face in providing training. Cost will prevent these companies from developing their own software but the provision of programs that can be used across an industry or section of an industry may be able to be produced at a price that is economic.

CBT offers promise. Its main disadvantage can be summarised as cost, quality and the need for discipline in its use. Cost will be discussed more in a later topic. Quality is relevant as much in instructor led as CBT training. The discipline matter comes back to the company to ensure that the training provided is being used. CBT will not suit all situations each must be evaluated to decide its suitability. In many cases cost will be a significant factor.

As CBT offers one possible solution in the insurance industry the next chapter examines the current training in this industry.
CHAPTER THREE

TRAINING IN THE INSURANCE INDUSTRY
TRAINING IN THE INSURANCE INDUSTRY

In considering training in the insurance industry it is necessary to consider the composition of the industry. The industry can be divided into four discrete functional areas. Not only do the training needs in these areas differ but because of the size of the companies in each area differ the type of training that is relevant varies also.

These groups are:
- Insurance Companies
- Insurance Agents
- Insurance Brokers
- Insurance Assessors.

Each of these groups are briefly considered here.

INSURANCE COMPANIES

Insurance companies can be divided into two broad groups based on the type of business transacted - Life and General. Currently their numbers are as follows:

Table 2.2

<table>
<thead>
<tr>
<th>Insurers by Type of Business</th>
<th>Life</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Insurers</td>
<td>41</td>
<td>138</td>
</tr>
<tr>
<td>Private Reinsurers</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>Public Insurers</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>181</td>
</tr>
</tbody>
</table>


As can be seen from Table 2.2 above the majority of insurers are private (as distinct from government) insurers. Reinsurers, that is companies that only accept insurance from other insurance companies, are the next largest group. Public or Government insurers make up
the final group. This latter group is diminishing as the various state governments sell off their insurance operations. One other observation that can be made in relation to the figures is that they represent the number of licences issued by the Insurance and Superannuation Commissioner. Some companies may, within their groups, have several licences. A subsidiary may specialise in a particular area and have its own licence. Quite a number of companies have both general and life licences. To this end there can be a number of licences issued to one group which means that the total numbers of groups will be less than the numbers of companies shown above.

The top twenty life companies control 96% of the life premium income and the top 20 general insurance companies control 89% of the general premium income. (Deloitte Touche Tohmatsu 1996).

INSURANCE AGENTS
Insurance agents are agents of the insurance company. The life insurance companies use agents to a much greater extent than the general insurance industry. Responsibility for the actions of agents rests with the insurer and this is taken further than the common law position by the Insurance (Agents & Brokers) Act. To this end insurers have a vested interest in ensuring that their agents are adequately trained. While a percentage of the agents are reasonably large the majority are small with less than 20 staff. In fact most would have less than 5 staff. Much of the product training will be conducted by the insurance companies. The agents will provide their own training in non insurance areas. In view of the size of most of the firms the prime need will be for product training.

INSURANCE BROKERS
An insurance broker represents the insured. They are seen as a specialist in the insurance market so they are in a position to advise the prospective insured of the best way in which to handle their insurances. With agents much of the training is done by the insurance company but with insurance brokers the onus lies with the broker themselves. There are a small number of brokers who are quite large in size and in fact the top twenty brokers
control 62% of the premium income (Deloitte Touche Tohmatsu 1996). This is an increase from 52% in the previous year.

The vast majority of brokers are small operations with less than 20 staff. The latest figures from the Insurance Commissioner for registered brokers are presented in table 2.3.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Insurance</td>
<td>992</td>
</tr>
<tr>
<td>Life Insurance</td>
<td>65</td>
</tr>
<tr>
<td>Total</td>
<td>1057</td>
</tr>
</tbody>
</table>

Table 2.3
Registered Brokers by Type of Business


When you consider that the top 20 brokers control 62% of the premium income this means that a large portion of the remaining are going to be small operations.

LOSS ASSESSORS, ADJUSTERS, SURVEYORS
This final group is intended to cover the remaining group of insurance organisations which principally comprise loss assessors and adjusters as well as surveyors. Each of these companies tend to be small in size. Very few would have in excess of 20 staff.

TYPE OF TRAINING
In the training of employees in the insurance industry there are a range of needs to be addressed. These needs can be divided into two categories, insurance related and non insurance related. Each area can be further divided according to the training venue - Internal or External.
To give some meaning to these divisions Table 2.4 sets some examples to show how this division of training operates in practice. Following table 2.4 is an explanation of each of the tasks that are referred to in the table.

**Table 2.4**

<table>
<thead>
<tr>
<th>Need</th>
<th>Insurance related</th>
<th>Non Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underwriting of risks</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Policy wordings</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Claims handling</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Administrative procedures</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Operating equipment</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Presentation skills</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Computer skills</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Table 2.4 above takes a few tasks and analyses them into the type of training needed and where it occurs. The following paragraphs explain each item.

The underwriting of risks is a task undertaken by an insurer. Some aspects of the task, the analysis of risks are common to all insurers. To this end it lends itself to external training. The company would focus their internal training on the type of risks that they are prepared to accept and the hazards they wish to avoid. Similarly policy wordings tend to provide the same basic coverage. To this end external training would focus on the ‘general’ areas and the internal training would focus on the companies specific policy wording.

Claims handling requires a range of skills. One is the company’s philosophy towards handling losses which would be handled by internal training. Other areas, such as knowledge of legislation, is common to all companies and can be handled by external training.
Administrative procedures are specific to a company and would be the subject of internal training.

The remaining areas listed; operating equipment, presentation skills and computer skills whilst quite necessary for the operation on the company are not insurance specific. These areas can be handled by either internal or external training. The larger companies may have their own specialist training staff handle the training. Smaller companies can employ external trainers to provide this training.

COMPANY SIZE

The approach to training will also vary according to the size of the company. In general terms there is a difference in the approach of small and large companies.

As stated earlier in smaller companies the training tends to be more informal and done on a needs basis. The large companies tend to have a more systematic approach to training and commonly will have a separate training department.

LARGE COMPANIES

Training in large companies can be seen to exist at three levels: company wide, specific departments; and specific jobs.

At the training department level programs will be developed that will provide training for employees across the company as well as programs for specific departments. These programs will be divided into three specific areas

- Products
- Administrative procedures - Insurance related
- Administrative procedures - Non insurance related

The training staff will undertake training in areas where they have expertise. Training in technical areas, policy wordings for example will be done by a senior technical employee. This type of training session tends to comprise information sessions only with no testing done to evaluate the employees understanding or retention of the presented
material. The extent to which programs will be run at each level will depend on the demand that exists at each level. The benefit in having a dedicated training department is that the personnel are actively considering areas where training is needed. In this way needs are recognised and dealt with before a problem develops. When this is compared against a smaller company where the responsibility for training is added to the duties of someone who already has other more pressing responsibilities it is apparent that the training needs are not going to be as well met. Programs for specific departments can be tailored to suit the departments needs where there is sufficient demand.

At a departmental level the training is less formal, will still cover all the areas mentioned, but they will generally relate to matters specifically affecting the department. It may relate to a new product introduced by the department or new procedures.

At the lowest level training is done on a one on one basis. This approach is done when needed by another staff member.

SMALL COMPANIES
Small companies have a need for training in two respects. First, new employees - to teach them their job. Once this is done then training is only done to introduce the employee to a new concept or technology. Training in the small companies tends to be more of an informal nature occurring only when it is needed. The smaller the company the less frequent the training occurs. There are two reasons for this.

- lack of time to carry out the training on the part of the experienced staff and difficulties in releasing staff for external training
- the reduced need, particularly so where there is a low turnover of staff as continued induction training is not necessary. Continuing education training is still needed.

The smaller company suffers from lack of training particularly because of the former reason. They were identified in the Australian National Training Authority report (ANTA 1995) as suffering this problem and a commitment made by them to develop flexible learning strategies to help alleviate the problem.
FACTORS AFFECTING TRAINING

The degree of training also depends on the commitment of the company to training and the need that the company sees for keeping their employees up to date. In some companies there tends to be a long time between training sessions. The survey questionnaires, completed as part of this study indicated that some of the smaller firms were looking for training to keep their employees up to date but there was none available. Presumably the training was beyond the abilities of the senior personnel in the companies.

Another factor affecting training comes at a time when cost cutting is seen as necessary. Unfortunately training often becomes an early target. One large insurer had moved into Computer based training on a large scale to the extent that they had a CBT department with their own programmers on staff. A restructuring of the company to produce a more cost effective operation saw the whole department disbanded along with all the work they had done.

INDUSTRY TRAINING NEEDS ANALYSIS

Over time there have been many training needs analyses done to establish the training needs of the industry. These have been conducted by the Australian Insurance Institute, The TAFE Board in Victoria and New South Wales and by Industry Training Australia (1995). With each analysis it seems that the approach to be taken is presented in a different way but the material to be covered is the same.

The most recent of these is the competency standards produced by Insurance Training Australia. As brief background to these the Federal government in the 1980’s, recognising the importance of training, initiated reform to Australia’s education and training system. This initiative dealt with vocational training and development was known as the National Training reform. The aims of this reform were stated as:

- improved efficiency and productivity
- provide national accreditation of training
- allow national recognition of skills
• ensure consistent assessment methods
• facilitate faster skill acquisition
• provide improved flexibility in employment

The principal method to bring about these reforms was Competency Based Training. Competency Standards form the basis for the development of a competency based training system. Insurance Training Australia was established in 1992 and is recognised by the National Training Board as the competency Standards Body for the insurance industry. The standards developed are endorsed by the National Training Board and ensure national consistency as it enables the standards to become required outcomes for courses accredited and training programs recognised under the National Framework for the Recognition of Training. These competencies become the basis for delivery of vocational education and training.

EXTERNAL TRAINING

In considering training needs, knowledge that employees need to acquire can be divided into two areas:

• knowledge common to all in the industry
• specific in company knowledge.

It is the knowledge common to the industry that is suitable for an external body to teach.

There are generally three types of courses available. These are:

1. Courses provided by educational institutions where the student is assessed and a qualification is given on the successful completion of the course.

2. Continuous education type courses that will concentrate on a specific topic area and have as their objective keeping the student abreast of developments which affect the industry.

3. The third type of course is one that is not industry related but equips the student with new skills or sharpens old ones. For example a computer skills course, an effective speaking course or a management skills course.
CERTIFICATION COURSES
There are four separate area in which these courses are provided.

- Private Providers
- TAFE Colleges
- Universities
- Continuing education and other courses

PRIVATE PROVIDERS
In the insurance area there are two principal organisations that undertake training. These are the Australian Insurance Institute and the Financial Planning Association. The latter is the newcomer.

- THE AUSTRALIAN INSURANCE INSTITUTE
  The institute has been in existence for over one hundred years. And provides courses at three levels in both general insurance and life insurance. The latest version of their course is an accredited TAFE course. The course has three levels culminating in a Diploma in Insurance that is a TAFE qualification. Completion of this level qualifies the student for the level of Associate membership with the Institute. The courses range over all branches of insurance Fire, Accident, Marine and Life and cover all functional areas such as underwriting, policy wordings and claims handling. These courses are widely recognised and well regarded throughout the industry. The institute has a further level of membership - that of Fellow. To fulfil the educational requirements of this level the student must pass six designated university units. Three insurance and three non insurance. The three insurance units were developed by Deakin University and are offered by Deakin and UTS in Sydney.

- FINANCIAL PLANNING ASSOCIATION
  The Financial Planning Association has been in existence for about 10 years. They offer a 6 unit Diploma Course that is designed to meet the needs of financial planners. The course focuses on investment and life insurance products. The
diploma is issued by the Financial Planning Association. The course is not accredited by a TAFE or a university.

**TAFE**
The Diploma provided by the Australian Insurance institute is also offered by a number of TAFE colleges throughout Australia.

**UNIVERSITIES**
The fellowship studies previously referred to are offered by Deakin University and University of Technology, Sydney. In addition a major in insurance is available in Deakin University's Bachelor of Commerce degree. Deakin also have a Graduate Diploma in Insurance.

**CONTINUING EDUCATION AND OTHER COURSES**

- **CONTINUING EDUCATION COURSES**
The main providers of these are the Australian Insurance Institute. Part of their mission is to provide continuing education to their members. In addition to these there is a growing numbers of seminars provided by professional seminar organisers. Brochures collected over the past 12 months amounted to more than 50. The insurance institute would provide a further 10 - 15 courses in a year.

- **OTHER COURSES**
  These are available to all companies according to their needs and they are many in number.

**CONCLUSION**
The category of companies that appears to have the greatest training need are the small companies with less than 20 staff and this was the group identified as suffering from a lack of training (ABS 1994). In response to this situation the Australian National Training Authority (ANTA 1995) identified this category as being suited to flexible training, which includes computer based training.
The next chapter suggests that CBT may be one way to meet the training needs of large and small companies.
CHAPTER FOUR

EVALUATION OF COMPUTER BASED TRAINING

- THE LITERATURE SURVEY -
EVALUATION OF COMPUTER BASED TRAINING

There are two principal areas in the evaluation of computer based versus instructor based training. These can be broadly described as "learning" and "cost". A question that arises is whether one method of instruction produces results that are superior to the other and, in relation to cost, whether one method is cheaper than the other. These two points will be discussed in more detail and will incorporate a review of the literature covering these topics. The principal focus of the literature survey was on the effectiveness and cost of CBT. The results of that survey are discussed in this chapter.

In considering the effectiveness of computer based training it is first pertinent to consider evaluation approaches used in management education training. In a literature survey undertaken by Kilmarry & Lambert (1989) they found that evaluation has received attention in employee education circles for several decades now and that the emphasis has been on post-training evaluation. That is, evaluation which is conducted once the training is completed. In this area, Kirkpatrick (1959, 1960) has put forward four types of post-training evaluation. Kirkpatrick has been built on by Laird (1983), Boothe (1985), and Kilmarry & Lambert (1989). These four areas can be summarised as follows:

1. Reaction Evaluation

This refers to the reaction of the participants in the training program. It does not deal at all with the effectiveness of the program but rather how the participants felt about it. This is generally carried out by way of a questionnaire that the participants complete at the end of their course and in it they give a rating based upon their satisfaction. Kilmarry & Lambert (1989) found in their review of literature on the evaluation of management
education, that reaction measures are by far the most popular form of program evaluation in management education. These sheets are often referred to as "Smile Sheets" or "Happy Sheets" and this reflects the fact that participants usually give positive evaluations.

2. **Learning Evaluation**

This is the next step on from reaction evaluation and attempts to ascertain whether the information presented in the course has been transmitted according to the objectives of increased knowledge, improved skills or changing attitudes. This is generally done by means of oral or written tests on the completion of the course. Kilmurry & Lambert (1989) found that evaluations of learning are not widely reported in management education literature.

3. **Behaviour Evaluation**

This goes a step further and attempts to measure on the job changes in behaviour against a set of standards. It is trying to detect improvement in the employee's work performance as a result of the training program. This is generally measured through performance appraisals, self evaluation by the employee, or evaluations by the employee's supervisor. Kilmurry & Lambert (1989) found that this type of evaluation, whilst providing good feedback to management, does not appear to be extensively used in management education.

4. **Results Evaluation**

This is the fourth area and attempts to measure the impact of training on the organisation's results. That is their profits, costs, productivity and quality. With this type of evaluation the results of the business are
compared before and after the training to measure any improvement. There exists, of course, an enormous difficulty in obtaining a true indication from this because of the large number of variables that are necessary to be identified and then isolated so that the result given can indeed be attributed to the training program as opposed to other corporate activities. It is unlikely that this evaluation level could be used in the majority of situations. In some isolated areas where costs, profits or the like can be easily identified and effects other than training can be easily isolated, then this would prove an excellent means of evaluation. The number of areas in which this could be done would be small.

EVALUATION OF CBT
Considering the four headings discussed above, the focus of this section will be on the second evaluation point – Learning. Reaction evaluation, whilst providing feedback, provides the trainees reaction rather than the mediums effectiveness. Behaviour and results evaluations are difficult areas to measure and it is very rare that you find papers written on the outcomes.

One other area will be considered – cost effectiveness. This attempts to relate learning improvements to the costs associated with the training.

LEARNING AND RETENTION DIFFERENCES
Two aspects need to be considered under this heading.
1. That with one method the student gains or retains a greater amount of knowledge.

2. The time taken to attain that knowledge is shorter with one method than the other.

It is not unusual for claims to be made that CBT produces better learning results than instructor led instruction methods (Mulder 1991; See 1990; Perez & Willis
1989). Many magazine articles will also lay claim to improved learning performance. A study done by Professor Richard E Clarke (1983) of the University of Southern California whose principal area of research is that of instructional theory, with particular emphasis on the role of media in training and the design of instruction, is of interest. Clarke's conclusion from his research in this area is that there is no learning advantage gained by one media type over another. His research shows that apparent advantages of one media type over another can be explained by factors other than the media used. In a meta-analyses of media research Clarke showed that electronic media was superior (though not greatly) over instruction based training. Deeper analysis, however, produced some interesting factors.

1. Whenever the same teacher or training design team developed both the mediated program and the presentation used by a trainer, there were no achievement differences between the traditional and newer training method. The differences only arose when different individuals or teams designed the presentations. For example where an instructor based program has been used for a number of years is produced as a CBT program. In producing the CBT version the presentation methods are “polished up” but the “polish” is not applied to the instructor led program. This may mean that the different results are not related to the delivery media used but rather the training methods built into each presentation.

2. A second factor that Clarke puts forward for the difference is the novelty effect (Clarke 1983). In this regard he found that the novelty effect of a new form of media wears off with longer exposures to electronic media. A review of literature revealed that reference was made to evaluations on the only implementation of the program and not to subsequent evaluations after the media had been in use for some time.
3. An interesting observation that Clarke makes is an assertion that editors of trade journals tend to refuse to publish studies that report advantages for "traditional media" over newer media.

To support his assertion, Clarke took a random sample of all the computer based instruction studies that had formed part of his meta-analysis and found that in 50% of the sample the delivery method used differed. That is, drill and practice was used for CBT whereas lecture and discussion were used for the instructor led approach. (See Fletcher this page) When the meta-analysis was conducted only on those cases where the training method was the same in each case (as discussed earlier), there was no difference in the results. One unexpected factor to come to light in this analysis was that the longer the student was exposed to the training, regardless of medium, the more they learnt. In a Japanese study (Schwalb, Schwalb & Azuma 1985) a similar position was shown. In this case the instructor led course initially showed the best results but when the analyses was confined to the same teaching methods used in both the instructor and computer based training, there was no difference in the results.

A very extensive study from the military (Fletcher 1987) provided some interesting information in relation to knowledge gained. Reference is made to a study by Visonhaler (1972) where 24 studies involving 10,000 students were reviewed and there was a median increase in student achievement of 40%. This comprised evaluations of CBT drill and practice.

More interesting was a study by Orlansky & String (1986) that showed student achievement was either equivalent or superior when using CBT.

The literature survey revealed that comprehensive analysis of CBT has been done in the US defence areas. A 1972 study of 34 studies of CAI that covered some 10,000 students gave positive results in 30 of the 34 studies (Visonhaler 1972). More recent studies (Bangert-Drowns, Kulik, & Kulik 1985; Kulik, Kulik &
Bangert-Drowns 1985) gave similar results. A review of a number of studies confirmed these results in 44 studies out of 48 studies and found that there was a median saving in student time of 32%. It does appear that many, if not all, of these studies involved ‘drill and practice’ CBT.

In the discussion on the analyses Fletcher (1987) discusses some aspects of these studies. He observed that many of the studies involved three steps:

1. there was an instructional design ‘clean up’ of the original course,
2. there was an individualisation of the course,
3. the CBT course was compared with the original course.

The comparison is not a straightforward one but as Fletcher himself points out a ‘real’ comparison (instructor led material presented as CBT) would unnecessarily handicap the CBT program and fail to take advantage of its strong points. (Fletcher 1987). He concludes his discussion on this point by saying that “The ‘head to head’ comparison of CBT with conventional instruction may be both unavailable and unenlightening.” NatWest in the UK with 56,000 employees at over 2,000 locations approach training with a mixture of instructor led and CBT. While the debate continues over which is more effective they feel, for them, a mixed solution gives the best result (Lester 1995).

The results of empirical research with adults (Kulik, Kulik & Shwalb 1994) showed improved results from CBT. Worksite training using “Just in time” (JIT) systems (having CBT available at the worksite so it can be accessed when convienent to employee or when needed by employee) claim 85% retention rates compared to 30% from classroom training.

Caltex Petroleum moved from instructor led training to CBT using CD-i technology. They saw an improvement in retention rates from 40% to 78% (nearer 100% with english speaking trainees) (Fritz 1994). The Ford Motor company using CBT to train employees to paint vehicles found a reduction of 50% in learning time
and an 80% increase in comprehension. As subsequent customer satisfaction survey indicated a 42% increase in customer satisfaction (Vasilash 1995)

The claims made are mixed. The studies of Clark and Fletcher are 13 and 9 years old and deal with 'drill and practice' CBT. Today with the use of interactive graphics and video the capabilities of CBT are vastly different and exceed at times what an instructor in a classroom can achieve. The technology was not as advanced. Today, with current graphical interfaces, still and motion video can be shown and made interactive which brings the real world into the classroom. For example US law requires that any employer who has employees who are at the risk of exposure to bloodborne pathogens (AIDS and Hepatitis) must provide employees with training within 10 days of hire and then annually thereafter. There are an estimated 5.6 million employees in the US who need this training. The ideal medium is CBT with its graphical abilities. (Fritz 1994). The technology of 13 years ago could not have handled this situation. Taking that into account the claims for increased retention could well be valid.

In conclusion the points raised by Clarke and Fletcher remain valid. The other studies claiming learning differences do not comment on these points. To this end the case for improved learning with CBT could not be claimed as proven.

Cost Effectiveness

Studies on cost effectiveness seem fraught with difficulties. They generally attempt to provide a formula that takes into account the learning improvement achieved and the costs associated with the training.

The outcomes of studies done into the cost effectiveness of CBT produce varying results (Hartley 1978; Levin, Glass & Meister 1984; Levin 1986; Dean 1989). These studies, at times do not provide sufficient information to enable a critical analysis. Levin et al (1984) compared a tutoring (one on one) program with a CBT program resulting in the tutoring program producing superior results. The results of this apparently sound paper were challenged by Niemiec, Sikorski & Walberg
(1989) in several ways. Principally that the specific groups that were used for the study had been evaluated separately in other studies, and found to be quite unrepresentative, and by using them as the point of comparison was not valid. You would expect that a valid comparison could only be obtained if the two groups were being presented the same subject matter. Other aspects of the study relating to the costing calculations were challenged. These points would not have been known to readers who were unaware of the other studies. In another study (Dean 1989), a comparison was made of CBT and instructor led methods in relation to teaching English composition. For CBT this would seem quite a challenge until you learn that what was introduced was a word processing program to assist students because of the extensive, revision and rewriting that was necessary with the subject. In view of the fact that the CBT aspect was adding to and not substituting existing training methods it was to be expected that this method was more expensive. The paper, in a short comment at the end conceded this point. The benefits would have been gained by the students in that the word processing program would have saved time with revisions and their skills acquired would aid then in other subjects in the future. No attempt was made to bring out these points.

Current computer technology allows much greater scope for delivering quite complex simulations than in the past (Marx 1995). A good example of this is a division of General Dynamics (Pastore 1991) which produces armoured cars. Because there are some 15 different ways in which these can be ordered, assemblers scattered throughout the USA need to receive one on one training. General Dynamics developed a CBT program that provided the training at the work bench of the assembler. This saved General Dynamics some 260 trainers and efficiency improved by 88%. The CBT program was there to be consulted whenever needed. The trainers could only provide the information when they were present. The work was complex and the CBT program gave a visual demonstration of how the work was to be done, something a written manual could not achieve.
Following a takeover a large retail chain needed to train 2500 employees very quickly in their point of sale terminals. They decided that CBT was the best medium to use to achieve the training (Hequet 1995).

Cost effectiveness can be shown but not in every situation. Each case needs to be considered separately.

**Time Saving**

Cost savings seem to represent the major advantage of CBT over instructor based training. Studies consistently report cost savings and the major area that this appears to come in is the saving in trainee time. Invariably the amount of time that the trainee needs to spend in training sessions is below that of instructor based training. Wetherill (1988) found a one third saving in training time over instructor based training. Borger (1989) found a minimum of 30%, rising in some cases to 50%. Peretz and Willis (1989) also claimed reductions in trainee time. Webr (1988) pointed to a 40% time saving. Caltex in changing from Instructor based to CD-i found training time reduced from 2 ½ days to 4 hours (Fritz 1994). Earlier reference was made to The Ford Motor company using CBT to train employees to paint vehicles. They reported a reduction of 50% in learning time (Vasilash 1995). In the preceding paragraph training by a retail chain was referred to. The company found in the training that the traditional training that took 12 to 14 hours was reduced to 6 to 8 hours (Hequet 1995). In training customer service representatives using CBT, JC Penney in the US found that the trainees reached peak proficiency in a third less time than with instructor led training (Marx 1995).

A mortgage company, in training loan counselors through CBT found a 22% reduction in transaction time and the error rate dropped by 80% (Bonello & Cavagnol 1996). In training restaurant managers Domino's claimed a $1 million saving in the first year with CBT. Training time was reduced from 59 hours in the classroom to 28 hours which was a mix of instructor led and CBT. The saving was attributed to the CBT (Kapner 1996).
A study by Orlansky & String (1986) covered some 48 studies and showed a saving in student training time of some 32%.

In an empirical study done of adult learners (Kulik & Kulik 1985) reported an overall reduction in instructional time of some 29% in 12 out 13 studies. In a USA defence Department study (Heathman & Kliever 1991) CBT allowed trainees to learn 30% faster than in the traditional classroom. These costs savings are significant when you consider the number of trainees covered by these studies.

How does CBT save time? Dennis (1994) discusses five ways in which this can arise.

- On demand availability - Employees don’t have to wait for scheduled training they can start straight away. They become productive faster. This type of approach is being referred to as “Just In Time” (JIT) training (Pastore 1993), which comes from the current approach to inventory management where the inventory is supplied as it is needed and not bought in advance and stored in warehouses. Another example of JIT is on computer systems for the USA defence department. The US Airforce Active Combat Command faced a situation where they had high staff turnovers, shrinking maintenance crews and the need for increased aircraft reliability. They developed a CBT system which used an interactive video disk intelligent tutor system which was available on site at F15 & F16 landing strips. In addition to on the job training the system also teaches expert diagnosis techniques. It is also very helpful for systems that rarely malfunction as there are few on the job opportunities for this type of system.

- Self paced. The students can progress at their own speed. Those who understand quicker can become productive quicker. Those who need more time can be accommodated and will learn but under instructor based will not as time will run out.
• Exemption testing - Where a student can demonstrate (by a test) that they have mastered a topic they can skip to the next topic. Instructor based does not accommodate this situation.

• The testing can be used to ascertain when the student has reached an understanding and can pass to the next level. In this way the student does not stay unnecessarily long at the one level.

• By presenting the topics in modules the student can complete portions of the course that are relevant at the time. Instructor based needs to complete the whole course.

Today's multimedia can present audio as well as text, graphics, animation, still framed and motion video. This can make presentations far more entertaining and can simulate real life situations. This keeps the trainees interested and motivated (Bonello & Cavagnol, 1996).

With a computer program record keeping is very easy and students progress can easily be checked. This can be done with instructor based systems also but in a CBT program it happens automatically.

Many of the references cited do not mention the number of trainees involved. Those that do, talk of large numbers, with the others the impression given is that large numbers are involved. In general with the initial costs in setting up a CBT program large numbers are needed to cover these costs and make the program viable. A rule of thumb cited by one writer was that for an interactive multimedia program to break even at least 300 - 400 trainees are needed (Marx 1995).

In making comparisons Rickett (1993 p78) makes a point that must always be borne in mind:

"How can comparisons be made of conventional training and CBT? There exist variables such as the teacher's brilliance, the pupil's intelligence, the quality of the program design to say nothing as to how the teacher or pupil is feeling on the day. These are just some of the variables that exist in any
comparison. Even when a means of measurement is devised it will be the subject of continued debate over its validity."

Bear in mind also that when a six figure sum has been spent on developing a program those spending the money may not wish to look too closely at how well it works for fear of what may be discovered.

A major point that emerges from the literature is that findings from one situation cannot be applied to all situations. The approach should be to treat each case on its own merits. It is common practice for training companies to offer a mix of instructor led and computer based training (Duffy 1996).

**Costs in the Cost Comparison**

The studies referred to make mention of cost savings but often do not give a great deal of detail of what costs are taken into account. To establish the costs that are valid the following comparison is made.

Fletcher (1987) mentions the following factors:

- Student salary costs
- Student time
- Instructor Costs
- Wear and Tear on Material.

With the possibility of reductions being achieved in each. It should be borne in mind Fletcher (1987) was comparing the results of many military studies and makes the point that many did not give detailed breakdowns. One of the studies makes mention that with the reduction in student time the savings achieved were sufficient for there to be fewer people to bring into the military.

Webr (1988) also made the point that development costs for CBT are in the vicinity of four to five times that of instructor based training. To this cost must, of course, be added the cost of terminals in computer based training but offsetting
that is the fact that there is no instructor or instructor travel costs with computer based training.

Webr (1988) gives an example of training some 800 students over 20 sites for a five day course. A costing is done of both computer based training and instructor based training. The end result is a 47% saving in costs by using the computer based training. A caution is added that computer based training is generally not suited to complex tasks, for example situations that require detailed responses or the students own thoughts to be expressed. As the complexity of the tasks increases, the suitability of computer based training diminishes.

Webr brings in the following factors and separates them into Instructor costs and Student costs.

- **Instructor Based Costs**
  - Development costs - Webr asserts that it takes 30 weeks of development time to produce a one week training program.
  - Presentation time - The time the instructor spends preparing for his presentation and giving it.
  - Travel - To training sites, accommodation and associated costs
  - Student time - The time the student spends taking the class.

- **Student Costs**
  - Development costs - 1 hour of CBT program takes about 175 - 200 hours of development time.
  - Student time - Time required for the student to complete the course. It is in this area that considerable savings are claimed.

Foster (1989) puts forward five broad categories:

- Student Cost
- Instructor Cost
- Workstation cost
- Training program development cost
- Cost of handouts.

Foster (1989) in fact provides a complex equation for the calculation of the costs involved which goes beyond the discussion here.

Perez and Willis (1989) study training in a hospital (staff 2000) and they took into account:

Instructors costs
Students salaries

No mention is made in the study of program cost (they used an off-the-shelf program) nor the computer cost. It can only be assumed that the program cost was small and that PC's were already in place with time available. In other words these factors were minor in the overall exercise. The savings achieved were over $5,000 a month.

Relevant Costs

The question that arises at this point is which of the costs referred to in the various studies are relevant here. Set out below is the complete list of costs that have been taken from the studies referred to above.

Student cost the time spent by the student undertaking the course.

Instructor cost the time the instructor spends in preparation and delivery of the course.

Workstation cost the costs of the workstation or PC on which the program is run and those costs associated with the workstation.
Training program

Development costs    the costs associated with the development of the training program whether this is instructor based or computer based.

Cost of handouts   Costs of handouts or other materials provided with the course.

Of the above costs all would be applicable with the exception of the workstation costs. In the insurance industry there would be a computer available to all participants and CBT would not be the principal use. These costs have already been incurred and the CBT program does not increase them.

Industry Trends

From discussions with companies it has become apparent that over the past year the larger companies are moving more into the area of computer based training. Programs are being produced either in house or by contractors to the company’s specifications for use by company staff and agents. These programs will deal with company products, procedures and legislation.

The move on the part of the larger companies into the area of CBT gained impetus with the introduction of the industry Code of Practice. This code was introduced in the industry in an endeavor to improve the industries dealings with the public. The move was prompted by the federal government. The production of the code was the first step. The next and more important step was to ensure that the code was being adhered to. The onus was on each company, broker and agent to ensure that their employees followed the code.

The large companies faced a situation where they had a large number of branches and agents that they had to make familiar with the Code in a short space of time. These branches and agents were scattered throughout Australia. Some companies
elected to employ an instructor whose task was to travel around Australia running seminars making staff familiar with the Code. Others used the CBT approach produced a program which was distributed Australia wide presenting the material. The latter had the advantage of enabling the staff to go back to the package at a later date and revise the material.

The introduction of the Code has served to expand the use of CBT further in the industry. Having used it and finding advantages in its use more programs will be developed in the future. This is not meant to imply that it will become the training medium but there are many areas where it can be used economically and effectively.

The areas discussed to this point are the large companies who are in a position to develop software and spread the cost over their operations. The small companies and brokers do not have this same ability and are dependent on commercially produced programs. These are available for non insurance material but not for insurance specific material.

The non insurance material has been available for some years - for example programs teaching the use of Windows, Word, Excel, Lotus and the like. These programs have proved popular and effective with small companies as they are available at a reasonable price, they provide the training and enable the training to be done at a time that suits the company. This latter point is particularly important for small companies as they do not have the staff numbers to be able to cover for others who are not available as they are attending training.

The Australian Insurance Institute is starting to produce CBT material for use in conjunction with their own study material and have also produced a program to be used in conjunction with their Code of Practice material. The Insurance Institute is the industry’s education body and would be seen by many of the smaller companies as to the area they would expect to see CBT material come from.
Companies today use computing facilities extensively. Many are using PCs that are networked and are connected to the company’s central computing facilities. In a few instances the prime computing facilities use terminals connected to the central computer and do not have the ability to run programs on their own. In these cases the companies have steadily increased the availability of PCs to enable CBT and other PC specific programs to be run.

With the wide use of PCs in offices today this serves the interests of CBT very well. The programs can be accessed by staff at a time that suits them and without the need for any special training facilities or time lost through having to travel to a venue. For CBT programs to be of value they need to produce more than page turning programs. Printed material can do that just as well and the computing facilities are not tied up. Where CBT can be used effectively in such a situation is to establish whether the material has been mastered. The use of a multiple choice programs providing feedback can let the student know the extent to which they have mastered the topic and indicate whether they should repeat it or go on to the next topic. Today quite complex simulation programs are being produced that serve as a valuable training tool.

Technology today allows the use of detailed graphics and also video. Technologies are starting to converge to produce very detailed interactive programs. This type of technology uses quite an amount of storage space and the programs being used to present the material are becoming larger in size.

The next section will look at the advancement of technology and how this will effect the development of CBT in the future.

TECHNOLOGY

The storage and retrieval of large quantities of data is necessary for the use of video. New technologies being investigated open the way to overcoming these
problems. The use of holographic storage devices or molecular storage will increase capacity enormously as well as making retrieval much quicker (Thompson 1996).

Multimedia marketing suggests that there will be an explosion of cheap, high quality multimedia systems in a host of new and unexpected contexts, as well as the rejuvenation of existing markets over the next ten years (Rickett 1993 p74).

The respondents to the survey saw a larger role in the future for CBT. While there are a number of technologies being investigated at present that may enhance greatly what can be achieved today - for example nanotechnology, which may provide greatly improved memory capacity - (Rickett 1993, Thompson 1996), it is beyond the scope of this thesis to elaborate on these.

Internet
The Internet could well be an area where the delivery of CBT could benefit the insurance industry.

One of the main problems in relation to training generally and insurance specifically is the inability of small business to get access to training. The larger companies are starting to produce more in the way of CBT products but these are intended for their own use. Large staff numbers and a staff that is spread over a number of locations have pushed these companies to into using CBT as an alternative training medium. Small business has the same need but lacks the ability to produce CBT. Developers have to date, been reluctant to produce CBT for this market because

• they are not aware of the markets needs
• they lack the technical knowledge
• they are uncertain as to the market that exists

The Internet opens the possibility for much easier access to that market and for that market to gain access to training. - Training on line. To emphasise the possibilities there is available at present the University of Florida (which is
accrded by the southern Association of Colleges and Schools) has available online some 46 courses on behalf of all nine universities in Florida. Last year they had some 5,000 students from around the world participate. The units offered are a mix of units for independent study and units that carry credit towards an undergraduate degree. The extent of credit in a degree is a matter for each participating institution but some will allow as much as 25% of the degree program to be done online. At Deakin University substantial parts of the delivery of the MBA program in the Faculty of Business and Law and the Ed. Dr are being delivered online.

**Conclusion**

The evidence for claiming learning improvement is not sufficient to claim that CBT has advantages in that area.

Cost effectiveness and time savings can be claimed but not universally. Each situation must be considered on its merits.

Industry trends appear to indicate a move to include CBT as part of the training ‘toolkit’. Much of the industry activity is confined to the large companies with the smaller companies not being in a position to produce their own software.

The next section surveys Australian Insurance companies to determine their attitudes toward their use of CBT.
CHAPTER FIVE

THE INDUSTRY SURVEY
The Survey

To ascertain the nature and extent of the use of CBT in the insurance industry it was necessary to go to the industry to seek this information. This was done by way of a survey, a copy of which is contained in Appendix 1.

PURPOSE OF QUESTIONNAIRE
The questionnaire was designed to gather sufficient information to establish a picture of the extent of training in the industry and, in particular, the extent of the use of CBT in the insurance industry. An oral pilot survey was done prior to designing the questionnaire to gain an insight to the type, nature, and extent of CBT usage in the industry.

Specifically information was sought on
1. The type of training currently undertaken in various sections of the industry.
2. Whether CBT had been used or considered.
3. For those who are or have used CBT to ascertain:
   • where it is used
   • the type of CBT used
   • whether any evaluation of the program was done
This is now discussed in more detail.

THE SURVEY INSTRUMENT
The questionnaire can be divided into a number of areas. The reasoning behind each area is now discussed. The question is given for ease of reference.

Details of the organisation (Question 1)
The questionnaire sought information on the type of organisation, whether an insurer, agent or broker as well as the size of the organisation and the number of locations. The training needs vary according to the type of organisation. It is
necessary to establish this information about an organisation as some insurers, generally not large in size, have quite a stable staff and their training needs are limited. These companies will specialise in a particular area. Small companies (under 10 staff) will probably count for a large proportion numerically of companies. They will experience difficulties due to their size. For example difficulties in releasing staff for training. Companies with multiple locations are likely to find CBT of more interest than a company with a single location.

**Training undertaken (Question 2 & 3)**

This section was designed to find the current training situation. Does the company have a formal training program? Is any training done? Those responding to this area were also asked to briefly describe the training. The object was to get some idea of the extent of the training. Is it just a token effort? The company may train on a “needs” basis. Companies that are not training will not use CBT. The reason will not be due to their views on CBT but rather their attitude to training in general.

**CBT Training (Questions 5 - 7)**

The objective of this section was to bring out the reasons that companies found for using CBT and those against it. The section started by asking those companies undertaking training in some form whether CBT is used now or has been in the past. The questionnaire sought to find the reasons for using CBT or where the company has ceased using it why they ceased using it. This section was designed to reveal the benefits that companies saw with CBT and what benefits were not realised. The questions went further to ascertain if CBT were ever considered and why it was not proceeded with.

**Where Is CBT used? (Question 8)**

The objective in this section was to find where CBT was being used. In product, for company processes or procedures or for other areas. Where it is being used may also give an idea of the extent of use. A company may indicate that they are
using CBT but are referring to a “help” package that came with their database
telling them how to use it. This is quite a different situation from a company that
has developed a CBT program used to train their staff in their company’s products.

Where developed? (Question 9)
Are companies producing CBT in house or externally. The objective of the section
is to gauge the commitment of companies to CBT. To develop CBT internally
means a reasonable financial commitment. Whether CBT is developed externally
or internally would most likely be decided on the basis of cost. This question
provides the opportunity to see if there are other reasons.

Cost benefit analysis (Question 10)
The object of the section was to see whether a cost benefit analysis was undertaken
and if so what factors were taken into account in that analysis. The intent was to
build up a range of factors to be considered in making such an analysis. The
responses were expected to vary widely from those making no analysis at all to
those making a detailed analysis.

Advantages and Disadvantages (Questions 11)
The object was to find the advantages and disadvantages experienced by
companies as opposed to those revealed by literature surveys and discussed earlier
in this paper.

The Type of CBT used (Question 12)
The object of the section was to find the range of types of CBT used and how
effective the companies found each type.

Evaluation (Question 13)
The objective here was twofold. Does the company usually test the trainees to
evaluate their training in general and is this done with CBT. Anecdotally little
testing appears to be done. This question will help clarify that point.
The Future (Question 14)
The objective was to obtain the respondents view of where they saw the role of CBT in the future. This may reveal some idea of the importance they saw of this medium.

SURVEY RETURNS
The insurance market is broken into a number of sections that were explained in more detail in Chapter 3. Broadly the market can be divided into Insurers on the one hand and Agents & Brokers on the other. With the agents, most are small and under the direct control of the insurer who arranges the training. Only a small portion would be large enough to consider developing their own training. A further division can be made into general insurance and life insurance. The survey went to all these groups.

In all 500 questionnaires were sent to life and general insurers, agents and brokers in the Capital cities in Australia. One issue that arises is whether the responses will be representative considering that only Capital cities were surveyed?

So far as insurers and reinsurers are concerned the answer is yes. Every insurance and reinsurance company or group has an office in at least one Capital city and would be included in the survey.

So far as Agents and brokers are concerned, they can be divided into two groups - Large, this group would control the bulk of the premium income handled by agents and brokers and all would be in at least one Capital city and therefore covered by the survey.

Others - this group would be the largest numerically but would control a minority of the premium income. Most of this group would be located in Capital cities but there is a significant number located outside Capital cities. The responses of the smaller brokers and agents in the Capital cities are expected to be similar to those
outside the Capital cites as the training needs are the same in each case. The legal
environment and the products are the same. To this end the lack of non Capital city
responses is not seen as leading to an inaccurate picture of the profession.

Organisations responding
The breakdown of responses are given in Table 4.1

<table>
<thead>
<tr>
<th>Organisation</th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Insurers</td>
<td>7.4</td>
<td>10</td>
</tr>
<tr>
<td>General Insurers</td>
<td>19.3</td>
<td>23</td>
</tr>
<tr>
<td>Brokers</td>
<td>64.2</td>
<td>81</td>
</tr>
<tr>
<td>Agents</td>
<td>9.2</td>
<td>11</td>
</tr>
</tbody>
</table>

Of the 500 questionnaires sent some 25% (n = 125) were completed and returned.
The representation was quite good, better with general insurance than life
insurance. So far as the insurers are concerned - with general insurance 10 of the
largest 20 general insurance companies returned the questionnaire. This comprised
about 70% of the total premium in the general insurance market. In the life
insurance sector 3 of the top 10 companies returned questionnaires. In an oral
survey conducted shortly before the questionnaire was sent out it was established
that some Life insurers had used CBT but because of falling business and
restructuring the use had ceased. One very large company, which did not complete
the questionnaire, had established a department for the production of CBT but due
to restructuring had disbanded it completely. A problem encountered with the life
companies was finding someone who could discuss CBT as many companies were
undergoing a restructuring and a matter such as CBT did not have a high priority.
Focus on the training and the use of CBT was still to be decided. To this end the
lack of response from the life companies (large ones in particular) does not surprise
me.
With insurance brokers 5 of the top 10 insurance brokers responded to the questionnaire that accounts for 60 - 70% of the premium income handled by insurance brokers. A good response has come from the smaller brokers (43% of total responses n = 54).

In the oral survey conducted before sending out the survey it was found that many companies were not using CBT at all. From this it was assumed that most of those who did not reply were not using CBT and that their reasons were similar to those who did reply and are not using CBT.

ANALYSIS OF THE SURVEYS
This will be discussed in relation to groups of questions on the survey.

QUESTIONS 1 - 3

<table>
<thead>
<tr>
<th>Company Size*</th>
<th>Provides Training</th>
<th>No Training</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small</td>
<td>Large</td>
<td>Small</td>
</tr>
<tr>
<td>Insurer - Life</td>
<td>0</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Insurer - General</td>
<td>1</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Broker</td>
<td>32</td>
<td>24</td>
<td>22</td>
</tr>
<tr>
<td>Agent</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>40</td>
<td>31</td>
<td>23</td>
</tr>
</tbody>
</table>

*A small company is one with a staff of less ten 10

Discussion on the responses will be divided into two areas. Those that used CBT and those that did not. Each of these areas is further subdivided into those doing no training, informal training and those with formal training. Table 4.2 sets out the distribution
Questions 4 - 7

CBT is not used

No CBT and No Training
Those that indicated that they undertook no training of any kind tended to be small companies. Twenty-eight percent (n = 34) of those responding fell into this category. Eighty percent (n = 27) of this group had a staff of 10 or less. These would comprise very small companies with one or two principals and a similar number of support staff. The personnel tend to remain constant so the only need for training comes in keeping up to date with changes in regulation or practice. The responses from this group indicate that no training is done. When considering companies who undertook informal training and had a staff size of less than 10 they indicated that CBT is used in training. The difference can be accounted for because of peoples perception of what constitutes training. With very small companies the staff is often very stable and the principal training need is to keep up with industry changes. This would, most commonly, be done by way of external seminars. It may well be that the respondents in this category do not regard the attendance at external courses as training whereas other respondents regard this as a type of training.

The remaining companies in this category are specialist companies or reinsurers whose staff comprises mainly of specialists. Training needs would comprise keeping up with industry or regulatory changes and would be filled by attendance at external seminars.
None in this group had considered CBT.

No CBT and Informal Training
This category comprised thirty-eight % (n = 48) of the total respondents and sixty-five % (n = 31) of those in this category had a staff size of less than 10. As indicated with the earlier category the response, in part, will relate to the interpretation of the word training. This group made reference to external seminars
as being part of their training. This group was a little more training minded as quite a number were aware of CBT and had tried it. The responses to the use of CBT were varied but several messages came through clearly.

The first was that there was very little in the way of CBT programs available for use for training and others saw none available for their area of the industry (insurance broking). One respondent indicated that they were very interested in this form of training and wanted more details on what is available, others indicated that they were not aware of what is available. A further group saw this as being a very good training medium but was only able to be considered by the very large companies (the company in question had a staff of 60).

The other strong message came from those who had seen CBT programs and found them very expensive. This had deterred them from proceeding further.

The major message that could be taken from this group is that they would be interested in CBT if suitable products were available and at a reasonable cost.

No CBT and Formal Training
This was a very small group comprising only two percent (n = 2) of the total responses. The staff sizes were 2 and 800. One was an insurer and the other a broker.

The questionnaires contained comment about CBT that is of interest. Whilst there was no CBT used there was an encouraging interest shown. In comments made on the questionnaire one agent indicated that if the insurer would provide the software they would use it. This really indicated the agent’s small size. Another indicated that if some CBT software were produced they would be very interested in using it.
The same point encountered in earlier categories emerged again that there is a dinth of software available but if it were available there would be interest in using it.

CBT is used
Discussion of the CBT aspects of the responses for this group will be combined and covered following comment on the type of training used.

CBT is used and Training is Informal
This group comprised 15% (n = 18) of the respondents with some twenty-eight percent (n = 5) of the group having a staff of less than 10. Again it is the smaller companies that dominate this group and thus the reason for the use of informal training. It tends to be on a need basis.

CBT is used and Training is Formal
The final group comprises eighteen percent (n = 23) of the total with only thirteen percent (n = 3) having a staff size less than 10. Some seventy-four percent (n = 17) of this group have a staff size in excess of 100, in fact the majority (13 of the 17) have a staff size in excess of 500. Large companies are able to spread their training costs better and are in a position to have dedicated training departments.

QUESTION 8
Where was CBT used?
The next question addressed by the questionnaire was where was the CBT used. Three categories were sought and the results are shown in the table 4.3. The respondents indicated more than one category. In relation to the "other" category this generally related to the CBT programs supplied with word-processing and spreadsheet packages where the user can be trained in the use of the product
Table 4.3

Distribution of where CBT is used

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Companies Products</td>
<td>50%</td>
</tr>
<tr>
<td>Companies Procedures</td>
<td>50%</td>
</tr>
<tr>
<td>Other</td>
<td>35%</td>
</tr>
</tbody>
</table>

This type of CBT was referred to frequently by the smaller companies reference was made to it being of value in situations where the company has limited ability to send employees on training courses. These smaller companies have a problem both from the viewpoint of releasing employees for training and meeting the cost of that training. The other principal use was a CBT program that is provided with a companies accounting or principal database program. These programs are used extensively to train employees and are also available to provide on the spot training or refresher courses when needed.

QUESTION 9
Where is CBT Developed?
This question was seeking to ascertain where the CBT was produced. In 80% (n = 34) of the cases it was produced externally. When it was produced internally, in all but a few cases, the program related to the operation of the company’s database system. Only a few (4 or 5) very large companies (over 100 staff) are producing a small amount of CBT for their own inhouse use.

QUESTION 10
Cost Effectiveness
The next section of the questionnaire deals with the cost effectiveness of the CBT used by the respondents. In 65% of the responses the company did not undertake any analysis of the cost effectiveness of the CBT. Table 4.4 sets out the factors taken into account in making the analysis for the 35% of responders whom indicated that an analysis was made.
Table 4.4
Factors taken into account in assessing cost effectiveness

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development cost or Purchase price</td>
<td>73%</td>
</tr>
<tr>
<td>Trainee time</td>
<td>53%</td>
</tr>
<tr>
<td>Availability of PC</td>
<td>80%</td>
</tr>
<tr>
<td>Evaluation made of CBT*</td>
<td>46%</td>
</tr>
</tbody>
</table>

*This relates to an evaluation of the CBT program after it has been in use to gauge its effectiveness.

Some of the comments made give a further insight into the way in which a cost benefit analysis may have been done.

- In one case the responder indicated that ‘Savings are seen in the efficiencies produced as the operators complete the job quicker.

- In another the response was ‘it costs $150 to send an employee on a course. The program costs $1500. We send more than 10 employees. The program is cost effective’

- In another the costs taken into account were listed as ‘staff time costs, trainee accommodation costs, opportunity costs, with cost reductions coming because trainees have the information on hand and there is no need to fax or phone the head office to obtain the information.

- Another evaluates by the knowledge gained by the trainee.

- Quite a number did not make formal evaluations but gave responses such as ‘we know intuitively that it is cost effective’ and similar comments.

**QUESTION 11**

**The Use of CBT**

The questionnaire asked for the advantages and disadvantages seen in CBT. These responses will be covered and discussed in this section.
Advantages of CBT

Respondents to this section were those using CBT (n = 41). They were asked what benefits they saw with CBT. There were quite a range of responses given and these have been categorised into eight headings. Eighty-eight percent of respondents (n = 36) gave a comment.

- Cost
  There were a number of responses (55% n = 23) indicating that cost savings were effected with the use of CBT. Comments such as ‘cost effective’ and ‘value for money’ was made. The questionnaire had a separate section relating to cost effectiveness and this topic will be discussed in detail when that section is reviewed.

- Convenience
  The fact that the student was able to complete the program at a time that suited the student was commented on by a number (12% n = 5), particularly those with small staffs. Some elaborated to the extent that with a small staff customer service was very important and, training while very necessary, was difficult to fit in. With CBT the flexibility was provided so the training could be done at a time that suited and the employees services are still available when needed. There is no time wasted with travel to and from the training site. CBT is always available.

- Individual Pacing
  The comments made here referred to the fact that a student could proceed at their own pace (45% n = 19) and were not forced to keep up or restrained to the pace of the group. In addition, if desired, a unit or course could be repeated. None of this is easily possible with instructor led training.

- Individual Training
Another comment made related to the way in which CBT allows parts of a course to be done. (38% n = 16). If the need for training arises in one section only CBT can accommodate this whereas instructor led training cannot.

- **Time Saving**
  Some (24% n = 10) found CBT to be time saving. How the time was saved was not commented on. This could arise in one of two areas. Studies have shown (Visonhaler 1972; Bangret-Drowns, Kulik, & Kulik 1985; Kulik, Kulik & Bangret-Drowns 1985) that the time taken to complete CBT courses, given the right situation, is shorter than instructor led. The other area is that with CBT a student can complete the course at their own pace and those who understand quicker are able to advance much quicker.

- **Geographical**
  Where the training has to be delivered over several locations the use of CBT can provide cost savings. This was mentioned on a number of questionnaires (19% n = 8).

- **Uniform Approach**
  A number (12% n = 5) spoke of the consistency of material in both quality and presentation. Instructor led will vary. In developing the CBT program the developer can ensure that the quality is clear and the contents accurate. With the updating of information in the course this can be done centrally and new programs forwarded ensuring that the program remains uniform. A related comment was made on nineteen percent (n = 8) that CBT enables the training to be standardised. This of course could be achieved with instructor led training by the company providing greater direction for their instructors.

- **Staff Access**
Some (14% n = 6) saw this as an advantage. One respondent gave the example of a situation where a number of different training courses need to be run at the same time and insufficient training rooms to run them all. The use of CBT overcame the problem as it could be done from a desktop PC.

- **Other Comments**

  Among other comments made were

  - Measurable results were produced. Most CBT programs contain a self-testing section that assesses how the student has fared and provides immediate feedback to the student. These results can be made available to the student and, can be set up to provide feedback to an instructor.

  - Several responses made mention of one theme described variously as ‘adds variety’ and ‘fun’.

  - Immediate transfer of knowledge. This refers to the immediacy of CBT, in that it is available at any time. Its use described in Chapter 3, as JIT training is an example of this. An expansion of this reference was also made of the use of CBT to reinforce knowledge. In that situation the CBT was used to supplement instructor led training. The initial knowledge was provided in instructor led training then followed up with CBT where by use of tests and feedback the knowledge imparted can be tested and feedback given when assessed and this used as a reinforcing exercise.

  - Use as an induction tool was also referred to and in providing this the inductee is able to go back to the program and review it at a later point. Invariably with induction courses the inductee is presented with considerable information and much of it is forgotten. An advantage was also seen in a situation where the company had a
high staff turnover. By using CBT for staff training in the companies procedures it was available whenever needed instead of having to continually run instructor led courses for low numbers.

Where there is insufficient internal expertise in an area an externally available CBT program is able to provide the training needed.

**Disadvantages of CBT**

The questionnaires also asked what disadvantages were seen with CBT. Only 50% (n = 21) of those who used CBT responded to this section. The comments made are categorised here.

- **The users**

  Some people find that using computers a somewhat daunting experience and, because of this their concerns impede the learning process to the extent that this medium is of no value to them (5% n = 2).

- **Changes**

  Changes will occur in legislation and practice, which must be reflected in the program. With instructor led training these changes can be reflected immediately but with CBT it is necessary to alter the program and redistribute it. This may not be able to be done quickly (7% n = 3).

- **Availability**

  Some respondents state that currently there are very few programs available for use in relation to insurance (14% n = 6).

- **Support**

  Unlike instructor led training there is no instructor support with CBT. There is no opportunity to ask questions. Whenever CBT is used, as a means of training the trainee should be told whom they could refer
questions to. The point made here is that a response cannot be obtained on the spot (5% n = 2).

- **Suitability**
  CBT does not suit all areas in which training is necessary. In the insurance industry training is needed in the area of customer service. CBT is not the preferred method for use in training in this area (5% n = 2). Despite this response some of the cases cited in Chapter 2 (Advantage 15) describe the successful use of CBT in customer service areas.

- **Interaction**
  CBT does not allow for group discussion and interaction with others (14% n = 6).

- **Costs**
  CBT can have high upfront costs when it is developed internally. With external development the same costs are incurred but respondents believe that these can be spread over a large number of customers (14% n = 6).

**QUESTION 12**

**Type of CBT used**

This question was seeking to establish the type of CBT that was used. The definitions of the different types of CBT are set out here. These appeared in the questionnaire.
Table 4.5
Definitions of CBT types

<table>
<thead>
<tr>
<th>Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page Turning</td>
<td>Where text is simply presented on the screen.</td>
</tr>
<tr>
<td>Drill &amp; Practice</td>
<td>where the CBT is used to test the student on a topic learnt elsewhere</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>where the student must solve a problem from the information presented</td>
</tr>
<tr>
<td>Multiple choice</td>
<td>A problem is presented and the student must select the correct answer from a range given</td>
</tr>
</tbody>
</table>

The table 4.6 shows as a percentage of total respondents the use of each type of CBT. Note some used more than one type.

Table 4.6
Type of CBT used

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page Turning</td>
<td>70%</td>
</tr>
<tr>
<td>Drill &amp; Practice</td>
<td>40%</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>40%</td>
</tr>
<tr>
<td>Multiple choice</td>
<td>45%</td>
</tr>
</tbody>
</table>

It is interesting to note with the high proportion of page turning approach being used and the quite enthusiastic response for the use of CBT.

This would be the least effective type of CBT from a user viewpoint. They might as well read a book. To introduce them to more problem solving and interactive CBT programs should bring a very positive response.
QUESTION 13

Student Assessment

The next question related to the assessment of students for both instructor led and CBT training. Table 4.7 shows the percentage of respondents that test the students in each case.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor led</td>
<td>37.5%</td>
</tr>
<tr>
<td>CBT</td>
<td>35%</td>
</tr>
</tbody>
</table>

Table 4.7
Percentage of respondents
that test students

The results are near identical and indicate a low level of testing.

QUESTION 14

The Future

The last question asked was how the responders saw the future of CBT. Eighty-one percent of respondents answered this question and were positive in their response. The major responses are set out under.

- There will be greater use in the future as more programs become available (44% n = 15).
- CBT will have a greater role in the future (44% n = 15).
- CBT will take on a bigger role in the future (44% n = 15)

Other responses were
- CBT will be effective for production of industry information (14% n = 6)
- CBT will grow as technology develops (12% n = 5)
- CBT will be used more in the future but don't see it as an exclusive means of training (6% n = 2)
- CBT is essential in the future (6% n = 2).
- CBT will become the major means of training (3% n = 1).
- CD ROM and interactive video will be an important point for company training (3% n = 1).
The respondents see a positive future for CBT.

CONCLUSION

The overall message coming through is a positive one. There are several matters that emerge

- There is a limited amount of software available and it is high priced. Greater use would be made of CBT if more software was available and it was more reasonably priced.

- As 65% of the companies responding did not undertake an analysis of the cost effectiveness of CBT this would not seem to be an important issue with companies.

- Student assessment in any form of training is undertaken by about 35% of companies. It would appear the majority of companies are simply looking to provide information to employees and trusting or assuming that that information has been understood and absorbed.

The next section examines one program developed to meet the needs of the user.
CHAPTER SIX

THE TRIAL PROGRAM
A TRIAL CBT PROGRAM AND THE MARKET RESPONSE

One of the objectives of this thesis is to establish if cost-effective software can be produced for use in the insurance industry. Anecdotal evidence suggests that the availability of insurance specific software is very limited and is expensive. These points were commented on by some of the survey respondents.

Examples were cited of one program available that was a text based page turning program which included a multiple choice program to test the students understanding and retention of the information given. This program was initially offered at $3000 and subsequently reduced to $1500. From discussions with many people in industry and comments made on the survey questionnaires they considered the program over priced. There is very little in the way of software that is developed and sold to the public. The larger companies are developing software with outside developers and the prices being quoted by developers to produce the programs vary considerably. In some cases developers indicate that they are not interested unless the price will exceed $100,000. Other cases tell of quotes obtained on a project that range from $120,000 to $460,000. A multiple-choice program quoted at $28,000 and at a mild suggestion that this was a little expensive was instantly reduced to $14,000. The price eventually ended up at $8,000. These anecdotal examples are not isolated; the marketplace abounds with them. It would seem that the marketplace uses a very old maxim of ‘charge what the traffic will bear’ and as corporate pockets are thought to be deep, charge high. You can always come down but you can’t go up.

To establish if software can be produced that fits the need of the user and is reasonably priced it was necessary to write a program, cost it, then show it to the market to see if it suits their needs. If so, what price would they be prepared to pay for it?
The Project

The development of the project was broken into stages
1. The program developed.
2. The program submitted to a student audience.
3. The program submitted to the market place to establish if the need was met and the price the market was prepared to pay.

Program development

The program was designed for the assessment of property insurance risks. The program would allow the student to put into practice the theory they have learnt in relation to the assessment of property insurance risks. The students conduct an on screen survey of a plant them complete an on screen survey report providing their assessment of the risk. When completed, the program then presents to the student their assessment and the correct assessment with an explanation of where the correct answer for each point can be obtained. The program can be used in an educational environment or as a training tool in industry.

Time

Time is the biggest cost in the development of a CBT program. The time taken to develop the program was noted. The development can be broken into the segments. Table 5.1 sets out these segments and gives the number of hours allocated to each.

To elaborate on the above this included the time taken for development and testing of the program as well as the time to develop and write the manual that goes with the program. The development of materials included the taking of photographs, converting those photos to a digital form ready for use in the program.
Table 5.1

Development segments and time allocation

<table>
<thead>
<tr>
<th>Segment</th>
<th>Time in hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan the overall program</td>
<td>80</td>
</tr>
<tr>
<td>Develop the materials needed</td>
<td>10</td>
</tr>
<tr>
<td>Convert the plan to code</td>
<td>60</td>
</tr>
<tr>
<td>Refine to the finished product</td>
<td>20</td>
</tr>
<tr>
<td>Package the product and prepare a manual</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>180 hours</strong></td>
</tr>
</tbody>
</table>

The final step in the process was the preparation of the installation program and copying of the program to the disk for final distribution.

In selecting an hourly rate to calculate the program cost a figure of $100 per hour has been used. While a figure of $50 per hour may be more in keeping with the rates currently available this higher figure takes into account that the programmer would need to have some educational experience to design the program. In addition in order to ensure that the cost is done very conservatively the higher figure of $100 per hour has been used. Table 5.1 above indicates the time spent was 180 hours. Using a labour cost figure of $100 per hour this gives a cost for this item of $18,000.

**Materials**

The materials used in the project are set out in table 5.2. Note values are also shown. The amounts shown in the table represent the total value of the items. These items were in use before the program was developed and will continue in use after its development.
Table 5.2

Materials used in project and their values

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>$3,000</td>
</tr>
<tr>
<td>Printer</td>
<td>$1500</td>
</tr>
<tr>
<td>Scanner</td>
<td>$1500</td>
</tr>
<tr>
<td>Software</td>
<td></td>
</tr>
<tr>
<td>Development program</td>
<td>$1200</td>
</tr>
<tr>
<td>Word Processing program</td>
<td>$500</td>
</tr>
</tbody>
</table>

To this end only a portion of the values shown should be included in the cost of developing the product. Set in Table 5.3 are the values of the items, an arbitrary % of the value to be costed into the product and the calculated result.

Table 5.3

Project Cost Allocation

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Project Allocation</th>
<th>Amount allocated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>3,000</td>
<td>20%</td>
<td>600</td>
</tr>
<tr>
<td>Printer</td>
<td>1,500</td>
<td>5%</td>
<td>75</td>
</tr>
<tr>
<td>Scanner</td>
<td>1,500</td>
<td>20%</td>
<td>300</td>
</tr>
<tr>
<td>Cost of photos</td>
<td>50</td>
<td>100%</td>
<td>50</td>
</tr>
<tr>
<td>Development Program</td>
<td>1,200</td>
<td>30%</td>
<td>360</td>
</tr>
<tr>
<td>Installation program</td>
<td>200</td>
<td>100%</td>
<td>200</td>
</tr>
<tr>
<td>Word Processing Program</td>
<td>500</td>
<td>5%</td>
<td>25</td>
</tr>
</tbody>
</table>

The total allocation in table 5.3 amounts to $1610. The percentages allocated are quite excessive. For example to say that one fifth of the total life of the computer was spent on
this project says little for the life of computers generally. This heavy-handed approach was taken to ensure that the materials aspect of the costing was not understated.

**Distribution Cost**

The final cost to be included is that of distribution. The costing to this point included the cost to the point of the completed program to a final set of disks. These disks need to be duplicated and distributed. Commercial disk copiers charge $1 per disk and this charge includes the cost of the disk as well as the process of copying the program to it. A set comprises two disks. The printing of the manual is $2 per copy. The final charge is that of the postage on the manual and disks to the end user. This was set at $2 per customer. The total distribution costs are set out in table 5.4.

<table>
<thead>
<tr>
<th>Distribution Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Copying (2 disks)</td>
<td>2.00</td>
</tr>
<tr>
<td>Manual</td>
<td>2.00</td>
</tr>
<tr>
<td>Postage</td>
<td>2.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6.00</strong></td>
</tr>
</tbody>
</table>

**Total Cost**

The total costs before distribution costs are set out in table 5.5.

<table>
<thead>
<tr>
<th>Total Costs (ex distribution costs)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>1,610</td>
</tr>
<tr>
<td>Time</td>
<td><strong>18,000</strong></td>
</tr>
<tr>
<td>Total</td>
<td><strong>19,610</strong></td>
</tr>
</tbody>
</table>
The cost per product, based on varying sales levels are set out Table 5.6 below

<table>
<thead>
<tr>
<th>Expected Sales Volume</th>
<th>25</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per unit (Dollars)</td>
<td>785</td>
<td>392</td>
<td>196</td>
<td>131</td>
<td>98</td>
</tr>
<tr>
<td>Distribution costs</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Total cost</td>
<td>791</td>
<td>398</td>
<td>202</td>
<td>137</td>
<td>104</td>
</tr>
</tbody>
</table>

The figures above are break even figures showing cost only. To this must be added must be added a margin for profit.

**Student Response**

The program has been trialed on some 100 students and was turned into an assignment. They had to write a paper on the results the program produced for them. Acceptance of the program was far better than hoped for. Bear in mind that this was an assignment. Students rang simply to say what a great concept this was and how they benefited from being able to undertake a survey themselves. The acceptance and enthusiasm for the program was universal. A feedback questionnaire was issued at the end of the semester and the comments were all very positive and encouraging that more of this type of program be produced. Set out below are selected comments made by students on the feedback questionnaire.

- ‘the visuals were great a change from the usual assignment’,
- ‘I thought it was a far more beneficial form of assignment as it was quite effective and gave a hands on feel’,
- ‘you get a better feel for the situation’, it was much more interesting using the computer, you felt you became more involved with the assignment’
- ‘As a full time student who has never undertaken a survey this assignment was greatly assisted my understanding of commercial risks’
• 'very very useful, it improved my understanding of the topic'
• 'enables you to get more of a feel for the risk'
• 'this is a really exciting assignment which the lecturer can provide a program to the students which lets them see actual aspects of real risks'
• 'gave more of an idea of what to look for'
• 'it seemed to be a more practical exercise than a paper based assignment'
• 'it was far better than a paper based assignment. Being computer based made it sort of fun. You were awaiting the next graphical display. It was a good program'
• 'I found the program a great benefit. Having had little exposure to surveys this gave a very comprehensive grounding in the subject'

Insurance Market Response
The program was submitted to a small group of companies and organisations. Five in all but those five produce over 70% of the markets premium income. Each were given a copy of the program and asked to comment on the suitability of the program to fill a need and the price range that they would be prepared to pay for the program. The companies to whom the program was submitted were ones producing CBT. The reasoning was that as they are quite involved in CBT they would be more demanding in their evaluation. A copy was also submitted to the Australian Insurance Institute. The Institute have produced programs so are familiar with student needs.

Suitability for the need
The response was positive. The program was seen by all to fill the need it was seeking to meet. One commented “Very detailed and providing an exhaustive explanation of the type of issues relating to risk assessment”. Another, while indicating that the program filled the need, suggested some areas that could improve the program. The principal one being the addition of a help facility. This is a useful suggestion that will be incorporated in the future.
Price range

The price range was varied and ranged from $800 (n = 2) with the remainder being in the range $1500 to $2,000.

On this basis it can be concluded that CBT can be produced for the industry at a realistic price and provide a comfortable margin for the developer.

Conclusion

Table 5.6 indicated that for 25 copies of the program a per unit cost would be $791 and at 50 this would drop to $398. At the lower of the price levels indicated above sales of 25 copies would produce a very small profit. You could justifiably expect higher sales and at sales levels of 100 or 150 (costs of $202 & $137) the copies could be sold for $250 - $300 which would make them accessible to the smaller companies.

A program can be produced and sold at a price that would be acceptable to the market and would appear to suit the markets needs.
CHAPTER SEVEN

CONCLUSION
Conclusion

Training is very important to the growth and development of companies. This is true of companies within the insurance industry. The use of CBT as the medium through which the training is provided has been the focus of this paper along with the cost effectiveness of that medium.

While CBT can and is used by companies of all sizes the group that has the greatest training need is those with less than 20 staff. This group was identified as suffering from a lack of training (ABS 1994) and is suited to flexible training (ANTA 1995), which includes computer based training.

The review of literature revealed that CBT can produce savings and this varies with the particular situation. For example training time was one area where savings were reported, travel and accommodation costs another. Each situation varies and must be decided on its merits. What will work in one situation and produces a saving in that situation is no guarantee that the same will be repeated in another situation.

The training needs in the insurance industry vary considerably and a range of training mediums is used to provide the training. The widespread use of computers in the insurance industry provides the delivery medium at no extra cost. This creates the incentive for the development of CBT products. In recent times larger companies appear to be starting to become more active in their production of programs for their own needs. This still leaves the smaller companies without a range of programs at a reasonable price.

A project was embarked on to test the feasibility of producing software that both fills the need and is reasonably priced. The program produced by the project confirmed
that this could be done with programs being able to be offered in a price range of $250 - $300 each.

Two areas present themselves for further research

- The survey indicated that 65% of respondents did not undertake an analysis of the cost effectiveness of CBT. The implied assumption must be that it is effective. Research could be undertaken to endeavor to establish this.

- Another area would be to establish the types of programs necessary to fill the industry needs.

The role of CBT in the future in the insurance industry is an encouraging one. The survey respondents see a role of CBT as a growing one and future technology will only improve that situation.

The Internet offers considerable promise. The small company has a major problem with access to training. Numerically these companies comprise a large percentage of the companies in the market. The respondents to the survey revealed (excluding insurers because of the nature of the organisations are generally very large) that two-thirds of the companies had a staff under 10. Training by way of the Internet would be available to all companies, small and large. This could be paid for as needed and accessed at any time. While the Internet would appear to hold great promise for training in the future it is an area where further research is needed to establish whether this is a viable medium for training.
APPENDIX

THE QUESTIONNAIRE
Dear Manager,

Survey of the Use of Computer Based Training in the Insurance Industry

The computer has been used as a medium for training for a number of years, particularly in the USA and Europe. A considerable amount of resources have been expended on the development of this training medium and today there are a range of formats available through which the delivery of this training is achieved.

I am currently researching the extent of use of Computer Based training within the insurance industry in Australia. It is in this regard that I am seeking your assistance.

Enclosed is a questionnaire seeking information in relation to the use of Computer Based Training in your company. I would be grateful if you could spare a little time to complete this form and return it to me.

Thanking you in anticipation.

Yours Sincerely

Tom McDonald
Senior Lecturer
Computer Based Training Questionnaire

Name of Organisation _______________________________________________________
......................................................................................................................
......................................................................................................................
Name of Respondent________________________________________________________
Contact phone number_______________________________________________________

For the purpose of this questionnaire the term CBT (Computer Based Training) means

Using a computer to fill part of the companies training role or to be used as an
adjunct to the companies training. For example the program may be used to
• introduce staff to new products
• teach people to use computers
• supplement traditional training programs

1. Details of your organisation
   a. Are you an [ ] Insurer [ ] Broker [ ] or Agent ?
   b. What is your approximate staff size ___________________________
   c. How many locations do you operate at __________________________

2. Does your company have a formal training program for employees? [ ] Yes [ ] No
   If yes go to question 4

3. Is any training of staff undertaken [ ] Yes [ ] No
   If No then please stop and mail back the first page of this
   questionnaire
   If Yes could you please give a brief description of what this
   consists of.

   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
4. Does your organisation use Computer Based Training at all? □ Yes □ No

If yes go to question 7.

5. Has your organisation ever used CBT in the past? □ Yes □ No

If yes why did you cease using it?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

6. Has your organisation ever considered using CBT in their training program? □ Yes □ No

If yes - Why did you not proceed with it?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
7. What were the major factors in your choice to use (or not to use) CBT?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

8. In what areas is CBT used?

Product knowledge     ☐ Yes ☐ No

Company processes or procedures     ☐ Yes ☐ No

Other (Specify)
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

9. Are your CBT programs developed     ☐ inhouse or ☐ externally?

What were the reasons for your choice
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
10. In using CBT as part of your training was a cost/benefit analysis conducted? □ Yes □ No

If yes what savings were revealed and in what circumstances?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

In making a cost/benefit analysis did it take into account the following

□ The development cost or purchase price of the program □ Yes □ No

□ The time the trainee spends using the program □ Yes □ No

• Was PC or terminal already available □ Yes □ No

• Has an evaluation been made of your CBT? □ Yes □ No

What factors were taken into account in making the evaluation?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

11. What benefits do you see with CBT?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
What disadvantages do you see with CBT?

12. CBT can use a range of methods for its presentation. Some examples are:
   - Page Turning - where text is simply presented on the screen.
   - Drill & Practice - where the CBT is used to test the student on a topic learnt elsewhere.
   - Problem Solving - where the student must solve a problem from the information presented.
   - Multiple choice - A problem is presented and the student must select the correct answer from a range given.

Which of the following types do you use?

Page Turning □  Drill □  Problem Solving □  Multiple Choice □

Other forms used (Specify)

Could you please comment on your impression of the effectiveness of the different types you use

...
13. Does your training incorporate some form of testing to evaluate the effectiveness of the training?

Instructor based training

☐ Yes ☐ No

Computer Based Training

☐ Yes ☐ No

14. What role do you see for CBT in the future

Within your Company?


Within the industry?
REFERENCES

ABS (AUSTRALIAN BUREAU OF STATISTICS) (1993) report on ‘Training and Education Experience - Australia (Cat No. 6278.0)


ABS (AUSTRALIAN BUREAU OF STATISTICS) (1994c) Business register, March


AGPS (AUSTRALIAN GOVERNMENT PUBLISHING SERVICE) (1992) Working for the future Jobs, skills, innovation, Canberra


BOOTHE B. (1985) How to successfully apply performance technology in organisations Performance & Instruction, 24(7), pp2-5


ibid p31


HARBAUGH L. (1997) *Learn IT at your own pace* Informationweek, August 1997, n643


ibid p23


'THE AGE', 1 May 1996, page B1


