Training and Development in Irish Technology Companies

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DECLARATION

I confirm that the enclosed is all my own work, except where acknowledgements have been made.

Signed: Jennifer McKee

Jennifer McKee

DEDICATION

I would like to dedicate this thesis
to the memory of my brother Gavin

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Abstract

The sustained economic growth that has been experienced in the Irish economy in recent years has relied, to a large extent, on the contribution and performance of those industry sectors that possess the ability to provide high-value-added products and services to domestic and international markets. One such contributor has been the Technology sector. However, the performance of this sector relies upon the availability of the necessary capabilities and competencies for Technology companies to remain competitive. The Expert Group on Future Skills Needs have forecasted future skills shortages in this sector. The purpose of this research has been to examine the extent to which Irish Technology companies are taking measures to meet changing skills requirements, through training and development interventions.

Survey research methods (in the form of a mail questionnaire, supported by a Web-based questionnaire) have been used to collect information on the expenditure on, and approach to, training and development in these companies, in addition to the methods, techniques and tools/aids that are used to support the delivery of these activities. The contribution of Government intervention has also been examined. The conclusions have been varied. When the activities of the responding companies are considered in isolation, the picture to emerge is primarily positive. Although the expenditure on training and development is slightly lower than that indicated in previous studies, the results vary by company size. Technical employees are clearly the key focus of training provision, while Senior Managers and Directors, Clerical and Administrative staff and Manual workers are a great deal more neglected in training provision. Expenditure on, and use of, computer-based training methods is high, as is the use of most of the specified techniques for facilitating learning.

However, when one considers the extent to which external support (in the form of Government interventions and cooperation with other companies and with education and training providers) is integrated into the overall training practices of these companies, significant gaps in practice are identified. The thesis concludes by providing a framework to guide future training and development practices in the Technology sector.

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GLOSSARY OF KEY TERMS

Term	Explanation
BETP	Business Education and Training Partnership initiative
CBT	Computer-Based Training
CD-ROM	Compact Disc – Read Only Memory
CIPD	Chartered Institute of Personnel and Development
CIPD UK	*Chartered Institute of Personnel and Development, UK*
CIPD Ireland	*Chartered Institute of Personnel and Development, Ireland*
E-Learning	Electronic Learning (excluding stand-alone CBT methods such as CD-ROMs
Expert Group	The Expert Group on Future Skills Needs
HR:	Human Resource(s)
HRD	Human Resource Development
HRM	Human Resource Management
IT	Information Technology
SMEs	Small and Medium-Sized Enterprises
Web	World Wide Web

INTRODUCTION

Ireland, since the mid-1990s, has been experiencing strong and sustained economic growth, characterised by an impressive rate of real GDP (Gross Domestic Product) growth, a strong export sector, low inflation, and growth in employment and consumer expenditure (Heraty and Morley, 1998). A major contributor to this growth has been Ireland's Technology sector, which has offered the capabilities and competencies to provide high-value-added products to domestic and international markets. With the erosion of economic borders, the internationalisation of competition, and the unprecedented rates of technological change, the companies that have thrived of late, and that will survive and grow in the future, are those that are in possession of the necessary knowledge, flexibility and innovativeness to provide value-added solutions to customers. (Gunnigle and Flood, 1992; Gunnigle *et* al, 2002; Heraty and Morley, 1998, 2000, 2003; McCole *et al*, 2001).

Underlying the ability of the Irish Technology sector to contribute to Ireland's economic growth is the availability of a work force that is in possession of the necessary capabilities and competencies to drive this growth. In the economic buoyancy of the 1990s, employment in Ireland increased substantially due to increasing demand for labour and skills. Three key demographic trends were instrumental in ensuring that this demand was met with sufficient supply:

- An increasing working-age population (i.e. aged between 15 to 64 years);
- Net immigration;
- Rising labour force participation rates (particularly amongst young women).

However, Ireland's Technology companies can no longer rely on fresh supplies of labour and skills from these sources, as each of these trends is set to slow in the coming years:

- Plummeting birth rates have been experienced in Ireland since the early 1980s, now impacting the number of students and new entrants into the workforce;

- The trend of net immigration is likely to become more subdued, due to a more cloudy economic outlook in the wake of the economic slowdown streaming from the US economy since mid-2000;
- The potential for expansion in labour force participation rates amongst women has reached its peak.

(The Expert Group on Future Skills Needs, July 2001).

The economic slowdown emanating from the US economy, and rippling through the world's other major economies, has also meant that Irish Technology companies have been unable to sustain the employment growth that they realised during the 1990s.

As a result of these two factors – slowing labour force supply growth coupled with slowing employment growth – Technology companies will be forced to look internally for the skills and capabilities to meet future organisational needs. These skill and capability requirements are constantly changing; it is imperative then that Ireland's Technology companies invest in the continuous development of their employees to ensure that they are equipped to meet these needs.

> "The greatest challenge for Ireland must therefore lie in the creation of a well-qualified and highly-skilled workforce that will allow for the exploitation of the range of promising opportunities that are represented in the challenges facing all modern market economies. This requires a strong commitment from both the State and from individual employers to facilitate the development of a knowledge-based and knowledge-driven economy. Strategic investment in human resources remains a critical requirement"
>
> (Heraty and Morley, 1998: 202-203)

The above outline given by Heraty and Morley relates to the challenge facing any company operating in Ireland, not referring specifically to the Technology sector. This challenge does however apply equally, if not particularly, to companies operating in this sector. McCole *et al* (2001) have acknowledged that Ireland's providers of telecommunications, software, and electronics are amongst the companies that have the strongest ability to grow and succeed in the future. These companies are knowledge-intensive; knowledge is the crucial resource that they must possess in order to realise

these growth possibilities. However, while many of these companies do acknowledge the strategic importance of their human resources, they are all-to-often unwilling, or believe themselves unable, to dedicate resources to the management and development of their employees. Undoubtedly, company size is a major prohibiting factor in the Irish Technology sector, which consists of a large proportion of Small and Medium-Sized Enterprises (SMEs). Many of these companies may be put off by believing that they can ill-afford the time, human and financial resources necessary to pursue human resource development policies – often failing to realise that they cannot afford not to.

A number of authors have dedicated studies and articles to analysing the approach to employee training and development that is adopted within Irish organisations, and providing statistics describing current training and development practices within these organisations (Bernadette Breen, December 2000; Garavan, Costine and Heraty, 1995; Garavan, Gunnigle and Morley, 2000; Garavan, Morley, Gunnigle and Collins, 2001; Garavan, Morley, Gunnigle and McGuire, 2002; Gunnigle and Flood, 1992; Gunnigle, Heraty and Morley, 2002; Heraty and Garavan, 2001; Heraty and Morley, 1998; 2000; 2003; Roche, Monks and Walsh, 1998). This research will be discussed within the Literature Review (Chapter 1) of this thesis. Much less profuse are analyses and studies dedicated to facilitating an understanding of employee development practices within the Technology sector in Ireland (for example O'Regan *et al*, 2001), despite the high profile that this sector is afforded within today's knowledge-based economy. Some authors have conducted studies of Technology companies in Northern Ireland and elsewhere in the world (for example, Wightman and McAleer, 1995). Very little guidance, in the form of theories or best practice evidence, exists to aid Ireland's Technology companies in their efforts to manage and develop their human resources. A further notable void in the research base relates to research focusing on the training and development practices of SMEs. Often SMEs are excluded from studies due to a widespread lack of formal human resource management functions and of employee development structures within such companies. It is the intention of this thesis to address these gaps in the research base relating to employee training and development in Ireland's Technology sector, a large section of which is constituted by SMEs. The results of this research are intended to serve two core functions: 1) to identify the current level, nature and sophistication of employee training and development practices within the Irish Technology sector, thus making a contribution towards answering the

questions posed by the existing gaps in the research base; 2) to provide a framework to aid future employee training and development activities implemented by Technology companies operating in Ireland.

These issues will be addressed in the following way:

- An examination of the existing theories relating to employee development (generally, in Ireland, and in the Technology sector), advocating why and how training and development should be delivered, and outlining factors that must be considered in any training and development decisions.
- A review of the results of previous studies offering statistics on employee development practices in Ireland and in Technology companies.
- An analysis of Government support for training and development in Ireland.
- Following the identification of specific gaps in understanding that arise from the preceding analysis, research will then be undertaken, involving the collection of primary data, in an attempt to answer the questions that are posed by these gaps.
- The findings of this research will be presented, and subsequently analysed and compared with the existing theories and statistics available.
- Conclusions and recommendations will then be presented on the strength of this analysis, and a framework for future practice will be introduced.

DEFINING THE TECHNOLOGY SECTOR

For the purposes of this research, the Technology sector is defined on the basis of the categorisations used by Deloitte & Touche in the annual Technology Fast 50 programme (see http://www.fast50.co.uk), which is run in Ireland and the UK, in addition to a range of other countries. Under this programme, Technology sector companies are those incorporating the following activities:

- Equipment Manufacturing
- ASP
- Telecommunications
- Biotech/Medical Products
- Software

- Hi-Tech
- Networking and Communications
- ISP

THE RESEARCH OBJECTIVES

The research is centred around four key objectives, each of which contains a number of sub-questions.

1) **To identify the nature of expenditure on training and development in the Irish Technology sector**

   - Are investments in training and development made from dedicated budgets set aside for training and development activities?
   - Which occupational groups receive training and development?
   - Do the companies facilitate access to training and development for employees?
   - What are the prevailing approaches to the provision of training and development?

2) **To ascertain the methods of delivery of training and development activities in the Irish Technology Sector**

   - What methods of delivery do the companies use?
   - To what extent are modern, Computer-Based Training methods of delivery used?

3) **To establish the techniques and tools/aids that are used to facilitate learning and to support the delivery of training and development activities in the Irish Technology sector**

   - What techniques do the companies currently use to facilitate learning?
   - What tools/aids do the companies currently use to support the delivery of training and development activities?

4) **To assess the extent of awareness of Government interventions in the training and development of Ireland's Technology labour force, and to determine the reaction to these interventions**

- What investments have the Irish Government made in the training and development of the Irish Technology labour force?
- What support mechanisms have been put in place to facilitate access to training and development activities for companies operating in the Technology sector, and for the employees of these companies?
- What is the level of awareness among these companies, and their employees, of the support mechanisms that are available?
- To what extent are these support mechanisms being used by the target companies and their employees?
- What is the dominant perception in relation to the effectiveness of these interventions in improving access to training and development activities?

CHAPTER 1

LITERATURE REVIEW

1.1 Definitions and Key Terms

Before any attempt can be made to discuss existing theories of why and how training and development should be delivered, it is first necessary to outline some important definitions that prevail within the training and development literature. These definitions relate to a number of key terms, and some authors exhibit a preference for a specific term or combination of terms. However, each of these is used widely within the literature, and must therefore be considered. Garavan *et al* (1995), Gunnigle and Flood (1992), and Gunnigle *et al* (2002) have identified some of the key terms from an Irish training and development perspective.

Learning: Learning should be recognised as a process, and one which underpins any education, development or training activity. Learning involves the development of further knowledge and understanding, through experience and practice, to effect changes in an individual's behaviour and performance. Learning may be formal or informal, conscious or unconscious.

Training: Training relates to a specific job or role within an organisation. An individual is trained with the expectation of allowing him/her to perform, or more effectively perform, this role. As such, the objectives and required outcomes of a training activity are generally well defined.

Development: Development, which is a broadly-defined and more long-term activity, is concerned with developing the skills and capabilities that an individual possesses, for the purpose of preparing the individual for a future role, and ensuring that the organisation's future needs are met.

Education: Education is aimed at providing an individual with a more general level of understanding and problem-solving skills, and in most cases extends beyond the context of a specific job. Education is typified by formal, often certified, education programmes.

A number of other key terms that are frequently encountered in the existing literature include:

Human Resource Management: "That part of the management process that specializes in the management of people in work organisations. HRM emphasizes that employees are critical to achieving sustainable competitive advantage, that human resources practices need to be integrated with the corporate strategy..." (Bratton and Gold, 1999: 11)

Human Resource Development: HRD refers to the development of an approach to learning, training, development and education, which not only links the planning and delivery of these activities to strategic planning within the organisation, but also integrates individual, group and organisational learning. (Gunnigle *et al*, 2002).

Career Management: "Activities and processes to match individual needs and aspirations with organization needs, set within an integrative framework" (Bratton and Gold, 1999: 379)

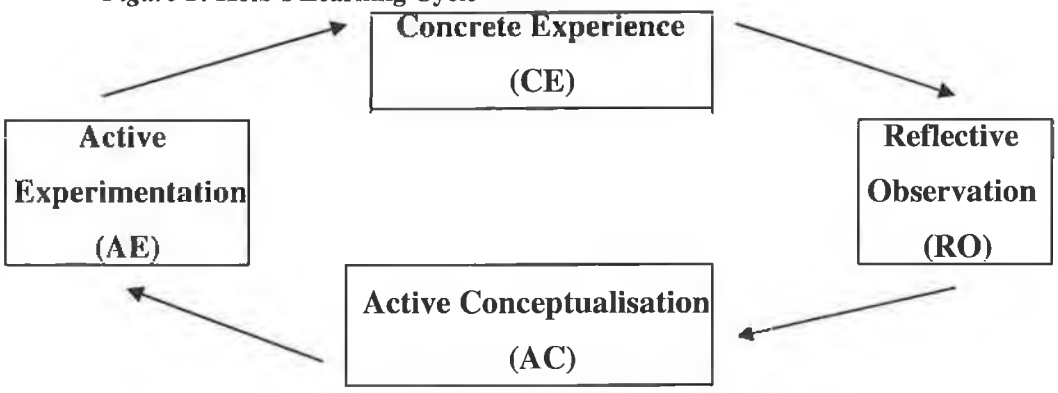
The term ***training and development*** is used throughout this research to refer to any combination of the above practices used within a company. Although other terms, for example *human resource development*, may be considered to be more comprehensive and inclusive of all activities involved in the management and development of human resources, the term training and development is used here to reflect the likelihood that a significant variation in training practices will exist within Ireland's Technology companies (as many of these companies are relatively small in size). Using this term therefore permits an analysis of the training and development practices that actually *do* occur, thus allowing the research to proceed without any preconceptions as to how these companies *should* be developing their employees.

1.2 Individual And Organisational Learning

As discussed, the process of learning, whether formal or informal, conscious or unconscious, is central to all training and development activities. A number of theorists have presented ideas relating to the content and sequence of this process, and preferences of individual learners in relation to how the process should be carried out. For some theorists (e.g. Kolb, 1984; Honey and Mumford, 1982), the focus of analysis is on the individual learner, and for others (e.g. Murray, 2002) it is on the learning of the organisation as a whole. These theories are intended to help the organisation to ensure the effectiveness of the learning process by considering them while planning the content and delivery of training programmes. Each of these perspectives will be analysed in turn.

Kolb (1984) has claimed that learning occurs through an "experiential" cycle. Each of the four stages of this cycle requires the learner to possess a distinct ability. *Concrete Experience* requires that the learner be able to participate fully in a new experience; *Reflective Observation* requires the learner to be able to reflect openly upon this experience; *Abstract Conceptualisation* demands that the learner can create concepts or ideas that convert reflection into theories; and for *Active Experimentation* the learner must be able to convert these theories into concrete plans and actions. While Kolb has acknowledged that individuals' assumptions, beliefs and capabilities will impact upon their ability to complete all stages of the cycle, he nonetheless contended that the full cycle must be completed if learning is to occur. Kolb's learning cycle is illustrated in Figure 1.

***Figure 1*: Kolb's Learning Cycle**



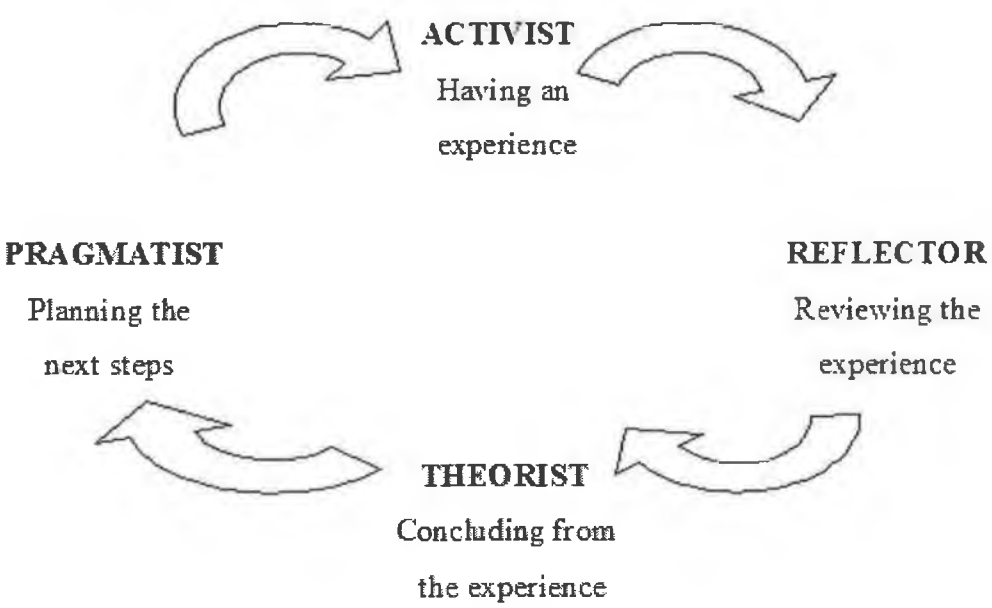
Source: Adapted from Bratton and Gold (1999: 291)

Honey and Mumford (1982) have drawn upon Kolb's learning cycle, and more particularly upon his concept that individuals learn in different ways, in developing their theory of Learning Styles. They have identified four distinct learning styles, contending that an individual may have a preference for one or more styles. Honey and Mumford's theory does, however, place more emphasis on the characteristics of each learning style, rather than on the cycle itself, since the cycle is seen as being self-evident. The learning styles identified by Honey and Mumford can be summarised as follows:

1) **Activist:** the person learns best through learning by doing.
2) **Reflector:** the person learns best when given time to contemplate the issue at hand.
3) **Theorist:** the person learns best by critically assessing conceptual frameworks.
4) **Pragmatist:** the person learns best by developing solutions to real-life problems.

Figure 2 pictures the Honey and Mumford learning cycle, incorporating these learning styles.

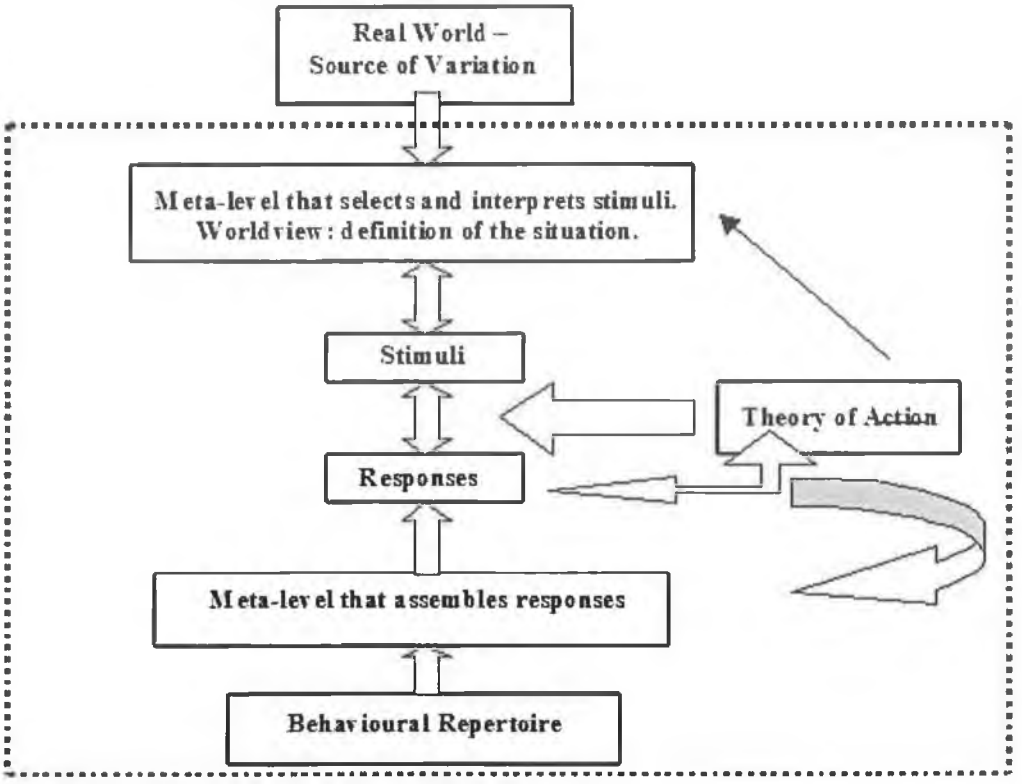
***Figure 2*: The Honey and Mumford Learning Cycle**



Source: Adapted from Schlesinger (1996: 31)

Murray (2002) has criticised these individualised approaches to learning, arguing that theorists should adopt a holistic perspective, focusing on organisational learning, rather than individual learning. Individual learning, he claims, is significantly influenced by the learning systems that are maintained within an organisation, and which are carried through to individuals within that organisation, via organisational norms and beliefs. However, Murray does not disregard these individualised theories, but rather claims that they are more valuable when integrated into a holistic cycle; this Murray refers to as an integrated cycle of "Unbounded Learning". Murray describes unbounded learning as "...the capacity of a company to *grow* and *change* simultaneously through superior learning and *capability* without being limited by organisational systems and culture" (Murray, 2002: 239; emphasis added). Unbounded learning must incorporate both adaptive learning and generative learning. Adaptive learning refers to the speed and efficiency with which an organisation can respond to environmental stimuli, and it involves gradual, small-scale improvements upon past decisions. Generative learning, by contrast, requires individuals and organisations to challenge the ways in which they currently understand environmental elements, such as customers or suppliers. Organisational and individual world-views and meta-level (higher-level) systems will constrain generative learning. In explaining this, Murray uses a cycle to demonstrate how an organisation interacts with its environment. In this cycle, the "real world" (or environment) is the source of variation and of stimuli. Stimuli are perceived and interpreted by one meta-level of the organisation, while another meta-level constructs responses to these interpretations. The prevailing theories of action and behavioural repertoire (history) of the organisation have a signification impact upon the processes of stimuli interpretation and response generation. This cycle is illustrated in Figure 3.

Figure 3: How a Firm Interacts with its Environment



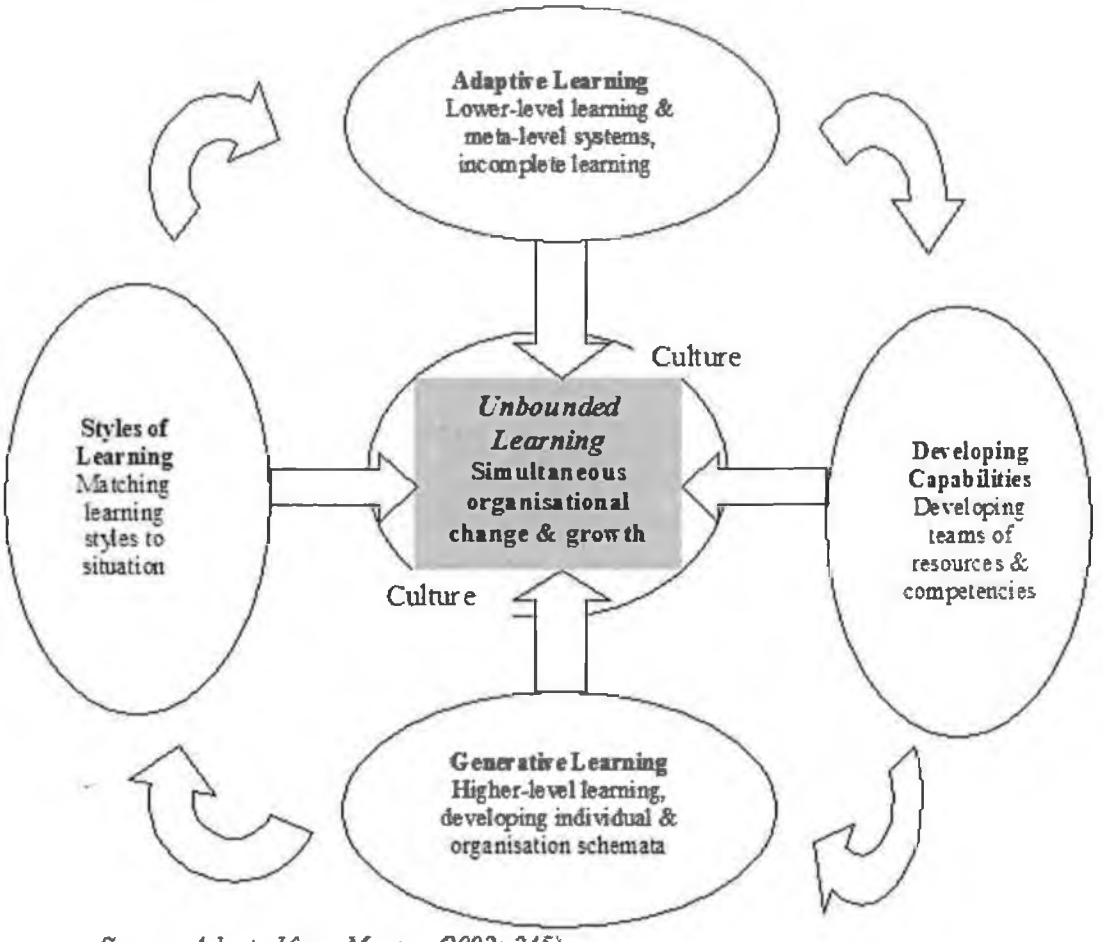
Source: Adapted from Murray (2002: 243).

However, Murray claims that unclear cause-effect relationships (where the organisation is not sure about which strategic action has caused a given environmental reaction) impair the validity of theories of action, and learning will therefore be obstructed.

In order for unbounded learning to occur, Murray has argued for the necessity of a learning cycle that provides a connection between cognition (perception) and reality. Murray refers to Neisser's (1967) model. This model claims that a new learning condition, "Organisation Schema", is created when an individual's *Interpretive Skills* (or "perceptual exploration process") are combined with individual and organisational *Integrative Skills* (the ability of groups within the organisation to build shared meaning from mutual experiences). A *productive organisation schema* occurs when integrative skills are made active at all levels within the organisation, and when action is influenced by a common belief system. Moreover, this productive organisation schema must be based upon capabilities or competencies to improve upon previous actions. When these conditions are met, the organisation can move towards a culture that emphasises generative learning based on creativity, as opposed to adaptive learning based on survival.

The final element of Murray's integrated cycle of unbounded learning comes from Kolb's (1984) learning styles theory. Murray has argued that, for each stage of the cycle, the organisation must identify the types of behaviours (associated with particular learning styles) that are suitable for the situation in hand. In this way, maximum benefit can be derived from individual learning preferences. The complete cycle of unbounded learning is illustrated in Figure 4.

***Figure 4*: An Integrated Cycle of Unbounded Learning**



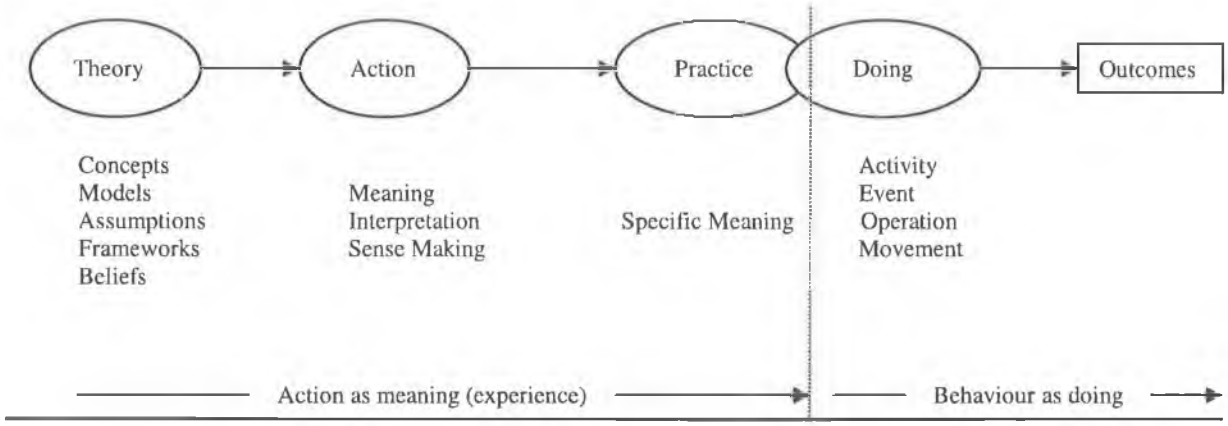
Source: Adapted from Murray (2002: 245)

In another criticism of the Honey and Mumford (1982) learning cycle, Schlesinger (1996) has offered a counterview to such learning cycle theories. He has claimed that it is incorrect to say that learning has not occurred merely because an individual has not followed a learning cycle in a systematic way. Learning, he contends, occurs in patterns rather than cycles. The individual may have covered all elements of the learning cycle, but in a *systemic* rather than a *systematic* fashion.

Schlesinger outlines a number of limitations of the Honey and Mumford cycle. First, the cycle does not acknowledge the connections and tensions between the act of "experiencing" and that of "concluding" (i.e. how the learner grasps the issue), and between the act of "reviewing" and that of "planning" (i.e. how understanding is transformed into concrete plans and actions). Second, the cycle is somewhat "closed" and neat. And a third key criticism outlined by Schlesinger relates to Honey and Mumford's interpretation of "experience". According to Logan and Stuart (March-April 1987), experience can be seen as either: a) Concrete Experience (i.e. an event that *happens* to us), or b) Interpreted Experience (i.e. what we do with or to an event, or how we interpret it). Honey and Mumford treat experience as concrete experience. However, Schlesinger argues for a third interpretation: experience as meaning. Experience occurs in an individual's search for meaning, and the individual's interpretation of that experience is equally affected by values and meanings.

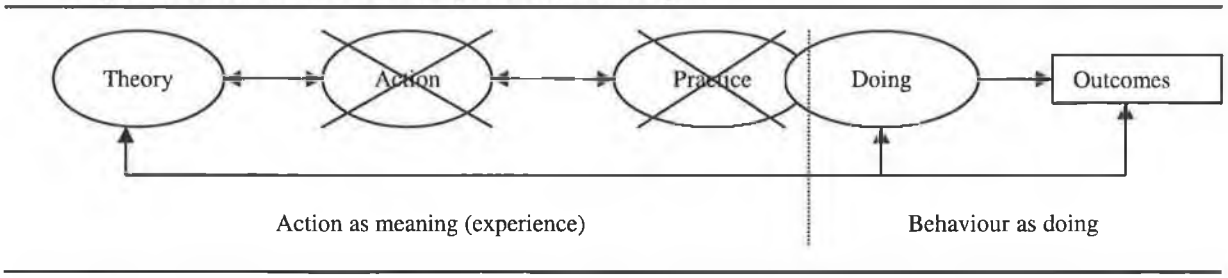
Following from this, Schlesinger has argued that experience can be referred to as meaningful action. In this way a distinction is made between *action as meaning* and *behaviour as doing*. In treating experience as an aspect of doing (rather than one of action), Honey and Mumford fail to acknowledge the interpretive dimension of experience. Figure 5 provides a diagrammatical representation of the distinction between action as meaning (experience) and behaviour as doing. When faced with a problematic situation, an organisation or individual must construct *theories* (interpretations and beliefs that guide behaviour), which are then grounded in *practice*, and ultimately explain outcomes; as Schlesinger (1996: 34) notes, "...what I *do* depends on what I *see through*". The limitations of the Honey and Mumford cycle are illustrated in Figure 6, which shows the elements of Figure 5 that are excluded in Honey and Mumford's theory. As can be seen from this, their theory fails to recognise that individual and organisational theories can help to generate radically transformed actions and practices. The learning cycle describes learning as being incremental and sequential. Schlesinger, by contrast, asserts that learning must be both transformational and incremental.

***Figure 5*: Actions as Meaning and Behaviour as Doing**



Source: Adapted from Schlesinger (1996:34)

***Figure 6*: Exclusions in the Honey and Mumford Cycle**



Source: Adapted from Schlesinger (1996: 34)

1.3 The Rationale For Training And Development

Within the literature, it is possible to identify a range of distinct perspectives, each advocating different reasons for the necessity of training and development, and for what it should achieve. The majority of these perspectives, with the exception of the Utility-Based approach, maintain that training and development should be approached from a strategic perspective, as an underpinning to an organisation's future capacity to compete.

The Resource-Based View of the Firm

The Resource-Based View of the firm advocates the necessity for the training and development of employees with a view to developing the value and rareness of these human resources. Companies can no longer rely on physical/tangible resources as a source of sustainable competitive advantage, as these resources can easily be acquired, imitated or substituted by competitors. Rather it is the intangible resources, which are

specific to a firm, that have the ability to offer this sustained competitive advantage (Roche *et al*, 1998). This argument is based on the theory developed by Barney (1991), who claims that, for a competitive advantage to be sustainable, it must be based upon resources which are *valuable*, *rare*, *inimitable*, and *non-substitutable*. On the basis of this argument, the employee training and development practices carried out by a company should be planned and implemented with a view to developing these features within the human resources that reside in the company.

A theory that is closely related to the Resource-Based View of the firm is the ***Intellectual Capital*** perspective. This perspective involves the assertion that organisations need to place less emphasis on land, labour, and physical and financial capital, and more emphasis on intellectual capital, if they are to realise future growth potential. The intellectual capital of an organisation is generally accepted as consisting of three elements (Mayo, 2000):

- **Consumer Capital** (*External Structural*): This includes relations and contracts with customers, brand names and images, and market share;
- **Organisational Capital** (*Internal Structural*): This includes organisational culture, systems, know-how, and patents;
- **Human Capital**: This includes the abilities and experiences of individuals and groups within the organisation.

Although it is possible to perceive the two types of structural capital (external and internal) as being the most valuable, given that they may be more enduring than employees, to do so would be in ignorance of the underlying importance of people in the development and maintenance of these structural resources. Following from Habermas (1984), it is the communicative interaction that takes places between human beings that underpins the creation of all intellectual capital, as these people form a social community of knowledge, the value of which is greater than the sum of the individual parts. Mayo (2000) has outlined five aspects of human resources that create value for a company in terms of its intellectual capital.

- **Individual capability**: relating to the knowledge, skills, abilities, and work and life experiences of employees.
- **Individual motivation**: relating to the motivation, ambitions and productivity of employees.
- **Leadership**: refers to the ability of management to communicate a consistent and clear vision to employees.
- **Organisational climate**: relates to the culture that prevails within the organisation, specifically in terms of its tolerance of experimentation and encouragement of innovation.
- **Workgroup effectiveness**: refers to the degree to which employees can cooperate supportively in groups, working towards common goals.

Mayo uses the following illustration to demonstrate that these aspects are highly interrelated, and that weaknesses in any one of the areas will be detrimental to the value of the company's intellectual capital.

***Figure 7*: Factors influencing the growth of human capital**

Source: Adapted from Mayo (2000: 533)

The role of employee training and development efforts is to focus on developing each of these qualities, with a view to improving the value that people add to the company's intellectual capital stock, thus helping the company to develop a strategic competitive advantage.

Human capital theory (a perspective which pays particular attention to the human capital dimension of intellectual capital), carries two core perspectives on the rationale for employee training and development. From an *organisational* perspective, the management and development of human resources is crucial for the development of core individual (and, by extension, organisational) skills and competencies, and for the creation and sharing of the tacit knowledge that underpins such competencies. From an *individual* perspective, an employer is obliged to take responsibility for ensuring that employees are offered the opportunity to pursue continuous development and updating of skills and competencies, in order to improve both the motivation and the employment prospects of these individuals. This argument also draws upon the psychological contract theory, which implies that the employer-employee relationship is characterised by an implicit understanding that the employer will invest in the development of the employee, in return for commitment and dedication of the employee to working towards the goals of the organisation. (Garavan *et al*, 2000; Garavan *et al*, 2001).

The Learning Organisation Perspective

Pedler *et al* (1988) have identified a "learning organisation" as one which provides learning for all employees, with a view to continuously transforming itself through reviewing and adjusting beliefs, behaviour and practices. The learning organisation perspective thus extends the concept of learning and development from the level of the individual to that of the organisation. It involves the creation of a culture of learning and continuous development, that encourages participation and innovation from all employees, and is tolerant of mistakes. Employees within the organisation must have at their disposal the necessary facilities and support to carry out such learning and development. The learning organisation perspective advocates a proactive approach to employee training and development, integrating it as a core element of the business strategy. Garavan *et al* (2000) have outlined a number of important ways in which employee training and development can be used to facilitate the development of a learning organisation environment:

- Developing a clear mission and vision
- Encouraging an ethos of shared leadership and involvement

- Developing an organisation culture that is facilitative of active experimentation
- Facilitating knowledge transfer across organisational boundaries
- Encouraging employees to cooperate and work together in teams
- Developing the necessary skills and competencies to realise the learning organisation vision

The Utility-Based Approach

The training and development approaches outlined in the preceding analysis all view human resources as having creative capabilities that are crucial to the future success of the organisation. The Utility-Based view of employee training, by contrast, views the capabilities of employees only within the confines of the needs of specified roles within the organisation. In this way, the rationale for organisations to pursue training and development activities applies only when such interventions are necessary to bring employees' skills and capabilities up to the necessary level, to meet the skills and capabilities required by the activities carried out in the organisation. Employee training and development is therefore seen not as an investment, but as a necessary expenditure. On the basis of this approach, such expenditure should be minimised where possible. (Roche *et al*, 1998).

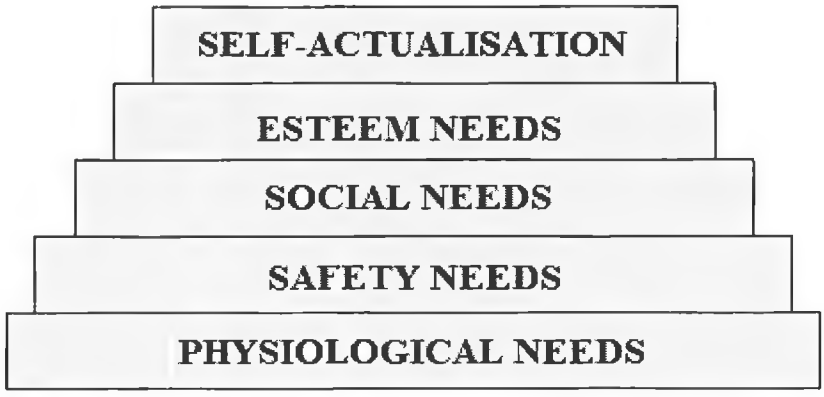
1.3.1 **Theories of Motivation**

A further rationale for expenditure on employee training and development emerges from the theories of human/employee motivation that have been developed by Maslow (1954), Herzberg *et al* (1959), and McGregor (1960). The general argument that emerges from these theories is that the highest levels of employee motivation can be achieved when employees are offered sufficient opportunities to develop the full potentials that they possess as creative human beings. Smith (1998: 56) has defined motivation as follows: "...it [motivation] represents a decision-making process through which the individual chooses desired outcomes or results and sets in motion the behaviours appropriate to acquiring them".

Maslow's (1954) theory maintains that human needs are formed in a hierarchy of importance, which has important implications for how people are motivated. The

core of the argument is that, the next level of need that remains unsatisfied is the one that acts as a source of motivation to the individual, and a need that has already been satisfied thus ceases to act as a motivator. The "hierarchy of needs" (which is illustrated in Figure 8) consists of five levels: ***Physiological*** needs form the base of the hierarchy, and they relate to those things that are required for basic survival, such as food, air and water; ***Safety*** needs include security of tenure at work and income security; ***Social*** needs relate to the desire for social interaction and a feeling of belonging; ***Esteem*** needs relate to the need for self-esteem, achievement and recognition; and ***Self-Actualisation*** needs, which become the ultimate source of motivation once all of the previous needs are satisfied, relate to the need to keep reaching new possibilities. From this theory, it follows that employees who feel relatively safe and secure in relation to their job and standard of living will be motivated by any opportunities for participation, recognition or personal development.

***Figure 8*: Maslow's Hierarchy of Needs**



McGregor (1960) has drawn upon some elements of Maslow's hierarchy of needs in the development of his theory of motivation. McGregor coined the terms *Theory X* and *Theory Y* to describe two alternative management attitudes with regard to the motivation of staff. Theory X (which is associated with "hard" HRM) represents an attitude that was prevalent at the time when McGregor developed this theory. Managers subscribing to Theory X hold a somewhat negative set of assumptions about employees' motivational levels:

- Employees dislike work and will avoid it if possible

- Employees must be coerced into exerting effort
- Employees seek to establish security and avoid responsibility

As a result of these assumptions, Theory X managers have tended to focus solely on financial incentives to ensure that employees continue to conform. In doing so, the physiological and safety needs of employees remain relatively well catered for, with the result that these needs will no longer act as a source of motivation. Managers subscribing to Theory Y (which is associated with "soft HRM") hold an alternative set of assumptions:

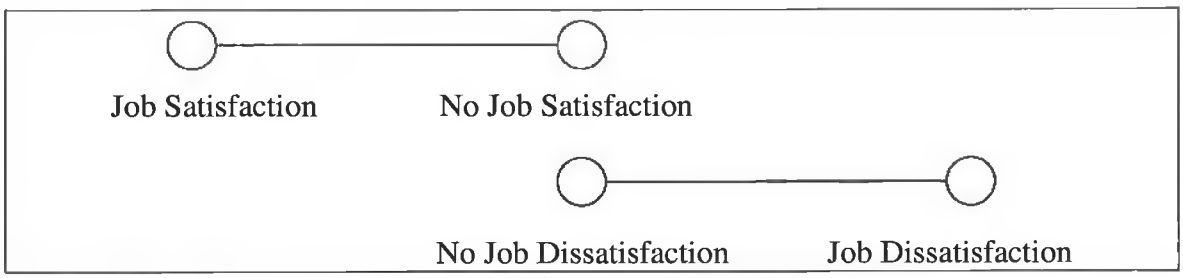
- It is natural for people to want to work
- Employees will exercise self-control and motivation towards the achievement of organisational objectives if they are committed to these
- Social, esteem and self-actualisation needs are the ultimate sources of motivation to achieve goals
- If given the opportunity to do so, employees will seek responsibility and active involvement
- Most people possess the ability to exercise a high degree of creativity and innovation in the solution of organisational problems
- At present, organisations are not developing their human resources to their full potential

If managers hold the assumptions related to Theory Y, individuals will be given the opportunity to seek fulfilment of their social, esteem and self-actualisation needs. Theory Y highlights the fact that "...the limits on human collaboration in the organizational setting are not limits of human nature but of management's ingenuity in discovering how to realize the potential represented by its human resources" (McGregor, 1960: 48).

The *Dual Factor Theory* developed by Herzberg *et al* (1950) also assumes that employees are motivated by opportunities for recognition and personal advancement. Herzberg *et* al differentiated between "Job Satisfaction" and "Job Dissatisfaction", which are affected by different elements of a job. While job dissatisfaction can be prevented by the presence of "Hygiene Factors", these factors do not actually create job satisfaction, but rather a lack of job dissatisfaction. Job satisfaction, on the other hand,

can be created by the "Motivators", where the absence of these motivators does not cause job dissatisfaction, but rather a lack of job satisfaction. One implication of Herzberg's argument is that employees are motivated not by extrinsic factors (such as pay and job security), but rather by intrinsic factors (such as recognition and advancement). Figure 9 provides a diagrammatic representation of the distinction between job satisfaction and job dissatisfaction. Table 1 lists the main motivators and hygiene factors.

***Figure 9*: Distinction between Job Satisfaction and Job Dissatisfaction**



Source: Adapted from Smith (1998: 59)

***Table 1*: Herzberg's Dual Factor Theory**

HYGIENE FACTORS	MOTIVATORS
Pay	Sense of Achievement
Job Security	Recognition by Others
Working Conditions	Responsibility Within the Job
Company Policy and Administration	Advancement and Personal Growth
Level and Quality of Supervision	Work Itself
Interpersonal Relations	
Very Dissatisfied	**Neither Satisfied nor Dissataisfied** — **Very Satisfied**

Source: Adapted from Naylor (1999: 545)

1.4 Models Of Training And Development

The preceding analysis was concerned with clarifying the various arguments as to why training and development of employees is a necessary activity. Extending from this, there exists a range of theories detailing how organisations do, or should, approach the planning, design and implementation of training and development interventions.

Sambrook and Stewart (2000) maintain that, in order to integrate and foster learning as an integral aspect of organisational life, organisations must ensure that management at all levels are supportive and encouraging of this learning ethos, ensuring that employees have available to them the facilities (these will include human, physical, financial and time facilities) to realise the potential for learning. Human resource development personnel should view their role as that of a learning facilitator, rather than merely as being responsible for conducting or organising training. And finally, employees must be encouraged to take the ultimate responsibility for ensuring that effective learning occurs.

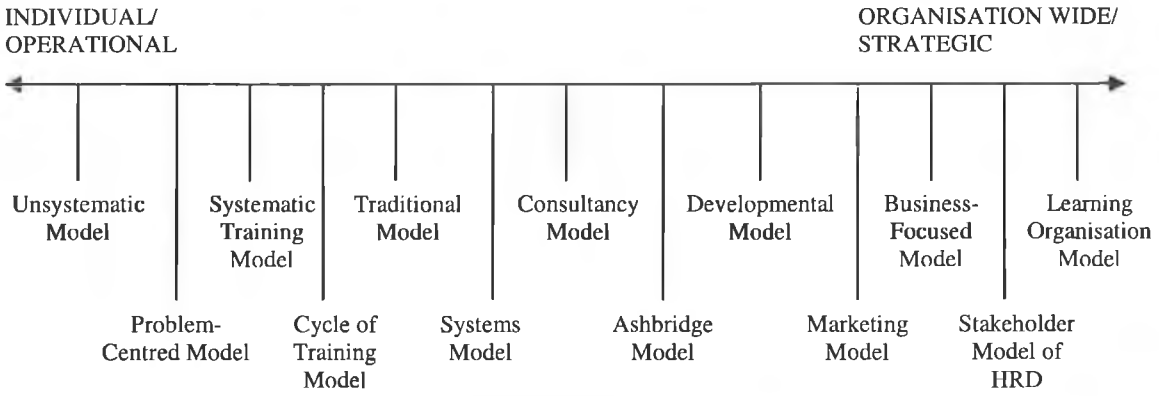
This represents an ideal situation however. There is in fact a wide range of alternative approaches that organisations may choose to adopt in relation to training and development. Garavan *et al* (1995) provide what is perhaps the most comprehensive analysis of the varying approaches to training and development that can be identified in the context of Ireland.

They have identified thirteen alternative "models" of training and development that may be adopted by an organisation. What is significant is the shift from unsystematic, ad hoc models to increasingly systematic and strategic models. Prior to the 1960s, models were operational in focus, with training only being offered to a small minority of skilled workers. From the 1960s onwards, systems thinking emerged, and the progression from operational training models to increasingly more strategic ones gained speed. However, at this early stage, the primary focus of the models was still on individual, systematic approaches, laying emphasis on formal, off-the-job training, in an attempt to provide more structure to training activities than earlier models (which favoured the "sitting by Nellie" approach) had done. With the development of the more recent models, the focus has shifted towards the organisation, recognising the strategic importance of the training and development function. These models adopt a more holistic approach, incorporating formal and informal training through on-the-job and

off-the-job activities, and also recognising the training needs of both the individual and the organisation.

Garavan *et al* make use of a timeline to illustrate the development of training models, showing a progression from ad hoc, operationally-focused models, to more planned and strategic models. This timeline is illustrated in Figure 10, and the remainder of this section outlines some of the key models from this timeline.

***Figure 10*: Continuum of Training and Development Models**



Source: Adapted from Garavan et al (1995: 302)

Pre-1960s Training models

Before the evolution towards systematic and strategic models that commenced in the 1960s, two models of training were prevalent. The first was the "Unsystematic (Fragmented) Model", which is common in many small and owner/manager companies. Training is seen as a cost to be avoided, and is often only introduced following external pressure. The prevalent method of training in organisations adopting this model is the "sitting by Nellie" approach, and what training is provided is not the result of systematic needs analysis. The "common skills" approach adopted by companies using this model assumes that one common training programme will be sufficient for all employees falling within a specific category.

The second model of training to be developed before the 1960s was the "Problem-Centred (or Planned Maintenance) Model". This model is highly reactive in nature, with training being provided in response to urgent skill requirements. Needs identification may occur in one of two ways: either informally, involving the supervisor

or manager identifying a problem and training solution, and subsequently asking the training specialist to organise this training activity; or more formally, as the result of training needs analysis carried out by the training specialist. One shortfall of this model is that the results of needs identification and prioritising of problems may be inaccurate, since neither of these activities is carried out in a systematic way. A further problem is that training interventions are designed to bring employees up to a set skill standard, and not beyond.

Training Models From the 1960s Onwards

The "Systematic Training Model" was developed with a view to making training activities more professional, and in the process adding credibility to the role of training specialists and the training function. In organisations adopting this approach, top management determine the overall objectives for the organisation, and these are then categorised into targets for each functional area. Modern interpretations of this model advocate four key stages in providing a training intervention:

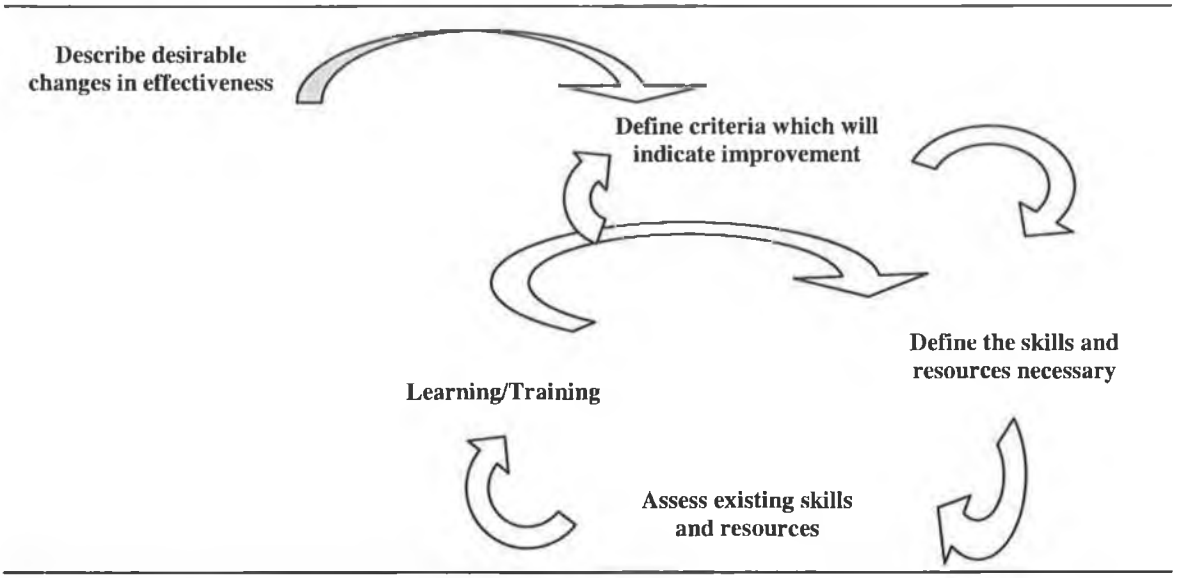
1) Analysis and identification of (macro level) organisational training requirements
2) Identification of (micro level) job training needs
3) Programme design
4) Programme evaluation and feedback

Organisations adopting this model tend to favour off-the-job training activities, due in part to the weaknesses of the unsystematic model, but also in an attempt to ensure that learning is formalised, standardised and measurable. However, the emphasis on standardised and measurable learning has the consequence of obstructing any learning that could occur above and beyond the stated objectives. This approach to learning also neglects to take account of differences in learning styles and levels of motivation.

Garavan *et al* note that many elements of the systematic training approach still remain, representing themselves in most organisations that believe their approach to training is systematic and planned. However, the model has been developed upon, and refined, by several theorists. One example is the Effectiveness Model (underpinned by the "Cycle of Training" approach), which was developed in an effort to overcome one specific failure of the systematic approach: the risk of the training sub-system

becoming independent of the organisational context. This model proposes a cycle of training, which takes account of organisational context by encouraging managers to become involved in the processes of job analysis and needs identification, and also in the design and delivery of training interventions. Evaluation is built into each stage of the cycle, and managers are also responsible for ensuring the transfer of learning into the workplace. The Effectiveness Model is illustrated in Figure 11.

***Figure 11*: The Effectiveness Model**



Source: Adapted from Garavan et al (1995: 312)

Since these early attempts at creating planned and systematic training interventions, the emphasis has shifted increasingly towards strategically focused (rather than operationally focused) interventions. The "Developmental Model" moves away from the Experienced Worker Standard (EWS) principle (underpinning the systematic approach), which assumes that learning should only occur until the trainee has reached the common standard. The developmental approach (termed "Continuous Development") advocated by the British Institute of Personnel and Development views development as a lifelong process. Training and development activities are designed to help the organisation to cope with change, by establishing a close fit between managers' development requirements and organisational objectives. Several characteristics underpin the developmental approach:

- If necessary, individuals should take responsibility for ensuring that their own developmental needs are met, although ideally the responsibilities for development should be shared between the individual and the organisation.
- The use of personal learning contracts can improve the success of training and development activities.
- Although development is seen as primarily taking place on the job, it should nonetheless include formal and informal activities.
- Both organisational and individual development requirements must be taken into consideration.

Garavan *et al* note that this model also has its weaknesses. Since developmental interventions usually occur in response to a particular problem/opportunity, managers may be of the impression that training and development activities are carried out without any guiding strategy, taking place as isolated and unrelated events.

The "Business-Focused Model" argues that it is not enough just to invest in training and development, if the organisation wants to ensure that training interventions will make a significant contribution towards the achievement of corporate goals. Instead, training interventions must be guided by a human resource strategy, which in turn fits with corporate strategy. Inherent in this model is the necessity for systems of strategic environmental monitoring (in order to identify likely changes in organisational needs) and strategic planning (in order to deal with these changing needs). Numerous factors must be considered. *Business strategy* must be considered, in terms of alterations in product design, quality procedures, manufacturing processes etc. The *external labour market* must be considered, since the organisation may decide to recruit externally, rather than develop internally, if the required skills are readily available. The *internal labour market* is of crucial importance, and the organisation must consider the effectiveness of mechanisms in place to ensure the quality of the internal labour market. *Internal actors and systems* should be considered, in relation to the support of top management and line management for the training function, the extent to which the organisation's culture supports learning, and whether or not there are mechanisms in place to make line management available to participate in the training function, by relieving their responsibilities elsewhere. The organisation must consider the availability of *external support for training*, in the form of sources of finance,

government legislation, customers and suppliers. And finally, any possible constraints to training and development must be considered. For example, where the required training demands heavy investment of resources, such as time or finance.

The "Learning Organisation Model", based on the learning organisation approach discussed earlier, sits at the far right of the timeline advocated by Garavan *et al*, since this model sees training as being an organisation-wide phenomenon, and one which must be closely linked to organisation strategy. However, there has been much deliberation over the exact nature of the learning organisation model. Senge (1990) has made a valuable contribution to the literature on the learning organisation. He has outlined five elements that must be present in a learning organisation. These are:

1) **Personal Mastery**: the ability to identify what is important to the individual
2) **Team Learning**: the ability to critically analyse current assumptions and allow new thinking to occur
3) **Mental Models**: the ability to recognise how internal perceptions of the world affect action within the organisation
4) **Shared Vision**: the capacity to create commitment within a group
5) **Systems Thinking**: the capacity to identify holistic solutions. Systems thinking serves as an integrating force for all the other elements.

However, the learning organisation model has been criticised for its lack of precision. Moreover, the model represents an "ideal type" situation, as opposed to one which can realistically be achieved by an organisation. Of the range of models, this model is at the extreme of those advocating how training and development considerations should be approached by an organisation.

1.5 Training And Development Methods

Whatever an organisation's approach to, or model of, employee training and development, when an intervention is needed the organisation must make a number of crucial decisions relating to the method(s) through which the training or development will take place. Ouellette (April 26, 1999) has acknowledged that, for Technology sector employees, the regular up-dating of their knowledge and skills is imperative to

their employability. However, it is not always possible for these employees to take time away from work to update their skills on a regular basis. This must be a major consideration when a company is choosing the best method(s) by which to deliver the required training. Also, the size of a company, and the location and geographical dispersion of employees will inevitably be key determining factors in terms of the types of methods that will actually be feasible (Tarr, 1998).

Weiss (January 2000) has suggested four issues that a company should consider when deciding on which method(s) to use to deliver training. Firstly, the participants (or learners) should be identified, so that an analysis of their current skills and work experience can be carried out. Garavan *et al* (1995) suggest that a range of individual learner characteristics should be taken into account, including age, educational background, motivation, and preferred learning styles. Secondly, if the trainers have already been selected or identified, the capabilities and strengths of these trainers in relation to specific methods should be considered. The third consideration relates to the level of resources that can be dedicated to the training, particularly time and budget. The budget available for the training will have to be considered in conjunction with the number of employees who will be trained, as some training methods will obviously be associated with a lower per capita cost than others. Time considerations may be affected by the urgency of the skill need, the length of time it would take an employee to complete a training or development activity/course via a particular method, and the amount of time that employees can be released from work for. Finally, the physical limitations of the chosen training environment will have an affect on the types of methods that can be employed for the training.

Many alternative training methods are available to the organisation, and as technologies advance the list grows. Categorisations of methods vary, and some are more extensive than others. Also, disagreement exists around the classification of some tangible equipment (such as videos or slides); while some authors would class these as methods of training, others would class them as training tools/aids, which are used to support the method(s) (these will be discussed in section 1.7 of this chapter). The following list of training methods has been identified from the literature, and the uses and limitations of each are outlined.

1.5.1 Conventional Training Methods

The conventional training methods outlined below are those that have been widely used for training and development purposes to date, and they generally involve the trainer and the trainee meeting face to face. Although conventional training methods and computer-based training methods have been separated here for the purposes of classification, it is quite possible that some of these methods (for example, open learning and formal/professional education) may also incorporate elements of computer-based training.

On-the-Job Training: Weiss (January 2000) has claimed that on-the-job training is generally the sole form of training that is offered to employees during the initial years of a company's existence, and that in this scenario the training is generally given to new recruits by their supervisors. However, this situation can also be found in mature companies. On-the-job training is typically associated with the "sitting by Nellie" approach, whereby a new employee is "shown the ropes" by a more experienced employee. Experiencing the task first hand, and from an experienced employee, can result in the trainee learning a significant amount during the training session, and the learning transfer is also likely to be high (Read and Kleiner (1996). With this method it is possible for the trainee to receive individual attention, which may result in higher motivation. Van der Klink and Streumer (2002) note that on-the-job training is a practical option for companies that require just-in-time training of employees. Gilmer, the president and general manager of a Texas-based telephone company, has found that training on-the-job offers a valuable solution to the company's training needs, as it does not require the employees to leave their jobs (Rumsey, May/June 2002). The cost of on-the-job training is also relatively low compared to other training methods. However, it is important not to underestimate the costs associated with this method, particularly in terms of wage or salary costs of the trainer and trainee during the training, inefficient use of resources while the trainee is learning, and the possibility that the trainee may pick up bad habits from the trainer.

Videotapes: In an analysis of the top ten training methods (in terms of frequency of use) that are used in US companies, Read and Kleiner (1996) have reported the videotape as the most frequently used method. They outline two main advantages of this method, when used in conjunction with a lecture that may account for its

popularity. Firstly, television tends to be a popular pass-time with most people. This means that participants may find the videotape more appealing and effective than methods which demand the use of only certain senses. Secondly, audience participation and feedback can be encouraged if the videotape is stopped at key points during the lecture. However, if the video is presented in such a way that it takes over the lesson, learning will be obstructed, since a video is not as effective as a live lecturer in attracting audience attention. Ellet (December 1999) has noted that, while ideas can be expressed adequately in print, they can be much more effectively demonstrated using videotapes, as these have a distinct capability to provoke the emotions of the viewer. Ouellette (April 26, 1999) considered the use of the videotape as a method for training Technology employees, and concluded that it is a useful means of allowing the learner to take the material home and proceed through it at their own pace. The main drawback, that he identified, of using a videotape for technology skills training was that it required the learner to have access to a video player and a television. This is not a significant factor, as both of these pieces of equipment are readily available to most people today. Steed (1999) has pointed out that the videotape makes it possible for a lecture to be recorded and made available to a large number of geographically dispersed learners. A videotape-based course used by the Manufacturers Representatives Research Foundation to train its customer sales representatives was found to be a very successful method for allowing them to meet their training requirements in-house (Manufacturers Agents National Association, August 2001).

The use of ***Films*** for the purposes of training and development has advantages and disadvantages that are closely associated with the use of videotapes. Read and Kleiner (1996) suggest that films are particularly useful for reducing or enlarging, slowing down or speeding up, a process or task for closer analysis.

Audiotapes: Steed (1999) has suggested that audiotapes are a much used method for the teaching of languages, and can be an effective means of teaching a wide range of subjects. However, the main drawback of the audiotape is that it draws solely upon the learner's hearing sense, and may therefore cause the learner to become bored and de-motivated. Ellet (December 1999) argues that the audiotape should not be rejected on the basis of it focusing on only one of the learner's senses. Rather, he argues that over-use of a learner's senses may cause the learner to be less creative in how they perceive and interpret the training content. Ellet proposes that the audiotape is a practical

training method for people who travel regularly, as it allows them to study the material while travelling. Read and Kleiner (1996) are less enthusiastic about the benefits of this method, suggesting that it is not an effective training method if used on its own. The material presented in an audiotape would be more easily digested as printed copy, and the audiotape cannot incorporate pictures or diagrams. According to them, the primary identifiable advantage of this method is its low cost of production and delivery.

Lectures: The lecture is often used in formal education programmes. It generally involves a unidirectional speech from a lecturer who is addressing a large group of learners. Two problems arise from this arrangement. Firstly, the learner generally has little opportunity to interact with the lecturer, so therefore must keep up with the pace at which the lecture is proceeding. And, secondly, learners cannot effectively interact with one another during the lecture. Garavan *et al* suggest that the lecture method is unsuited to the teaching of job-related skills, as it involves no element of interaction. Read and Kleiner (1996) do, however, believe that it is possible to arrange a lecture situation to facilitate periodic group discussions during the lecture, thus reducing the unidirectional nature of the method. Luccioni (1998) also suggests a number of ways in which the lecturer can create a lecture centred around dialogue rather than monologue: the lecturer should, as far as possible, memorise the names of attendees, and ensure that people are directly addressed by their names during the lecture; in order to ensure that the whole group feels involved, the lecturer should make certain that the types of people who are addressed individually represent the diversity of the group; a range of thought-provoking questions should be scattered through the lecture for attendees to answer, in order to keep them focused on what is being said; and finally, members from the group should be asked to volunteer during the lecture, to assist with demonstrations or explanations of the concept under discussion.

Role Plays: The role play method requires learners to act out a character or part in a given organisational situation. The role play is governed by a set of rules, which the participant must follow in interacting with the other role play participants. In doing so, they become fully aware of the course of action taken, and develop an understanding of the interactions that would take place in such a situation. However, Hale-Feinstein *et al* (2002) note that there is a risk of participants developing a false sense of the interaction that would take place in a real situation, as all the participants in the role play may be

novices in the subject matter. For this reason, they stress the importance of ensuring that the participants are provided with some basic knowledge of the subject before the activity takes place. Garavan *et al* highlight the benefit of the learning-by-doing approach associated with role plays. The benefits of the role play method can also be used to support other training methods, such as lectures or case studies. However, employees may not always be willing to offer full participation to such a method, and there is a further risk that the possible learning outcomes may be jeopardised by the participants not taking the activity seriously.

Case Studies: A case study is a record of an event or series of events drawn from a real life situation. This situation may represent an example of an event that was handled successfully, in which case the task of the participants is to learn from the actions taken; or it may be an example of an event that was handled poorly, in which case the participants must determine how it went wrong, and what alternative actions may have been taken. Simmons (Taylor and Lippitt, 1975) has analysed the effectiveness of the case study method for the development of analytical skills among managerial staff. He has noted that a well designed case study should draw upon the previous experience of the participants, be credible and challenging. If these conditions are satisfied, the learners will benefit from both the content and the method of the case study. The *content* of the case study induces learning because the participants are often required to elicit further information from a range of sources, including the experience of other participants, or from library material. The *method*, or process by which the case study is carried out, is beneficial in the sense that it encourages participants to express their own views on the issue, and to then consider the views of other participants. From this experience, the participants may learn to critically assess their own views on the basis of information received from others. It also provides an opportunity for the participants to develop their interpersonal skills. The main drawback associated with the case study method is the risk that participants who are not familiar with this method of experiential learning may fail to comprehend the purpose and goals of the exercise, and may therefore not perform a full analysis of the issues involved.

Games: As a training method, a game is represented as a challenge facing an organisation, or a functional area of an organisation, and the participants must embark

upon this challenge, usually in groups. The participants are generally provided with demographic, financial or other details about the company, and on the basis of this must make a number of decisions (for example, how to locate resources or market a product/service) (Hale-Feinstein *et al*, 2002). Games are often used for the purpose of management development (Garavan *et al*, 1995). Loveluck (Taylor and Lippitt, 1975: 217) defines a management game as a "dynamic teaching device which uses the sequential nature of decisions, within a scenario simulating selected features of a managerial environment, as an integral feature of its construction and operation". He highlights the significance of the sense of involvement that participants feel when they are deciding upon which actions to take in a game, and waiting for the outcomes. Organisation and intelligent cooperation are crucial aspects of a game of any kind; in a business game, the importance of organisation and cooperation in relation to business decisions is brought to light. According to Loveluck, the necessity in the game for the learner to discover for him/herself the link between certain actions and the solution of the problem is likely to result in a significant level of learning and retention of that learning. He does also outline some weaknesses of this method. Firstly, the nature of the game may on the one hand result in participants not taking the learning outcomes seriously, or, on the other hand, becoming so enthused by the game that they feel more learning has occurred than actually has. There is also a risk that participants may become so competitive that bad feelings emerge between each group. Finally, Loveluck points out that, in order to be successful, the game constructor must be able to limit the choices that players can make to a pre-defined list. This design may be seen as being at odds with the need for companies to foster an ethos of innovation and original thinking among its staff.

Conferences / Discussions: Conferences and discussions generally involve a group of people meeting to discuss a given topic or set of topics. Although this group may be larger or smaller in size, a smaller group will allow for more interaction between participants. Indeed, it is the opportunity for increased interaction, and the associated sense of involvement and motivation that is likely to arise from this, that distinguishes the learning potential of the discussion/conference from that of the lecture. Weiss (January 2000) does, however, point out that such methods of training and development are inappropriate for some training requirements, most notably for the acquisition of job skills. He also highlights the important role of the discussion facilitator in ensuring that

attendees participate in the talk, and that there is agreement between the expectations of participants and the content of the discussion. By contrast, Kremer and McGuinness (1998) advocate an alternative method of conducting discussions, in which the facilitator is present at the discussion but remains completely detached from the conversations that take place. This approach is based upon a method that is being utilised by the Queen's University, Belfast, and is aimed at improving the ability of students (as future labour market entrants) to communicate effectively in teams and to exercise independent thought and action.

Formal / Professional Education: This training or development usually occurs outside of the place of work, and is often carried out, and accredited, by further or higher educational institutions or by professional bodies. Garavan *et al* (1995) have suggested that the costs of these courses may be considerable, when one considers the sum of the course fees, travel, subsistence (and perhaps accommodation) expenses, and wage or salary costs. Nonetheless, these courses are becoming increasingly flexible in order to accommodate the needs of employees with demanding work schedules, and are often available on a short full-time, or part-time (evening or weekend), attendance basis. As many of these programmes are accredited, they often lead the learner to become a member of a professional body, and/or to develop expertise in the subject under study. Mercer (April 1999) has claimed that the providers of formal and professional education will in coming years experience deterioration in the demand for this type of education, in light of the growing need for education and personal development through lifelong learning.

Open Learning (Non-Electronic): Open learning offers flexibility to the learner in terms of what is studied, and how and when it is studied. As one might expect, a great deal of this is carried out through distance learning. With distance learning, the learner is not required to be in the same location as a tutor or trainer, but can study in any place that is suitable for them. Non-electronic open and distance learning courses may utilise one or a combination of the media available, including printed textbooks and worksheets, audiotapes and videotapes (Steed, 1999). Tarr (1998) has highlighted the benefits that flexible learning courses can offer to small companies that would otherwise find themselves unable to provide training to their employees. She has outlined several key advantages that such companies could elicit from open learning

solutions. Firstly, this method is likely to prove less costly than other methods where the learners and the trainer must be present at the same place and at the same time. Learners can proceed through the course at their own pace, and can also refer back to the material if they need to refresh on a certain aspect. Moreover, because the individual learners are ultimately responsible for ensuring that they discipline themselves to complete the course, they are likely to feel a greater sense of ownership and involvement with the learning. Mercer (April 1999) has noted the increasing contribution that open learning solutions are making to meeting the need for longer-term developmental activities that will preclude the rapid obsolescence that is associated with skills based training in today's knowledge-based economy.

1.5.2 **Computer-Based Training Methods**

"Computer-based training (CBT) is a generic term for training delivered, tested or managed by a computer..." (Tucker, 1997: 4). CBT takes advantage of the media possibilities presented by computers, which include text, still pictures/graphics, animated graphics, video, audio and data. Early attempts at CBT, during the 1960s and 1970s, were largely unsuccessful, stemming from the fact that many of these packages were developed by computer programmers who had little or no knowledge of individual and organisational training needs. In addition, early CBT packages offered little opportunity for the user to interact with the courseware, with such interaction often being limited to instructing the computer to proceed to the next screen (Steed, 1999; Whalley, 1998). However, computer capabilities and course design techniques have progressed significantly since these early days. Computer-based training packages are now being developed with the needs of the organisation and the end user in mind, and these packages present vast opportunities for the learner to interact not only with the computer, but also with other learners and/or with course tutors or trainers. Respondents to an Open University Business School survey (Mercer, April 1999) conducted in the UK in 1998 believed that by 2020 companies would be relying a great deal more on computer-based alternatives for delivering training. In particular, it was believed that the percentage of training time dedicated to Internet-based training would increase from 4% in 1998 to 14% in 2020, and that the time dedicated to training through in-house computers would increase from 6% to 13%. As the cost of computer and communications technologies continues to fall, these technologies will increasingly

prove to be attractive alternatives to traditional forms of education and training delivery (Williams, 1998). Also, by exploiting the media capabilities of these technologies, organisations and trainers can adopt new and innovative ways of delivering training to employees (Long and Smith, 2004). Little (2002) has argued that the companies that are able to prosper during times of economic stagnation are those that embrace technological developments not only to improve processes and performance, but also to manage the knowledge and skills of the organisation.

Using computer and communications technologies to deliver training offers a number of distinct advantages over conventional training methods. Tucker (1997) summarises these advantages from the viewpoint of the organisation and from that of the learner.

Benefits for the Organisation:

- The same information is provided to each learner on each occasion.
- Pre- and post-training tests can help the organisation to track the learning of each individual.
- CBT allows the organisation to cater for the requirements of each individual learner, as individuals can concentrate on those topics of which they have little or no knowledge, while skimming through topics that they are familiar with.
- It is believed that individuals who learn through CBT methods exhibit greater retention of learning than those who learn through conventional methods.
- CBT offers more flexibility to fit training times around organisational needs, and many organisations find that staff are motivated to study outside normal working hours.
- Using CBT materials allows employees to refer back to the course content if they encounter problems in transferring the learning to the workplace.
- Related to the previous advantage, there is minimal cost associated with employees taking a refresher course or revising the content.
- Cost savings can be realised as a result of a number of characteristics of CBT. In particular, travel, accommodation and subsistence costs are not an issue when the learner does not have to travel to a training course; and employees

can organise learning times to ensure that they do not clash with busy periods at work.

- Training can be carried out when it is needed, thereby increasing motivation and transfer of learning to the workplace.
- And finally, computer-based, flexible learning approaches often provide a valuable solution to organisations that would otherwise be unable to allow employees to leave work for training.

Benefits for the Learner

- The learners can progress through the course at their own pace.
- With computer-based training, employees may be motivated to proceed through the course more quickly.
- In conventional training courses learners may be worried about making a mistake in public or may be reluctant to ask any questions that they may have. With computer-based training, learners have the privacy, and therefore the sense of security, to practice and to seek out the answers to any questions that they may have.
- Learners can concentrate on only those parts of the course that they need training on.
- Many CBT courses allow learners to make mistakes and input wrong answers in order to learn by discovery.
- Employees can receive training without the worry of having to leave their home and work to receive the training.
- Individuals will be more willing to learn if they can do so at times chosen by them.
- Being able to receive training for a new job requirement as and when it is needed is a valuable source of comfort and support to the learner.
- Finally, when employees are using the training materials, the knowledge that the organisation is investing in their development will make them feel valued, and this in itself will be a source of motivation.

Some computer-based training materials (notably CD-ROMs and computer-based simulations) are designed to run on an isolated computer, and no interaction with other computers or people is possible. However, it is now very easy for organisations to connect numerous computers to a network, linked via a central server. Training materials stored on this central server can be accessed through any computer connected via an Intranet, an Extranet or the Internet. Both types of computer-based training – isolated and network-connected – will be discussed in the following sections.

Unconnected Computer-Based Training Methods

Computer-Based Simulations: A computer-based simulation represents the behaviour of a model which depicts or replicates some element(s) of reality (Hale-Feinstein *et al*, 2002). A simulation that is designed for employee training or development may replicate the organisational environment, allowing the user to participate in a dynamic cycle of experimentation in which he/she makes decisions in relation to several areas of the business (such as marketing, human resource management etc.) and waits to learn the performance outcomes of these decisions (Gopinath and Sawyer, 1999; Whalley, 1998). The simulation, as a method for the delivery of training, is often described as being on a continuum with the game, each at opposing ends. Unlike games, which may bear only a very indirect relation to reality, simulations are intended to directly represent the relevant element(s) of reality. Due to the high cost associated with the development of a simulation, the use of this method is often confined to situations in which mistakes made by the learner would prove very costly or dangerous; an obvious example is that of flight simulators. However, organisations may also make use of this method to provide learners with a safe environment in which they can get a feel of the real decisions and actions involved in a given situation. For example, a computer-based restaurant management simulation exercise known as "Cornell Restaurant Administration Simulation Exercise" (CRASE), which was developed in Ithaca, New York, has been made available to over one hundred hospitality management schools worldwide. The simulation is used by industry and by educational institutions to develop the accountancy skills of current or future managers in the hospitality industry. The exercise involves the use of a simulated marketplace in which teams of managers or students must compete in the

management of their restaurants. Decisions and actions are based around a range of business statistics that are generated by the simulation, including profit-and-loss accounts, balance sheets and other data relevant to the accountancy element of management. This simulation exercise has been adopted as part of the hospitality and tourism management courses offered at the University of Ulster, Northern Ireland. The experience with the use of the simulation exercise here has been positive, as the competitive nature of the exercise has been found to trigger motivation and enthusiasm amongst participants. (Fawcett, 1996).

Gopinath and Sawyer (1999) note that business simulations are widely used for management development initiatives that seek to develop skills and competencies related to business strategy decision-making. Evaluating the effectiveness of learning that occurred through a simulation of companies operating in the athletic footwear industry, they conclude that computer-based simulations are effective in reinforcing the learning objectives of a development exercise. The experiential nature of computer-based simulations allows the participant not only to understand the underlying knowledge, but also to learn how to apply that knowledge in a practical setting. Gopinath and Sawyer also argue that the group decision-making process involved in a computer-based simulation is instrumental in allowing learning to occur.

CD-ROMs: With the emergence of the computer as a means of delivering training content, the CD-ROM (Compact Disc - Read Only Memory) represented one of the most popular forms of CBT. An important advantage of this method is that it offers the possibility of significantly reducing the per capita cost of training and development, when compared to conventional methods such as formal/professional education. Ouellette (April 26, 1999) contends that CD-ROMs provide a valuable solution to technology companies in terms of being able to train employees without having to schedule training sessions at times that may not be appropriate for all participants. Using this method of training also allows these companies to provide, at a low expense, refresher or revision training to employees on elements that they may need to touch up on. A CD-ROM is capable of storing text, audio, high-resolution graphics and full motion video data, and can retrieve this information at an impressive speed (Williams, 1998). However, this method is not without its disadvantages. Some of these disadvantages stem from the elements of CD-ROMs that are the source of its main advantages as a training method. For example, while it is considered to be beneficial

that employees can study at their chosen time (and often place), and without the presence of a tutor, these characteristics also mean that it is much more difficult to track the progress that employees are making through the course, and indeed whether they are accessing the material at all. A further disadvantage stems from the permanent nature of material contained within a CD-ROM; courses can very quickly become obsolete, as amendments or additions cannot be made to the material. Also, when a CD-ROM is used as the sole method for delivering training, learners may feel isolated and unmotivated due to the absence of a tutor or peers with which to discuss any issues that they may have. Computer and communications technologies have progressed significantly since CD-ROMs were first used to deliver training and development material, and network-connected CBT methods can go some way towards tackling the disadvantages associated with isolated CBT methods. (Little, 2002; Ouellette, April 26, 1999).

Network-Connected Computer-Based Training

Network-connected CBT materials can be transmitted through an Intranet, an Extranet, or the Internet. These networks make use of Web technologies and hypertext linking to deliver content from a server computer to client computers (CSBS, 2000; Edenius and Borgerson, 2003; Little, 2002; Long and Smith, 2004; Taylor, 2002). Learners can either download the training material from the server and work through it offline, or they can access the material interactively whilst online.

If the material is transmitted through an ***Intranet*** it can be accessed from any client computer connected to the network without actually connecting to the Internet. An Intranet is an organisation's closed, internal and private network, granting access to permitted users only. An Intranet can store a vast quantity and diversity of information, and is capable of making this information available to a large group of people (using client computers connected to the network) in a short space of time (Edenius and Borgerson, 2003; CSBS, 2000). A major benefit of this type of network is that connection speed is not a problem, particularly when downloading content that is rich in graphics, video or audio data. However, setting up an Intranet network can involve considerable initial expense for the organisation.

An ***Extranet*** allows an Intranet to be accessed from outside of this closed network by linking it to the Internet. The security of the Extranet is protected by a firewall, and users accessing the Extranet can be screened for access rights (by means of username and password facilities) before allowing them to connect to the network. If an organisational Intranet has already been established, a great deal of the software, hardware and network infrastructure required to extend to an Extranet will already be in place, and this will minimise the associated cost. Extranets enable immediate and convenient access to information twenty-four hours a day, seven days a week, and they also permit just-in-time training for employees who can access the training content when and where they need it. (Edenius and Borgerson, 2003; CSBS, 2000).

If training materials are delivered over the ***Internet*** they can be made accessible to anyone, anywhere at anytime, thus overcoming the time and space barriers often experienced by organisations when planning training and development activities. The training materials, which are stored in one central location, can be made instantly available to all users (Little, 2002). Due to the popularity of the Internet, Internet-based training applications are less complicated to develop (in terms of the required infrastructure) than Intranet/Extranet applications (Long and Smith, 2004). By utilising the capabilities of the Internet and World Wide Web, course administrators can offer learners the opportunity to interact with a tutor and/or with fellow learners via email, chat rooms or virtual meeting facilities. The Internet, as a method of delivering training, goes some way towards overcoming the main weaknesses of isolated CBT methods (Ouellette, April 26, 1999). For example, the Internet makes it possible to track who is accessing the courses, how often they are accessing them, and what particular sections they have covered. By testing learners before they undertake the course, and testing their knowledge after the completion of each module or section, the organisation can create a user profile for each employee that will show exactly what the employee has learned, and which areas he/she may need to refresh on. A variety of individual learning styles and needs can be catered for in the design of Internet-based training courses, and the learners can be offered a great deal of flexibility in terms of how they proceed through the course (Long and Smith, 2004). Also, when training material is delivered over the Internet it becomes very simple to amend and update the content and to make this new material instantly available. In this way, the organisation can be sure that all employees are accessing the same, up-to-date material. (Steed, 1999).

However, as the speed and reliability of Internet connections can vary considerably (depending in part on the type of connection and the geographic location of the user), slow and/or unreliable connections may cause problems, particularly when the course content contains graphic, audio or video data. Also, the cost of designing and developing an Internet-based training application (particularly the initial development cost) can prove to be considerable, and for this reason the method may be a feasible option only for larger companies that have a greater number of employees to train (Steed, 1999). Beyond the cost consideration, a major factor that continues to prohibit the widespread use and acceptance of the Internet as a means of delivering training materials is that organisations do not yet know how to effectively utilise the capabilities of the Internet to facilitate learning (Long and Smith, 2004). However, the Internet is still a relatively young and under-developed method for training delivery, and knowledge, awareness and acceptance of the method should grow with experience of using it.

Taylor (2002) provides an overview of the unique characteristics that the Internet offers as a means of delivering training and development interventions (Taylor refers to this as "online learning"). In analysing these characteristics, he outlines the advantages and disadvantages associated with each. Although Taylor provides this analysis with a view to aiding faculties in adopting the Internet as a course delivery method, most of the analysis is also relevant to the organisational context. The main characteristics (and the associated advantages and disadvantages) that are relevant to the organisational context are outlined in the remainder of this section.

Online learning can be incorporated effectively as an element of a broader course, or as a stand-alone course: On the positive side, online learning courses or course elements can be extremely beneficial for academic courses or for courses requiring cognitive learning, where the participants can use the online material to learn and analyse concepts and to develop problem solutions. On the negative side, this method is less effective for courses that are designed to induce behavioural or attitude changes, or to develop physical job skills. However, it may be possible to distribute additional materials for these courses (for example, instructional information or learning support) online.

Online learning can be delivered asynchronously: If an online course is delivered asynchronously, individuals can access the material at a time that suits them.

Interaction with tutors or peers can take place via email or through a discussion forum. The main advantage of this approach is that participants are not tied to specific times for undertaking the course. This is particularly beneficial where participants are geographically dispersed and living in different time zones. However, asynchronous courses may lack the dynamic of group discussions, as communication carried out through emails or discussion forums may be characterised by significant time delays.

Online learning can be delivered synchronously: Synchronous online learning requires that all the students and the tutor log on to the Internet at a specified time. By doing so, the group can communicate with each other instantaneously by posting and replying to messages. Synchronous online learning allows the dynamic of real-time discussions, which is lacking in asynchronous online learning, to develop. It also provides an opportunity for learners who may be shy of contributing in face-to-face discussions to make a real contribution. However, synchronous learning sessions may be difficult to arrange and conduct, and individuals entering the discussion late may upset the course of the session. It may also be difficult to identify meeting times that are suitable for all participants.

For the course designers and trainers, implementing an online learning application will help to broaden their knowledge and skills: In the long-run, exploiting the capabilities of new technologies will not only make the jobs of course designers and trainers easier, but will also serve to improve and modernise the knowledge and skills of these people. However, a learning curve is inevitably involved, and those concerned must become proficient in the design and conduct of an online learning application before any attempt is made to implement one.

Multimedia can be easily incorporated to enhance material presented online: The use of graphics, audio, video or animation can be greatly beneficial in conveying a message to learners, and can also take away from the dullness of plain text material. However, the ease with which such media can be incorporated in online material results in a risk that course designers may go overboard in the use of these. Further, these media will reduce the speed with which course materials download, particularly if the user has a slow Internet connection, and can also require a considerable amount of storage space once downloaded.

Hyperlinks can be used to arrange information neatly: By inserting hyperlinks throughout the text that link to further information, the main text can be kept less cluttered and the hyperlinked material can be accessed at the exact point that it is

needed. However, there is a risk that some users may miss the links or choose not to access them. Also, if any of the links are not working correctly, learners may not be receiving all of the necessary information.

Online learning applications are capable of tracking how each student is progressing through the course: If a profile is set up for each user, it is possible not only to track which parts of the course the user is accessing and how often, but also to assess the learning outcomes for the user at each stage of the course. A major drawback of attempting to track user "attendance" online is that a user may be logged onto the course while simultaneously browsing other web pages or listening to music. The Internet has such immense potential of becoming a distraction to learners that it requires a great deal of discipline to resist the temptation to carry out other activities whilst online.

Updating course materials can be relatively easy in online learning applications: If additional material is required or some of the existing material needs to be amended, this can be done very easily by updating the content on the server, making the new content instantly available. However, if audio or video materials need updated the task may not be quite so straightforward, and indeed may prove costly and time-consuming.

Generic or Bespoke Computer-Based Training:

The potentially high cost associated with the development of computer-based training materials means that an organisation may face a tough choice in deciding between generic materials that may not exactly meet the organisation's training needs, and bespoke materials that are developed to precisely meet their needs but may require a lot of time and money to develop. Tucker (1997) suggests that generic CBT materials will be sufficient if a small number of people need trained and/or if the course meets the majority of the organisation's needs. A number of minor alterations can be made to generic materials to make employees feel that they are relevant to the organisation. For example, an in-house leaflet or customised workbook can be included with the course, or any sections of the course that are not relevant can be removed before making the course accessible to employees. If an organisation chooses to develop bespoke CBT materials, a substantial time commitment will be required from subject area experts within the organisation, regardless of whether the materials are developed by an in-house team or by external consultants.

1.6 Training And Development Techniques

Training and development "techniques" can be seen as strategies (or approaches) for promoting learning, at the individual, group and organisational level. Sadler-Smith *et al* (2000) have identified a number of training and development techniques, which organisations may use to facilitate learning. Methods of delivering training and development, as outlined in the previous section, are considered as the supporting media, and they integrate with the training and development techniques to promote learning within the organisation. The following techniques may be adopted by an organisation to promote and facilitate learning (Sadler-Smith *et al*, 2000):

Networking and Benchmarking: Underdown and Talluri (2002) discuss the critical role of networking and benchmarking in organisational learning that is aimed at helping an organisation to become more "agile". The Small Business Development Centre for Enterprise Excellence (SBDCEE) at the University of Texas at Arlington identified a specific "cycle of success" that was found to be effective in helping organisations to realise this learning throughout the organisation. The two primary elements of this cycle of success are networking and benchmarking. Networking is defined as "...a process of sharing ideas and information with others for the purpose of learning and improvement" (Underdown and Talluri, 2002: 280). Networking provides a small business with the opportunity to benefit from the opinions, advice and experience of other companies that can empathise with their situation. In order for relationships to form quickly and effectively, networking meetings should take place frequently. From the cycle of success perspective, ideas generated during networking lead to the next phase of the cycle – benchmarking – in which an organisation's members seek evidence of the success of these ideas from other organisations that have successfully implemented them. By benchmarking against other successful organisations, a business can learn the precise details and necessary steps involved in replicating these successes. The final two elements of the cycle of success, which the SBDCEE have identified as contributing to the reinforcement of learning that occurs through networking and benchmarking, are the availability of mentoring and advice from the benchmarked company, and continuous improvement of the organisation on the basis of learning that has occurred through the cycle. As the term "cycle of success"

suggests, these learning techniques should be carried out on a continuous, cyclical basis. (Underdown and Talluri, 2002).

Violino (April 12, 1999) has outlined the many learning opportunities that technology-sector workers can gain from networking and benchmarking with peers from other companies within this sector. These opportunities include building networks of contacts and sources of advice, learning best practice solutions and innovative ideas, and the ability to share concepts without revealing important and confidential content. According to Violino, networking and benchmarking activities can take place formally, or on a more casual and informal basis.

Online Knowledge Exchange: Gibbons-Paul (December 1, 2003) contends that the sharing of knowledge among peers within an organisation is essential if an organisation is to ensure that valuable tacit knowledge does not become lost if employees leave the organisation or forget elements of the knowledge. Online knowledge exchange is a technique that allows an organisation to share knowledge with its employees, or allows employees to share information with each other, using Web and Internet technologies. In 2000, Giant Eagle – a grocery retailer and distributor – implemented a knowledge exchange system called KnowAsis, which allowed employees to share ideas with each other by posting and replying to messages. Initially the success of this system was inhibited by the competitive spirit that had developed between each of the branches within the company's chain; this seemed to be incompatible with the notion of disseminating valuable knowledge. However, once a display presentation idea posted by an enthusiastic deli manager showed positive sales results for other branches that acted upon it, employee perceptions of the system changed. The bottom-line benefits of the system had been witnessed, and the competitive spirit inherent in the chain manifested itself in an enthusiasm to develop and share the best ideas through the system. Gibbons-Paul consequently advises that any knowledge sharing initiative of this kind must take account of (and plan for) the likely reluctance of employees to offer full participation and commitment unless the bottom-line benefits can be immediately witnessed.

Lustig (April 2003) has argued that online knowledge exchange should incorporate facilities that encourage collaboration amongst employees, such as electronic whiteboards and chat resources. These facilities should effectively represent a virtual classroom.

Critical Incident Review: Critical incidents (or events) that occur throughout the development of a business present a challenge to those who are responsible for coping with them. The handling of these "discontinuities" potentially results in learning (and consequently, new behaviour) for the individual and for the organisation. Cope and Watts (2000) have investigated the use of critical incident reviews as an entrepreneurial learning technique, allowing individuals to analyse past events in order to gain an understanding of current and future events. Six entrepreneurs were involved in the research, which involved each individual in a discussion relating to the "best" and the "worst" times in their business history, how these events were handled, and the learning outcomes in terms of what they now do differently as a result of these events. Although most of the incidents identified were perceived as being "negative", positive critical incidents also proved to be important. Moreover, the long-term developmental and learning outcomes of even the negative incidents were often considered to be positive. The process of reflecting on an incident in retrospect was found to offer significant learning potential for individuals, who may have been unable to fully comprehend the course of events at the time of occurrence. Even in retrospect, it is often difficult to identify the causal factors involved in critical incidents, due in part to the likelihood that these events were accompanied by emotional anxiety. However, the learning outcome of a critical incident is increased if the individual is able to admit his/her part (if any) in triggering the event. Cope and Watts conclude that the availability of a mentor to guide individuals through critical incident reviews can be instrumental in two ways. Firstly, when going through a current critical incident, the mentor's role is to encourage the individual to step back from the incident and to analyse the causes and possible solutions in a comprehensive and objective way. Secondly, the mentor should encourage the individual to reflect back on past incidents, in order to identify a more long-term path of causality, actions taken and resulting consequences. Critical incident reviews, as a training and development technique, can therefore provide the individual with an understanding that is based on both action and reflection.

Action Learning: Action learning is a technique that was developed in the late 1940s by Revans. Revans (Taylor and Lippitt, 1975) argued that, for truly effective learning to occur, five distinct conditions must be met. Firstly, all individuals involved in the learning endeavour must want (and be motivated) to succeed. In this regard, Revans has criticised higher education for divesting students of any ability to decide whether

they actually want to learn. The challenge for training and development specialists is to design an action learning programme that enlists learners who have volunteered to be there, and who are willing to expend effort in order to achieve the desired learning outcomes. Secondly, learning must be based on real-life, complex problems to which the learners can relate, and for which no easily identifiable solutions exists. Again, higher education is criticised for forcing students to focus on problems that have been set by strangers, rather than providing real-life problems relevant to the learners. An action learning programme must allow learners to focus on problems that are important to them. Thirdly, solutions to a problem can be more quickly and effectively developed if learning occurs in teams. Unlike traditional education courses (which place a great deal of emphasis on individual learning), action learning must take place in a group, or "set". This set should consist of between four and six learners, and a facilitator. Each learner is allowed an equal amount of time to present his/her problem to the rest of the group; the group will assist individuals in developing an understanding of their problems by asking questions. For each individual, these questions will help to bring to light the nature and appropriateness of his/her assumptions about the problem at hand (Johnson, 1998). Fourthly, in order for the individual (and the supportive set members) to be able to learn whether the proposed solutions are effective in resolving the problem, there must be an opportunity to implement the solutions in practice (i.e. to take action). This is one of the main elements of action learning that is critically lacking in higher education. And finally, the action learning process must conclude with the individual examining (with the support of the other set members) the successful elements of the action decided upon, and how this action compares to his/her past experience and personal values and assumptions. This stage of the process (which has also been neglected in higher education) allows the set members to ask questions which will help the individual to challenge the assumptions underlying past actions and values.

Johnson (1998), in his analysis of action learning as an employee development technique, concludes that a core advantage of this technique is its ability to bring learning back into the context of the organisation, rather than viewing the two as distinct entities (as is often done in training and development activities). Action learning also provides an invaluable opportunity for an individual to dedicate a set amount of time to analysing an important organisational problem, where the demands of work may not otherwise have permitted such dedication. This opportunity may

prove particularly beneficial in a situation where an individual's self-confidence is being undermined by an unsolved problem.

Experimentation: Experimentation as a training and development technique has its roots in Kolb's (1984) experiential learning cycle. Hurley (2002) contends that organisations must give greater recognition to the role of the individual in instigating learning and change. In order to promote active learning, the organisation must motivate individuals to take control of their own learning. This requires an appropriate balance to be achieved between creativity and control. Hurley maintains that learners must be provided with the opportunity to actively experiment, to tackle challenges and to learn from this action. In this way, the individual can experiment through action, correct mistakes, and learn from failures. Learning, from this perspective, is highly proactive.

Englehardt and Simmons (2002) argue that successful learning occurs when the learning incorporates an opportunity to learn by doing, and when others in the learning environment are supportive of this experimentation. Experimentation, they argue, is a fundamental element not only of individual development, but also of organisational adaptation. Learning through experimentation is essential if individuals are to grasp both the tacit and explicit knowledge that underlies the activity. Also, when a learner is given the opportunity to actively experiment, any learning that occurs may not merely be an end in itself, but may also trigger a desire for further experimentation and learning. It is in this way that individuals can achieve incrementally higher levels of performance. Englehardt and Simmons further assert that a tolerance of failure and mistakes is essential if experimentation is to succeed. Even with such tolerance, however, individuals may feel afraid or embarrassed about making mistakes that others can witness. For this reason, Englehardt and Simmons suggest that the ideal setting for experimentation would be in a separate organisational space dedicated to experimentation, in which individuals and teams of learners could feel free to act upon their ideas and plans.

Coaching and Mentoring: Although coaching and mentoring are two distinct development techniques, the foundation of both is an experienced adviser who is whole-heartedly committed to providing guidance and support to another member of staff. This member of staff will gain from the experience the sense of worth and level

of support necessary to take charge of his/her own development (Wright, 1998). *Coaching* is generally concerned with improving an individual's performance on a specific task or role, and involves setting goals, establishing techniques, encouraging practice, and providing feedback. A *mentoring* programme may be a more general developmental effort, in which the mentor develops a relationship with another employee (who is usually lower in the organisational hierarchy) and supports the developmental needs of that employee. (Veale, 1996; Wright, 1998).

Coca-Cola Foods in the USA have implemented coaching and mentoring programmes to support their wider human resource development efforts (Veale, 1996). The coaching programme has been designed with the intention of improving the individual's performance, by discussing performance in relation to business goals, creating better working relationships, improving commitment to the organisation, and facilitating continuous learning. Five different (but often overlapping) types of coaching can take place within the coaching programme, allowing coaches the flexibility to adapt the programme to the needs of the individual: *modelling* involves the coach demonstrating or performing a task for the coachee to witness; *instructing* involves the coach telling the employee how to perform a task; *enhancing performance* requires the coach to develop a plan through which the employee can improve his/her performance; *problem solving* requires the coachee to be provided with a format or method for reaching a solution to a given problem; and *inspiration and support* requires the coach to inspire and enthuse the employee to achieve the relevant goals. The mentoring programme at Coca-Cola Foods involves the development of formal relationships between two members of staff of different status and from different departments within the organisation. From their experience within the organisation, the mentors are able to offer guidance in relation to the mission, culture and procedures of the organisation, and can thus help individual employees to understand their current and potential future roles within the organisation.

In 1993 Aer Rianta implemented a mentoring programme with the intention of addressing the relatively low incidence of female managerial workers within the organisation. The programme involved 18 female managers who were each mentored by a male senior manager, with the objective of increasing the development potentials of the female managers. The outcomes of this programme were positive, in most cases improving the self-confidence, organisational awareness, and indeed the promotional prospects of the female managers. (Roche *et al*, 1998).

Team Development: Barker and Neailey (1999) have contended that, while the individual is the basis for learning in an organisation, individual learning in itself is not enough; learning must occur at the individual, team and organisational level. Focusing on the learning potential resulting from team development, they argue that team development occurs in most organisations, possibly in the form of project teams dedicated to a specific task, or because of natural boundaries created through functional divisions within an organisation. Although learning does occur within these teams, organisations often fail to implement a set of procedures for identifying and assessing the learning that occurs. Any team that is developed within the organisation must be encouraged to learn from mistakes made, to adjust behaviours on the basis of this learning, and to communicate this learning to other teams within the organisation.

Barker and Neailey suggest three common mistakes that limit the learning that occurs from team development. These mistakes relate to the process by which learning is reviewed following a team project or task. Firstly, they note that team development often takes place without the team members having actually been made aware of the significance of the learning that occurs within this team for the development of the organisation as a whole. Secondly, it is often the case that no structured procedure is identified for the capture of learning that occurs within teams; attempts to capture this learning may be ad hoc and unstructured. Thirdly, learning reviews are often limited to team members who hold prominent positions within the organisation, thus neglecting the learning and contributions of the other team members. In order to avoid these weaknesses, they suggest a number of conditions for successful learning resulting from team development. Firstly, innovation should be introduced as the motivation and driving force for learning. If opportunities are provided to translate innovation into tangible outcomes, this will also provide a mechanism for capturing the learning that has occurred. Secondly, a structured approach should be implemented to capture the learning of the individuals and of the team, and to communicate this learning to other teams within the organisation. Barker and Neailey suggest that the use of individual and team learning logs represents the best way of doing this. Finally, this learning review procedure should be applied to all members of the team, to ensure that the learning of each member is identified and analysed. What is more, the use of individual learning reviews before team learning reviews are carried out will preclude the risk of junior team members not making a full contribution because they feel intimidated by more senior team members. The recommendations for team development and learning

that are made by Barker and Neailey are based on an approach used by a major automotive manufacturer based in the UK, and were found to be highly successful here.

1.7 Training And Development Tools/Aids

Training and development tools/aids are the devices and equipment used to support the delivery of any training activity. Many of these are visual aids or exhibits, which may be used to strengthen the portrayal of a specific message to the learners. A number of authors have dedicated their efforts to analysing the merits of specific tools/aids. Forsyth (1994), however, provides a more comprehensive analysis of the range of supportive tools/aids available to trainers. The following analysis details those prevalent within the available literature, much of which are covered by Forsyth's analysis.

Overhead Projectors: Foxon (November, 1992) has claimed that the use of an overhead projector can help to stimulate learning and effectively reinforce the underlying message, but only if the transparencies are well designed and relevant to the content. While Sherman (June, 2003) posits that words, diagrams, charts or graphs can effectively be presented on an overhead projector, Foxon has insisted that the use of transparencies to convey verbal, as opposed to visual, messages is a grave error. As indicated by Foxon, overhead transparencies retain a number of benefits, including low cost of production and delivery, ease of production and delivery, and the ability to convey graphical information that would be difficult to convey in any other form. Forsyth (1994) also notes the widespread availability of materials and equipment as a major benefit of overhead projectors. Despite these clear advantages, Foxon has noted that the widespread use of overhead projectors has given rise to a number of common mistakes in relation to the use of overhead transparencies. These mistakes relate to design (for example, over-use of words may mean that learners rush to copy down the content of one transparency before it is replaced by the next one); delivery (transparencies may be out-of-focus, for example, or the presenter's hand may be casting a shadow on the screen); and positioning (for example, if a clear and unobstructed view is not available to learners at all positions in the room).

Table-Top Presenters: Forsyth (1994) has argued that table-top presenters provide a clear, portable alternative to the use of full-sized flip charts, which may be difficult and awkward to transport. However, the relatively modest size of this visual aid means that its use should be limited to training sessions that involve small groups.

Flip Charts: Dehaas (September, 1999) maintains that, although the flip chart is a simple and basic tool/aid, it can nonetheless be very effective in stimulating learning as it has the potential to involve participants in the learning process, thus making learning enjoyable. Using the flip chart to highlight key sections of the presentation, and to note the key points in each section, will help to provide structure to the activity. The end result will be a sheet or group of sheets that represent the key points discussed, and which the participants should have helped to create. According to Dehaas, for those participants who prefer to take notes during a training session using the flip chart will provide structure to the notes that they take; for those who prefer not to take notes, the flip chart notes will still aid understanding and retention of key points. Sherman (June, 2003) cautions that a key risk associated with flip charts is that the presenter may turn his/her back on the participants to write on the flip chart. In order to avoid this, Sherman advises that the participants should be invited to write on the chart, or the sheets should be prepared in advance of the presentation.

White/Black Boards: A variety of chalkboards and marker-boards (which are made of different materials and require different writing implements) are available to trainers (Smith, May 1979). Whiteboards, blackboards and other marker-boards offer great versatility and allow the trainer to write down, and rub off, supporting material as required. The low cost and widespread availability of whiteboards and blackboards are obvious advantages. However, Forsyth (1994) cautions against over-use of these boards, advising that use should be limited to listing of key points to aid group discussions.

LCD / Computer Displays: Johnson (December, 1994) has made reference to the evolution that has taken place in presentation technology, notably in relation to projection capabilities. Whilst in the late 1980s and early 1990s, improvements in projection capabilities were concerned with improving the brightness of overhead

projectors and creating more visually effective transparencies, it is now possible to project a computer screen containing full colour (and even animated) content.

Pearson (November, 1995) has highlighted the utility of presentational software (such as Microsoft PowerPoint) for the creation of computer presentations that have a professional appearance. In line with Pearson, such presentational software offers a number of feature-related benefits: content can be created and organised easily via the available wizards; existing computer-based content can be easily integrated into a presentation, and will automatically assume the appearance of the rest of the presentation; a variety of visual enhancements – including animations, diagrams and flowcharts – can easily be incorporated into the presentation; and the presentation can be transferred into printed form in a variety of formats (allowing for the creation of handouts and audience notes), which can be distributed to the audience to increase participation and understanding.

Electronic whiteboards, which link a computer, an LCD panel and a projector together to create an electronic form of the traditional whiteboard, can facilitate the delivery of training and development activities by allowing the trainer to present content that has already been created, along with notes that are produced throughout the session (Numonics Corp., February 1997).

Photographs: Magellan-Horth and Palus (October, 2003) underline the ability of photographic and other images to draw out exactly how an individual perceives or feels about an issue. Fortune 500 firms and educational institutions in the US have used a tool known as Visual Explorer (which was created by the Center for Creative Leadership) that offers a range of photographs and drawings for detailed discussion. The tool incorporates more than 200 images; these have been deliberately chosen to include a range of black-and-white and colour photographs and paintings, both modern and dated, in order to appeal to the widest possible audience. Magellan-Horth and Palus believe that photographs provide learners with the opportunity to view and discuss all possible dimensions of the issue in question.

Posters / Advertising Copy: Posters and advertising copy can be used as visual aids or exhibits to convey a particular message to learners. However, Churchill (1995) discusses a slightly different use of such tools/aids to facilitate learning. Her analysis focuses upon an educational endeavour set up by Bexley Education Business

Partnership in South London, and supported by a number of local employers and by the South London Training and Enterprise Council. The one-day event involved 120 local young people in the design of an advertising campaign (involving newspaper advertisements and promotional leaflets) for a hypothetical business event. The project was intended to help the young people to understand the key business decisions involved in creating effective promotional material, and in budgeting and allocating resources to the production of this material.

Information About Competitors: Fahey (2003) has remarked that some leading companies are adopting competitor scenario analysis as a tool to aid the learning of managers. Competitor information is analysed and discussed in an attempt to predict the potential moves of current competitors, and the possible emergence of new rivals; responses to changing market and environmental conditions can be proactively planned on the basis of this learning. Fahey highlights two types of competitor scenario analysis. *Unconstrained* "what-if" scenarios involve creative thinking about possible new moves of current competitors, and new competitors that could emerge. These scenarios are typically radically different from anything that competitors have done in the past. *Constrained* "what-if" scenarios, by contrast, relate to the possible moves of competitors to market and environmental conditions that could be considered to be relatively likely to occur.

Working Papers: Working papers can include exercises or handouts related to the content of the training session (Forsyth, 1994). These can be used to summarise the course content or to allow the learners to participate in the discussion or activities. Sherman (June, 2003) suggests that working papers and handouts are a very simple and effective way of structuring and summarising a presentation. Although each trainer may have a personal preference regarding when to distribute the papers (at the beginning, during the presentation, or after the presentation), Sherman notes that some trainers may be concerned about losing audience attention if the papers are received at the beginning of the presentation. In order to avoid this, he suggests that the papers could incorporate sections that the participants must fill in, or distinct colours could be used for different papers to ensure that participants are always following the right one.

The above analysis covers the tool/aids that are commonly used to support the delivery of training and development activities, and which are discussed in the available literature. However, Forsyth (1994) also points out that many trainers choose to "liven up" their training activities by using highly innovative props, exhibits or demonstrations. To exemplify this, he tells of a trainer who used an onion to represent market segments, and one brown and one white egg to demonstrate alternative pricing strategies for similar products. Although Sherman (June, 2003) advises that such personalisation of the training activity can be risky, he nonetheless acknowledges the merit of such approaches in ensuring that learners do not become bored and disinterested in the activity.

1.8 Training And Development In The Technology Sector

O'Regan *et al* (2001) have acknowledged the role of the Technology sector as one of the key drivers of Ireland's economic growth. For companies operating in this dynamic sector, they argue that the key to competitive success increasingly resides in the intangible resources that these companies possess. O'Regan *et al* report the results of research conducted by the University of Limerick, the Irish Management Institute, and the University of Maryland, USA, which involved interviews with the CEOs of indigenous Irish companies operating in the high-technology sector. The research was concerned with identifying the percentage of company value that was considered to derive from a company's intellectual capital (based on the perceptions of the company CEO). "Intellectual capital" was defined as consisting of the company's people, internal structure, and external structure. The research found that an average of two-thirds of company value was perceived as being attributable to intellectual capital. Moreover, the people element of intellectual capital was perceived as being the primary contributor, being credited on average with creating almost fifty percent of the intellectual capital value.

In spite of such findings, the existing literature base that deals with human resource development in the technology sector is somewhat narrow; this remains true of the Technology sector in Ireland and elsewhere in the world. Much of what does exist focuses largely upon the development of managerial level workers, offering little comment on the training and development of the general technology workforce. As a

result of this void, few benchmarks exist to guide the training and development practices of Technology companies, and little evidence or data is available to researchers who concern themselves with this field of study. In the remainder of this section, two key studies are discussed: a representative study of companies operating in the Northern Ireland software industry conducted by Wightman and McAleer (1995); and a study of the effectiveness of a training programme targeted at managers in the Canadian high-technology sector, carried out by MacDonald *et al* (2000).

Wightman and McAleer (1995) stress the importance of managerial skills for a company's survival and growth. Concerned with the lack of managerial skills that is common among managers in the software industry, they have noted the tendency of software companies to recruit managerial workers from inside the company, by promoting professional staff. These employees are then expected to take on managerial responsibilities, which demand an extended range of skills, even though it is often the case that little or no training is provided in relation to management skills. In 1991, Wightman and McAleer conducted a survey that examined the management training and development practices of companies operating in the Northern Ireland software industry. A major advantage of this survey, for the purposes of this thesis and research in particular, is that the survey sample (which consisted of 24 companies) was said to be representative of the companies that operate in the Northern Ireland software industry. This industry is characterised by a large proportion of small companies and companies that are also relatively young. 45.8% of the survey sample consisted of companies that were established since 1985 (only six years in business at the time of the research). In relation to size, 66.7% of companies in the sample employed twenty-five workers or less, and 79.2% employed fifty workers or less.

The survey dealt with a number of key areas:

Training Provision: 83.3% of companies surveyed stated that they did provide some training for their managerial workers. The 16.7% of companies that did not provide any training were small companies that had been in existence for three years or less. Of the companies that did provide training, 70% did not have a structured management development plan, but rather provided training on an ad hoc basis. The 30% that had implemented structured management development plans were primarily larger and

more mature companies. A number of smaller, young companies had however stated that they were in the process of establishing a structured framework for management development.

Expenditure on Management Development: Of those companies that reported their expenditure on management development activities, 33.3% (exactly one-third) dedicated less than two percent of the annual management salary bill to management development. 61.1% spent less than four percent, and only 27.8% allocated between eight and twelve percent of management salary. Wightman and McAleer therefore concluded that, although awareness of the need for management development in the software industry is increasing, this had not yet manifested itself in more ambitious expenditure on management development activities.

Number of Management Development Days: Wightman and McAleer note that the dynamic nature of the software industry, coupled with the short life cycle of the industry's products, means that the technical skills of employees (at all levels) are of crucial importance. The results of the survey support this argument, as the majority of companies that provided training for managers concentrated more on training in technical skills than in management skills. Table 2 below illustrates the average number of days of management training and of total training per manager by management level.

The average number of annual training days provided to senior, middle and lower level managers was 10.4, 12.3, and 13.9 respectively. The proportion of this training that was dedicated to the development of management skills was 51.9% of senior management training, 47.2% of middle management training, and only 36.7% of lower management training. Therefore, while lower level managers received the most training overall, of the three management levels they received the least amount of management skills training (at 5.1 days, compared to 5.8 days and 5.4 days for middle and senior level managers). Furthermore, the proportion of total training that was provided externally was 56.7% for senior managers, 43.9% for middle managers, and 31.7% for lower level managers; the remainder was provided in-house. When management skills training only is considered, the proportion that was provided externally was 46.3% for senior managers, 22.4% for middle managers, and 21.6% for lower level managers. Therefore, senior managers received the highest level of

external training, both in management training and in total training. Wightman and McAleer suggest that the low level of senior and lower level management training that was received externally could perhaps be interpreted as a reluctance on the part of the companies to invest in external training below the senior management level.

Table 2: **Average Number of Days Training Received by Managers**

	Number of days total training per annum[a]			Number of days management training per annum[b]		
Management Level	In-house	External	Total	In-house	External	Total
Senior	4.5	5.9	10.4	2.9	2.5	5.4
Middle	6.9	5.4	12.3	4.5	1.3	5.8
Lower	9.5	4.4	13.9	4.0	1.1	5.1

Notes:
n = 20
[a] Includes technical training
[b] Excludes technical training

Source: Adapted from Wightman and McAleer (1995)

Training Requirements: Wightman and McAleer identified six categories of business/management and interpersonal skills that would be required of managers in software companies. The six skill areas were as follows:

1) Human resource management
2) Finance
3) Marketing
4) Project management
5) Strategy
6) Interpersonal skills and generic management skills

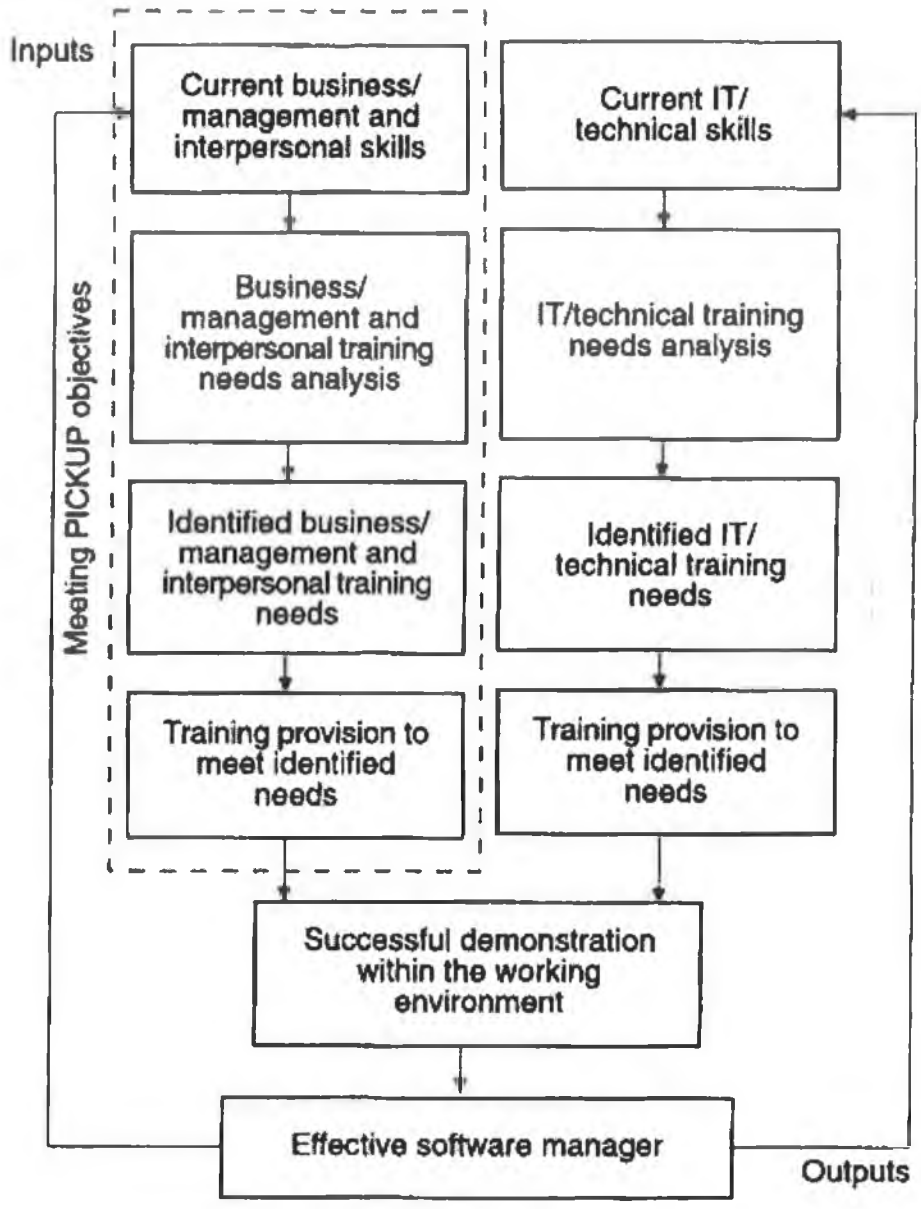
Each of these six skill areas was then expanded to include a number of sub-skills, and participants were asked to identify those skills for which training was required among senior and middle level managers. Although the findings from this section of the research are too complex to analyse in any detail here, it is worth noting that, in most companies, there was a shortage of skills in the majority of the areas listed. The most severe areas of shortage included interpersonal skills and human resource management

skills, and the results were similar between senior and middle level managers. These findings highlight the strong need for management development interventions in the software industry.

Wightman and McAleer went on to propose a framework for developing effective managers in the software industry. This framework (which is illustrated in Figure 12) gives due consideration to the two sets of skill requirements for software managers: **business/management and interpersonal skills**, and **technical/IT skills**. These requirements are treated as inputs into the system. The output from the system, which is an effective software manager, can be achieved only when the manager can effectively demonstrate both sets of skills within the working environment. It is stressed that the process must be ongoing, due to the continually changing context of managerial work within the software sector.

One notable limitation of this framework is that its applicability is limited in time and geographic scope. This is because the managerial skills section of the framework is based around the company meeting 'PICKUP' objectives. PICKUP refers to the Professional, Industrial and Commercial Updating Scheme established in Northern Ireland in 1989. The research was funded under this scheme.

Figure 12: **Framework for Development of Effective Software Managers**



Source: Wightman and McAleer (1995)

A study conducted by MacDonald *et al* (2000) evaluated the effectiveness of applying principles of adult education to training programmes designed for managers in technology companies. The study was based on the Certified Advanced Technology (CATM) training programme in Ottawa, Canada, which was geared towards middle managers and skilled professionals with five to seven years of experience in the advanced-technology industry. The purpose of the research was to assess the impact of applying adult education principles in terms of the perceived effectiveness of the

training and the support provided to trainees. MacDonald *et al* note that, in spite of the importance of management development to companies operating in the technology sector, little guidance exists in relation to the design and delivery of training programmes for managers in this sector. In an effort to provide direction to such endeavours, they assert that the application of principles of adult education to a training programme can help to improve the motivation, attitude and understanding of learners, by extension facilitating learning retention.

The CATM training programme was founded upon the principles of adult education. MacDonald *et al* have summarised these principles as follows:

1) **Recognise and Use Learners' Experience:** Learning is facilitated when the learners feel that they can build upon past experience, since it is around this experience that a learner's self-concept is developed. Sharing experiences among participants should be treated as a valuable learning resource.
2) **Ensure Programme Flexibility:** The programme should acknowledge that individuals have different learning styles and preferences, and these should be sufficiently accommodated for. There should also be scope for questions and discussions.
3) **Conduct Effective Group Discussions:** Group discussions should be recognised as an effective learning tool.
4) **Relevant Applicable Content:** Learners should be able to work on problems that are applicable to their life, developing solutions for themselves, and having the opportunity to apply learning outcomes immediately.
5) **Modular Structure:** By breaking a training programme into modules, learning is much more organised and the content will be much easier to digest. Generally, fewer participants drop out of modular courses before completion.

The CATM programme was structured on a modular basis, incorporating eight three-day modules that were spaced thirty days apart. The modules contained both technical skills content (such as finance or strategic planning) and management skills content (such as negotiation). The study analysed five key aspects of the programme. The findings of the study help to determine the effectiveness of the programme, on the basis of participants' perceptions of positive and negative aspects.

Training Instructors: Each module had two instructors: one to tutor in technical skills, and the other to tutor in management skills. Participant perceptions of the instructors were very positive. The instructors' use of empirical data and other examples relating to course assignments were remarked upon and appreciated. Satisfaction was diminished when instructors did not listen, allow discussion or feedback, or give adequate examples. Instructors who were overly academic in their approach were also criticised. A key factor was enthusiasm during presentation, with participants showing appreciation for instructors who exhibited a sense of humour, or an ability to deliver the content in an engaging way.

Content: The CATM course was split into eight modules, and each module had a technical component and a management skills component. Technical skills generally accounted for two-thirds or more of each module. While participants were, on average, less satisfied with the management skills component, it seems that when this component was successful it was indeed very successful, having an overwhelming power to motivate participants.

Pre-Readings: Prior to each module, participants were required to undertake around twenty hours of pre-reading. Positive comments in relation to pre-readings suggested that they helped to prepare the participants for the modules. Participants also commented that they were motivated to carry out the pre-readings as they aided preparation for the course assignments (see below). It would, therefore, appear that linking elements of coursework together could serve as a motivating force to prepare effectively for the course. Negative comments, however, suggested that the time requirements for the readings were too severe, and some participants felt that the pre-readings were not relevant enough to the rest of the course.

Assignments: For each module, participants were required to submit an assignment, which was designed to extend the learning that occurred throughout the module. The assignment related solely to the technical content of each module. Participants perceived the course assignments as being the most valuable learning tool incorporated in the course. Feedback was extremely positive, with one participant commenting that 75% of learning had occurred through completion of assignments. Other comments suggested that the assignments had helped to relate learning to the participant's

workplace, and served as a gel to integrate all the modules of the course. Areas of dissatisfaction were primarily in relation to the difficulty of assignments and the substantial length of time it took to complete them. Overall, the use of pre-readings and assignments in combination with each other was found to contribute immensely to the learning that occurred.

Programme Administration: Feedback on the programme administration was primarily positive, and participants believed that the course was "smoothly run". Participants appreciated the use of a location that offered good food and other facilities, and the presence of CATM staff through the programme was also appreciated.

Participants were asked to make suggestions about improvements that could be made to the course in order to facilitate motivation and learning retention. Two main suggestions emerged. Firstly, it was suggested that the necessary skills to participate effectively in groups should be developed among all participants as part of the programme, and that this must be done at the beginning. This suggestion was made because many participants did not feel comfortable participating in group discussions, as they were unprepared for this process. Secondly, it was felt that more time needed to be allocated for group discussion sessions. Many participants commented on the value and motivation they derived from listening to and learning from the experience of other participants, but they did not believe this was adequately provided for in the programme.

MacDonald *et al* suggest that the findings of this survey can provide some valuable insights for the development of training courses designed for managers in technology companies. They claim that the application of adult learning principles to such a training programme can facilitate learning motivation, retention and transfer. The relevancy of content would appear to be of crucial importance for training within the technology sector, the dynamic nature of which requires high-impact, customised (as opposed to generic) training that offers both technical skills and management skills development, and combines this with on-the-job training. The findings of the survey appear to confirm this, as participants found the customised nature of the course, and the common background of students, to be extremely beneficial.

The two studies discussed in this section have notable limitations. The study conducted by Wightman and McAleer (1995), although representative and inclusive of the large proportion of SMEs that operate in the Technology sector, was conducted in 1991, which means that the findings are dated and may bear little relation to the training and development practices of today's technology companies. What is more, neither of the two studies bears reference to training and development practices in the technology sector in Ireland. It is intended that this research will go some way to addressing these literature gaps.

1.9 Training And Development In Ireland

Bernadette Breen (December 2000) notes the changing nature of employment in Ireland. Not only, she claims, are employee skill requirements changing at an increasing pace, but employees themselves are no longer motivated solely by extrinsic rewards (such as pay). Intrinsic rewards, provided, for example, through personal development, are becoming increasingly important. Furthermore, as the pool of talent becomes ever more sparse, retention is emerging as the primary human resource issue for Irish firms.

A number of studies have been conducted in Ireland in an attempt to build a picture of the level and nature of training and development practices that are taking place. One notable contributor to these efforts has been the Cranet E survey, a European study of training and development practices that is conducted every three years. The Chartered Institute of Personnel and Development (CIPD) Ireland has also made a valuable contribution to this research base. In this section, a number of such studies relating to training and development in the Irish context are discussed.

In 2001, the CIPD Ireland undertook a survey of Irish training and development practices, which received a response from 221 companies, covering three-quarters of a million employees (Heraty and Garavan, 2001). The vast majority of companies responding to this survey were medium to large in size. For example, only 4% of companies employed less than 100 workers, and 27% employed less than 200. 35% employed between 201 and 500 employees, 15% employed between 501 and 1000, and 23% employed more than 1000 employees.

The key findings of the survey can be considered under the following themes:

Number of Days of Formal Training Per Annum: The survey asked companies to express the average number of days of formal training received in 2000 per employee by occupational group. The results of this section indicate that most organisations do provide some training for employees. The average number of days training received across all occupational groups was 5.61 per annum, although senior management appeared to be the more likely than any other occupational group to receive training, while professional and technical staff were less likely to receive training.

Expenditure on Training and Development: Of the companies that provided information on training and development expenditure for the year 2000 as a percentage of payroll (78% of respondents), the majority expressed a reasonably high level of expenditure. 17% of these companies spent less than 1% of payroll on training and development, while 26% of companies allocated between 1% and 2%, and 36% of companies spent upwards of 2% of payroll on training and development. Overall, the average expenditure was 3.85% of total payroll.

A further positive finding was that, for each occupational grade (with the exception of administrative and clerical staff) around 40% of organisations intended to increase the level of expenditure on training and development. For administrative and clerical staff, a slightly higher percentage of organisations (49%) intended to increase the level of expenditure.

Furthermore, 82% of respondents stated that training and development expenditure is allocated from a dedicated training and development budget. This can be considered as a very encouraging finding, as the CIPD consider the existence of a specific budget as being indicative of a planned and strategic approach to training and development within the organisations concerned.

Methods Used and Their Perceived Effectiveness: Respondents were asked to indicate any methods of delivering training that were employed in their organisations, and they were also asked to indicate how effective they perceived each method to be, with 5 being the highest level of effectiveness. Table 3 presents the findings of this section. From this table, it can be seen that organisations continue to focus on conventional methods of training and development, notably face to face training, on-

the-job training, and formal education. Although the adoption of computer-based training methods is less pronounced, a high percentage of organisations are using these methods, and this finding is somewhat revealing. Nonetheless, the adoption of computer-based training methods is not necessarily associated with the perceived effectiveness of such methods; for example Intranets and the Internet are used by 58% and 57% of organisations respectively, although the mean effectiveness rating for these methods are ranked at 2.95 and 2.96 respectively, which is quite low. For the most frequently used (and mostly conventional) methods, there is a greater degree of consistency with perceived effectiveness and frequency of use. However, conferences are used by 82% of organisations, despite a perceived effectiveness rating of only 2.95.

***Table 3*: Methods Used and Their Perceived Effectiveness**

Usage and Effectiveness of Training and development Methods	Usage %	Effectiveness	
		Mean	*Std. Dev.*
Face to Face Training	98	4.01	0.97
On-the-Job Training	95	4.03	0.97
Formal Education Programmes	88	3.81	0.91
Coaching / Mentoring	84	4.07	1.00
Conferences	82	2.95	0.99
Open Learning	79	3.22	0.90
CD ROMs	66	3.16	0.84
Video-Based Learning	65	2.97	0.91
Action Learning Sets	61	4.10	0.96
Intranet	58	2.95	0.91
Internet	57	2.96	0.83
Other CBT	53	3.50	1.02
Audio-Based Learning	45	2.72	0.97
Extranet	34	2.71	0.77

Source: Adapted from Heraty and Garavan (2001: 18)

Training and Development Leading To Certification: The findings of the survey also indicate that companies are increasingly concerned with providing training and development that leads to certification. It appears that Semi-Skilled/Unskilled employees are the least likely to receive such training (48% of companies), while Professional/Technical staff are the most likely to be in receipt of it (66% of companies). Craft/Technician employees are next in line, receiving certified training in

61% of companies, followed by Administrative/Clerical staff (60% of companies), Supervisory staff (59% of companies), and Senior Management (54.5% of companies).

On the whole, the picture of training and development practices in Ireland to emerge from this study was primarily positive. In terms of expenditure and days allocated to training and development, Irish companies are comparing favourably to their European counterparts. The widespread existence of specific training and development budgets as indicated in the results of this study point to an emerging positive attitude in relation to the importance and contribution of training and development efforts. On the negative side, however, the results were found to vary greatly by company size and ownership, with smaller and indigenous companies less likely than larger and foreign-owned companies to implement a training budget and to adopt a systematic approach to training and development.

MacMahon and Murphy (1999) report the results of a study – concerned with the growth capabilities of small, indigenous Irish enterprises – carried out by the Small Firms Research Unit (SFRU) in the University of Limerick. The purpose of the research carried out by the SFRU was to investigate the extent to which a lack of management skills among the managers (generally owner-managers) of these small firms serves to constrain the ability of the firms to adapt and grow through periods of volatility and change. The hypothesis underlying the research is that many small firm managers – often coming from non-business backgrounds – do not possess the necessary management skills to provide their businesses with the best chance of success, and the training needed to develop these skills is often seen as being an "unaffordable luxury".

The research sample consisted of six small companies (employing less than 50 workers, and having a turnover of less than £(IR) 3m (€ 3.8 m)) operating in the mid-west of Ireland. The approach was qualitative, and involved in-depth observation, interviews, focus groups and other analyses on an ongoing basis. The findings that emerged from the research did indeed support the initial hypothesis. It emerged from the research that the recruitment and retention of staff was the single most important issue constraining the growth of all six companies, without exception. From the observation and analyses carried out, the researcher believed that these problems concerning recruitment and retention were aggravated by the lack of human resource

development systems put in place by the owner-managers to deal with these issues. There was a widespread unwillingness to believe that the problems could have been caused by anything other than external factors, and salary incentives were perceived as the only available solution. The constraints on business growth that resulted from these labour and skills shortages were significant; not only were the levels of production, innovation and customer service negatively impacted by the shortages, so too was the amount of time that management could afford to dedicate to managerial activities.

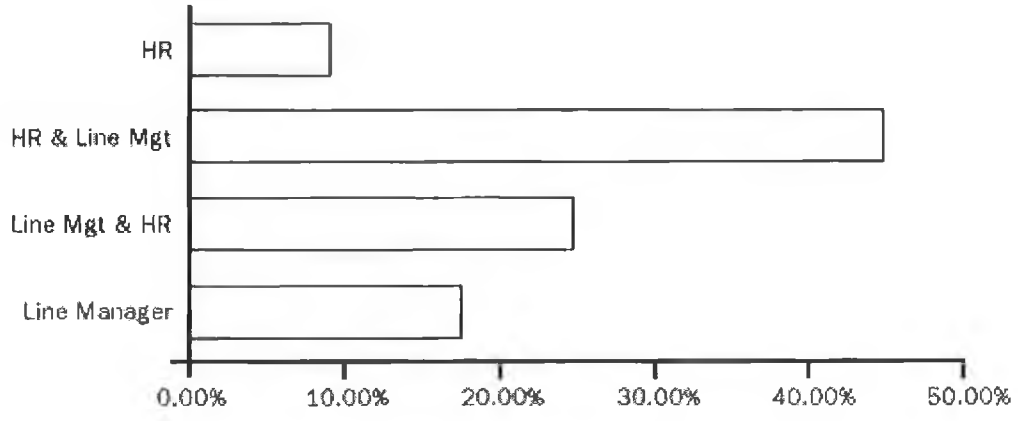
A further finding of the research was that, although all of the companies did provide some training for employees, none of the companies adopted a strategic approach to training and development, with only one setting a specific budget. Moreover, while it would appear that most owner-managers did appreciate the importance of providing training to employees, they failed to acknowledge the importance of undertaking training themselves. The researcher's conclusion is that most of the owner-managers did indeed see training as a luxury that they could not afford. They attributed their lack of interest in training to a number of perceived weaknesses of the training that was available. In particular, the training provision was deemed to be too costly, irrelevant to their specific needs, and geared towards larger companies. The owner-managers also frequently stated that the demands of work meant that they could not afford to take time off for training – a problem that, paradoxically, may be explained in part by the lack of business management skills of these owner-managers.

The training and development practices of Irish companies are also examined in the Cranet E surveys, a round of surveys that are conducted in various European countries every three years. The Cranet E programme – which began in 1989 as the Price Waterhouse Cranfield Project – is managed in Ireland by the College of Business at the University of Limerick, while the Centre for European Human Resource Management at Cranfield School of Management in the UK deals with the overall management of the programme. In Ireland, the sample frame for the surveys is the Business and Finance Top 2000 Trading and Non-Trading Bodies. The remainder of this section outlines the results from two Cranet E studies – 1995 and 1999/2000.

The 1995 Cranet E survey (Heraty and Morley, 1998, 2000) collected information on a number of issues relating to the training and development of employees, with the main issues including the following:

Training and Development Policy Decision Making: The Cranet E survey conducted in 1992 discovered that 92.3% respondents had developed a training and development policy. In 1995, the companies were asked to confirm who was responsible for training and development policy decision-making – line management, the HR department, or both. Figure 13 represents the findings. The results of this section of the survey suggest that, in most companies, policy decisions are made jointly by the HR department and by line management. If this is not the case, line managers are likely to take primary responsibility for policy decisions. As line managers work closely with employees and would arguably be more aware of employees' needs than would the HR department, the increasing responsibility that line managers are taking for training and development decisions can be perceived as a positive and encouraging trend. Nonetheless, it was evident from the survey findings that the increase in line management responsibility for training was much less marked in small companies than in larger companies (employing more than 200 workers), with 36% and 52% of these companies (in respective order) having reported an increase in line management responsibility.

***Figure 13*: Responsibility for Training and Development Decision-Making**



Source: Adapted from Heraty and Morley (1998: 196)

Expenditure on Training and Development: The survey revealed that the average expenditure on training and development in 1995, as a percentage of total annual salaries, was 3.59%. Of those organisations that responded to this section, 55% dedicated 1% or more of their annual salaries to training and development. Interestingly, organisation size did not appear to have any significant impact on the amount spent, although indigenous Irish organisations did appear to be spending less than their foreign-owned counterparts. Public sector organisations were also found to be spending less on training and development than those in the private sector, as the percentage of these organisations dedicating 1% or more of their annual salaries to training and development was 59% and 82% respectively.

Number of Days Training Received: As Heraty and Morley (1998) point out, the previous measure of training and development activity will always be of questionable accuracy for a number of reasons. Firstly, Irish organisations are not obliged to allocate a minimum percentage of turnover or annual salaries to training and development of employees. Secondly, there is no legal requirement for organisations to declare their annual spend on training and development. As a result of this, there is less incentive for organisations to track their actual expenditure. And thirdly, estimates of annual expenditure on training and development may not be accurate, as each organisation may have a different idea of what exactly constitutes expenditure on training and development. The significant amount of informal training undertaking makes these estimations still more troublesome. For these reasons, the 1995 Cranet E survey also asked respondents to reveal the number of annual training days provided to employees from each occupational band.

From the results shown in Table 4, it can be seen that the number of annual training days most frequently received by management is between three and five, while professional/technical employees are more likely to receive between one and three days of training (down from the 1992 survey, in which most of these employees received between three and five days training). The clerical and manual categories revealed higher percentages in the zero to one days of training category than any of the other occupational categories, although clerical and manual employees are also likely to receive between one and three days training. Although a general increase in the provision of training and development can be identified across all employee categories, the opposite can be said for the provision of more than five days of training. For

example, for all occupational groups the percentage of employees receiving between five and ten days training fell from 1992 to 1995. Furthermore, the percentage of employees receiving in excess of ten days training also fell for all occupational groups, with the exception of clerical workers.

Table 4: **Number of Days Training by Employee Category**

Average number of training days per employee per year	Management		Professional/Technical		Clerical		Manual	
	1995	1992	1995	1992	1995	1992	1995	1992
0.01 - 1.0	4.6	3.5	3.1	2.2	19.5	11.4	11.9	8.3
1.01 - 3.0	24.9	17.5	25.3	19.7	27.6	26.8	20.7	14.9
3.01 - 5.0	26.4	26.8	22.2	21.1	15.7	15.4	10.7	11.8
5.01 - 10.0	10.3	15.8	12.3	16.7	5.7	7.9	4.6	11.8
>10 days	3.4	4.4	4.5	4.8	1.5	0.9	3.4	2.2
Don't know	30.3	32.0	32.6	35.5	29.9	37.7	48.7	50.9

Source: Adapted from Heraty and Morley (1998: 198)

Training Methods Used: Another part of the survey asked companies to indicate their use of various methods of delivering training, and to also point out whether their use of these methods had increased, decreased or remained the same over the three years preceding the survey. Table 5 presents the results of this section.

The findings suggest that organisations are using a wide variety of methods, both informal and formal, and internal and external. For half of the methods mentioned (internal training staff, external providers, internal courses, external courses, and computer-based packages) the largest percentage of organisations stated that they had increased the use of these methods. For the remaining methods, most organisations had kept the use of these methods at the same level (with the exception of open learning and mentoring, for which most organisations (37.9% and 51.3% respectively) selected the "not used" option).

The methods that were associated with the greatest increase in use were external providers (having increased use in 54.8% of organisations), closely followed by internal courses (having increased use in 54.4% of organisations). Interestingly, although conventional methods such as on-the-job training – not used in a mere 0.4% of organisations – are remaining popular, the increase in the use of computer-based

packages, a more modern method, is also substantial (44.1% of organisations reported having increased their use of this method). It is also worth noting that public sector organisations were more likely to have increased their use of computer-based packages than were private sector organisations, with 59% of those in the public sector suggesting that they had increased the use of these.

Table 5: **Changes in the Use of Training Methods**

	Increased	Same	Decreased	Not used
Internal training staff	48.7	33.0	4.2	7.3
Line managers	34.9	41.8	3.4	8.8
External providers	54.8	31.4	5.7	3.1
On-the-job training	45.2	48.3	0.4	0.4
Internal courses	54.4	32.2	3.4	2.7
External courses	41.4	39.5	6.5	3.8
Coaching	23.8	32.2	1.5	27.2
Computer-based packages	44.1	24.1	0.8	20.7
Open learning	25.3	16.9	3.4	37.9
Mentoring	16.9	16.5	-	51.3

Source: Adapted from Heraty and Morley (1998: 198)

In general, the findings of this survey point to an improving picture of training and development in Irish organisations, showing increased involvement of line managers in training and development decision-making, in conjunction with a general increase in the provision of training and the adoption of an increasingly wide range of methods for delivering training.

Unlike the 1995 study, which collected information on the training and development provided to all employees within Irish organisations, the 1999/2000 Cranet E study (Heraty and Morley, 2003) focused specifically on management development in Irish organisations. The main measurement included in the survey related to the number of management training days provided per annum. The impact of a number of factors (including the existence of training and development policies, and a number of practice and structural factors) on the number of training days provided was also examined. The following results emerged from this study.

Number of Management Training and Development Days: Although both the one to three, and the three to five days categories recorded the highest frequencies for 1999, the mean number of days training stands at the higher end of this scale, at 4.5 per annum (Table 6). The provision of management development appears to have experienced a general increase from 1992 through to 1999, although the percentage of managers receiving between five and ten days of training has fallen through these years (from 15.8% in 1992 to 15.2% in 1999), as has the percentage receiving in excess of ten days of training (falling from 4.4% in 1992 to 3.6% in 1999). Nevertheless, the overall results are favourable, with the percentages in all categories having increased from 1995.

***Table 6*: Number of Management Training Days Per Annum**

Average Number of Training Days for Management per Year	1999 (%)	1995 (%)	1992 (%)
0.1 – 1.0	7.6	4.6	3.5
1.01 – 3.0	35.1	24.9	17.5
3.01 – 5.0	35.1	26.4	26.8
5.01 – 10.0	15.2	10.3	15.8
> 10.0	3.6	3.4	4.4

Source: Adapted from Heraty and Morley (2003)

Existence of Training and Development Policies: A further section was added to the survey to determine the impact, on the number of days training provided, of the existence of training and development policies. The results indicate that the mean number of days training provided per annum is higher in those instances where a written management development policy exists. For these companies, the mean number of days training per annum was 5.5, which contrasts with the 2.6 days provided by companies that did not have such a policy. This pattern is mirrored in relation to the existence of a wider personnel or human resource strategy. For those companies that have developed a written personnel or human resource strategy, the mean number of training days per annum stands at 5.3, in contrast to 3.2 days for those with no such strategy.

Existence of a Strong Internal Labour Market: In order to determine how the existence or otherwise of a strong internal labour market affects the number of

management training days provided, the survey gathered information on the following factors. Firstly, respondents were asked to indicate whether managerial vacancies were recruited from the internal labour market or externally. The findings from this variable reveal that the average number of training days is higher in those organisations that recruit internally than in those than recruit externally. However, this is only true for senior managers and middle managers, but not for junior managers. Secondly, organisations were asked to state whether they used retraining as an aid to recruitment. Again, those organisations that responded positively to this question provided employees with an average number of annual training days that was higher than that provided by organisations that did not use retraining as a recruitment aid.

The Impact of Structural Factors on Training and Development: A final element in the study involved an analysis of the affect that a number of structural variables – including size of overall workforce, size of managerial workforce, sector, and gross revenue – had on the number of training days provided to managers. Significantly, the results of this analysis indicated that none of the structural variables had any significant impact on the provision of training.

The general conclusion to be drawn from this study is that policy and internal labour market factors, rather than structural factors, have the greatest impact on the number of management training days provided. On the whole, the findings in relation to the number of management training days provided by organisations provide an encouraging view of the perceived importance of the development of managerial workers among Irish organisations.

1.10 Training And Development Outside Of Ireland

For the purposes of benchmarking, and to provide a general depiction of the level and nature of training and development that is currently taking place, it is useful to examine the available evidence relating to the training and development practices of companies that operate in other countries. However, the economy of one country will inevitably be subject to different conditions, opportunities and constraints than any other; Ireland is a relatively small economy, but one which has managed to prosper in recent years.

Much of this prosperity has been credited to its sizeable population of indigenous SMEs. When examining the evidence relating to companies operating outside the Irish context, it is necessary to bear these limitations in mind – as far as the present research is concerned at least. The remainder of this section offers an analysis of a number of studies which shed light on current training and development trends.

The Chartered Institute of Personnel and Development (CIPD) in the UK has devoted a great deal of attention to tracking the training and development practices of its member organisations. The most recent survey conducted by the CIPD (April 2004) represents what is perhaps one of its most innovative efforts, in terms of its analysis of areas that have in the past been neglected. A number of important issues were covered by the survey.

The Impact of Economic Conditions on Training and Development: In the past, it has often been the case that, in times of negative economic conditions, training and development has been one of the main areas of organisational expenditure to suffer. Although 51% of private sector respondents and 48% of public sector respondents to the survey believed that economic conditions had remained the same over the previous 12 months, 36% and 39% (respectively) believed that conditions had become worse. In terms of the impact of these changing conditions on training and development, 27% of private sector respondents and 30% of public sector respondents stated that economic conditions had negatively impacted on training and development expenditure. On the positive side however, 55% and 52% of private and public sector respondents believed that economic conditions had no impact on training expenditure, while 18% in each sector category believed that the impact had been positive.

Training and Development Expenditure: Significantly, 81% of respondents to the survey had set up a formal training budget. For private organisations, the average training budget was £672,484 (stg), while for those in the public sector it was £473,656. The expenditure per employee fell as organisation size increased. For example, it was £884.06 for organisations employing between 25-49 employees, £878.82 for those employing 50-99 employees, £660.62 for those employing between 100-249 employees, and £602.45 for organisations employing between 250-499 employees. It is probable that the underlying explanation for this pattern lies in the "economies of scale"

that larger organisations can benefit from when purchasing training and development products and services.

However, due to the growing concern in relation to the accuracy and reliability of training expenditure estimates, the survey asked respondents to indicate what percentage of training and development time was taken up by informal training activities. The reason for including this question was that informal training activities are often not sufficiently accounted for in expenditure estimates. Therefore, a high proportion of informal training activities would indicate that the training expenditure estimates should be interpreted with caution. The results show that in 34% of organisations informal training accounts for between 75-100% of total training, and in 75% of organisations informal training accounts for between 50% and 100% of training. On average, 60% of training is informal and the remaining 40% is formal.

Respondents were also asked to indicate the number of formal training days received by each employee per year. In 50% of organisations, employees received between three and five days of training per year, and in 32%, employees received more than five days per year. Employees in only 18% of organisations received less than three days of training per year.

Critical Factors for Supporting Learning: One section of the survey that offers important and revealing findings for human resource development researchers and practitioners is that section that asked respondents to identify what they perceived as being the three most important activities in supporting learning in an organisation. From this question, the three core activities selected were: "ensuring the organisational culture is supportive of learning and development" (selected by 74% of respondents); "ensuring managers have the skills for and are committed to supporting learning and development" (selected by 58% of organisations); and "providing employees with time to learn at work" (selected by 33% of organisations).

In the survey respondents were also asked to state what they believed was the single most important thing that an organisation must do to promote learning. Although the need for a supportive organisational culture was the predominant factor mentioned, a number of other suggestions were also common. These included the need to ensure that employees were provided with adequate resources to learn, the need to recognise differing employee preferences in relation to how they learn, and the need for senior managers to be strongly committed to learning within the organisation. Overall,

the results to this section are extremely encouraging, indicating a widespread acceptance of the importance of integrating training and development as a strategic activity.

Perceived Effectiveness of Various Training Practices: Respondents were asked to state which training practices they perceived as being the most effective in terms of provoking learning. The results would indicate that on-the-job training is perceived as being by far the most effective (having been selected by 41% of organisations), followed by coaching and mentoring (21%) and formal training courses (16%). Other methods such as self-study were attributed with much less effectiveness (3% of organisations), as was informal help from colleagues (8% of organisations).

In a previous survey, the CIPD discovered that time pressures presented a major barrier to effective learning. In the 2004 survey, respondents were asked to state how their choice of methods and materials helped to overcome this barrier. The findings suggest that a number of flexible arrangements are being adopted by organisations to ensure that time constraints do not prevent employees from learning. The three prevailing courses of action were arranging learning in "bite sized" chunks, providing learning materials that employees could access whenever they wanted, and reducing the length of training courses. Each of these solutions was adopted by more than three-quarters of respondents.

The results of this survey have painted a picture of an improving training and development scene in the UK. Although training expenditure decisions are still impacted by economic conditions, it would appear that most organisations appreciate the crucial role that training and development plays in the overall business strategy. Organisations do, however, seem to be continuing their reliance on conventional methods of delivering training, particularly on-the-job methods. Nonetheless, coaching and mentoring would appear to be emerging as valued learning techniques.

In 2002, the CIPD (April 2002) conducted a survey in the UK which provided a number of important findings in relation to the adoption of e-learning practices (excluding stand-alone computer- and technology-based methods, such as CD-ROMs). Of the total survey sample, 30.5% of respondents reported some use of e-learning. The e-learning findings below are based on this group of respondents.

In terms of the amount of total training time that consists of e-learning in these organisations, the findings suggest that most organisations (almost 70%) use e-learning a little, while only 6% use it a lot. Of the e-learning materials that are used, 61% of organisations reported that some of these materials were produced to meet their specific needs. While only 10% of organisations reported that the materials had been developed by external consultants, around 40% developed the materials in-house, and half of the companies used a mixture of both. What is interesting is that, in spite of the high incidence of customisation, most organisations (50.3%) spend less than 10% of their training budgets on e-learning materials. 23.5% of companies spend 10-25% of the training budgets on e-learning, and only 5.2% spend more than 25%.

The survey also asked respondents to indicate the types of training that e-learning was used for. From these results, it emerged that organisations prefer to use e-learning for IT skills training (83.7% of organisations) and other technical training (61.4% of organisations), than for training in management skills (48.4% of organisations), and other "soft" skills such as interpersonal skills (34.0% of organisations) and teambuilding (20.9% of organisations). This finding does not come as much of a surprise, as e-learning is obviously less appropriate for learning that requires changes in attitude and awareness, than it is for training of a more directly instructional nature.

Finally, organisations' perceptions of e-learning were analysed through a series of statements relating to e-learning, which organisations were asked to either agree or disagree with. From this set of statements, a number of revealing findings emerged. Firstly, 90.25 of organisations agreed that learners must develop a new attitude to learning in order for them to effectively partake in e-learning. Secondly, 69.3% of organisations agreed that the future possibilities of e-learning products have not been fully represented in the first-generation of e-learning products. Thirdly, 64.7% of organisations felt that those involved in training and development must develop an entirely new set of skills to design and deliver e-learning. And finally, 62.7% of organisations believed that e-learning is more effective when it is combined with conventional training and development methods. These findings suggest that organisations are willing to embrace the capabilities of e-learning, but are aware of the challenges that this new type of learning faces for both learners and training specialists alike.

The 2002 CIPD survey also contained a section that collected information on the support that organisations provide for employees who want to undertake any type of training. Respondents were asked to indicate whether they were prepared to meet employees' training expenses. Although most organisations indicated that they were prepared to provide financial support for most types of qualification, they were most likely to do so for professional qualifications (95% of organisations), then vocational training (88%), postgraduate degrees with business content (79%), and undergraduate degrees with business content (73%).

Additionally, organisations were asked to indicate whether they would allow employees to have time off for training. The results to this reflected the results to the previous question, as organisations were most likely to allow time off for professional qualifications (92.2%), followed by vocational training (92.1%), postgraduate degrees (76.5%), and undergraduate degrees (71.5%).

Again, these findings are encouraging, and suggest that organisations are willing to make whatever provisions are necessary in order to allow employees to pursue training and development.

The Use of "Modern" Training Methods and SMEs:

Sadler-Smith *et al* (2000) have noted that little empirical investigation has been undertaken into the use of what they refer to as "modern" training methods (that is, those which do not involve the trainer and trainee meeting face-to-face) in Small and Medium-Sized Enterprises (SMEs), despite the reality that these firms are responsible for the majority of employment in most European countries. They have conducted a survey of the training methods used in UK firms (ranging from 10 to 1000 employees) in an attempt to establish whether or not modern training methods (including distance learning, computer-based training, and videos) can realistically be adopted by SMEs. Leonard (1996), for example, has argued that the high cost of developing bespoke training materials (which often rely on high-technology delivery systems), designed to meet the training needs of the specific organisation, is likely to make it too difficult for SMEs to adopt them. For this reason, it is argued that larger firms have access to bespoke (and therefore client-focused) packages, while SMEs are forced to accept market-focused packages (which are chosen on the basis of provider menus). (Sadler-Smith *et al*, 2000).

However, the findings of the survey conducted by Sadler-Smith *et al* do not provide support for this argument. It was not found to be the case that modern methods were more frequently used by larger firms, nor were more traditional methods (e.g. at-job training) more frequently used by smaller companies. The most frequently used method was "at-job training", with 70.7% of small firms, 76.4% of medium-sized firms, and 86.4% of large firms claiming to be frequent users. The least frequently used methods were "distance learning" (being frequently used by only 8.1%, 3.6%, and 7.4% of small, medium and large firms respectively), and "video" (being frequently used by only 5.1%, 9.1%, and 27.2% of small, medium and large firms respectively).

The findings of a survey conducted by Huang (2001) into the use of various training methods (ranging from "traditional" to "modern" methods) among SMEs in Taiwan reinforce the findings of Sadler-Smith *et al*. Huang's analysis has shown that no one method stands out as being the most frequently used by SMEs, and they do seem to be making use of most of the methods available (with the exception of "Internet teaching", the usage of which is notably low). It would seem, therefore, that the slightly lower usage of "modern" methods among SMEs can be explained as a combination of the generally lower adoption of all training methods by SMEs, coupled with a universal uncertainty (as identified by Sadler-Smith *et al*) with regard to the effectiveness of modern methods.

1.11 Conclusion

From the literature that has been reviewed, a number of gaps in the available research base can be identified. For example, it is notable that there is currently a lack of understanding of the training practices of small companies – a major limitation given the prevalence and vital contribution of SMEs in Ireland's economy.

In relation to the finer details of training delivery, a number of areas call for examination. In addition to examining the extent of the provision of training and development, it is necessary to identify the perception of, approach to, and support for training and development requirements. Although some indication is available of the changes that are taking place in the use of particular methods for delivering training, further information is needed to identify patterns in terms of the length of time that specific methods have been in use by organisations, and which categories of employees

the methods are used for. With the emergence of modern, computer-based methods of delivering training, and the associated challenges that these methods pose for training specialists, it is important to develop an understanding of the acceptance and use of CBT, in addition to the factors that are limiting such take up. More severely neglected in the available literature and research has been the use of supportive techniques for encouraging learning, and the tools and visual aids used during training. It is intended that this research, guided by the underlying objectives, will assist in developing an understanding of these issues, by gathering primary data on the areas that have to date been under-researched. Chapter 2 details the methodology and the research proceedings.

The next section of this thesis offers an analysis of a further consideration that must be taken into account when examining the training and development practices of Irish organisations – that of Government intervention and support with regards to training provision. Many small companies operating under volatile and highly competitive conditions rely on support from external sources as a means of funding training and development activities. In recent years, the Irish Government has intensified and expanded its efforts to promote lifelong learning by providing financial and other support to companies wishing to train or develop their employees, and to employees and citizens who wish to take charge of their own development. Given the expanding role of the Government in supporting training and development, it is important to include this role in the current analysis. However, what remains unclear is the extent to which organisations are aware of, and make use of, the support mechanisms which have been put in place by the Government. These issues will, therefore, also be addressed in the collection of primary data for this research.

GOVERNMENT INTERVENTION

2.1 Introduction

In recent years, the Irish Government has contributed substantially to the education and training of the labour force. The primary catalyst of these interventions has been the Expert Group on Future Skills Needs. The Expert Group was put in place by the Government in 1997, when the increasing pace of economic expansion was resulting in growing skills shortages across several areas of the economy (areas of skills shortage that have been identified by the Expert Group include the Information Technology (IT) sector (December 1998; February 2000; July 2001; January 2002), Life Sciences (July 2001), the Construction Industry (February 2000; August 2000; July 2001), and Traditional Manufacturing (August 2000)). Indeed, Government interventions in the education and training of the labour force did take place prior to the establishment of the Expert Group on Future Skills Needs. However, it was upon receiving the recommendations of the Expert Group that the Government announced plans to make a more substantial, and long-term, commitment to educating and training the labour force in general, and the IT labour force in particular. The extent to which the established support mechanisms have been utilised by technology companies will be analysed as part of the data collection process of this research.

2.1.1 The Expert Group on Future Skills Needs

At the time that the Government established the Expert Group on Future Skills Needs, the Irish and world economies were experiencing unprecedented rates of growth. The growth in Ireland was facilitated by a combination of low inflation, moderate increases in wages, and a relatively stable exchange rate. These factors in turn provided a welcoming climate for foreign direct investment. However, vital to the ability of Irish technology companies to take advantage of this favourable economic climate was the availability of a large, highly skilled labour force. (The Expert Group on Future Skills Needs, January 2002). Three factors contributed to the provision of such a labour force:

1) The increasing size of the working age population (i.e. those aged 15 to 64 years); in Ireland, the 1970s saw a substantial increase in birth rates, which by the 1990s meant large increases in the size of the working age population.
2) Net immigration, which contrasted with the patterns of net emigration witnessed during the 1980s.
3) Rising labour force participation rates; the increase was particularly marked amongst young female members of the working age population.

(The Expert Group on Future Skills Needs, January 2002; July 2001).

The Expert Group has noted the increasing importance of a skilled workforce to the technology sector. For instance, during the 1990s, companies operating in the software sector were seen to be locating in those countries that offered a highly skilled technological labour force (such as Ireland) (The Expert Group on Future Skills Needs, July 2001). The National Competitiveness Council (2001) has also noted that the quality of the human resource base that a country has available to it is the primary determinant of the economic output and growth of that country. Although Irish companies had access to an increasing supply of highly-qualified labour during much of the economic boom, in the period approaching the latter years of the 1990s both labour and skills shortages began to emerge. These shortages translated into pressure for employers to increase wages, combined with a lower capacity to produce. In short, the competitiveness and productivity of Irish companies were put at risk by these labour and skills shortages. Table 7 below illustrates the severity of skills shortages, as manifested in job vacancy rates, between the years 1998 and 2000. The shortages are particularly marked in technology-related professions.

Table 7: **Percentage Vacancies by Occupational Group 1998 - 2000**

Occupational Group	1998/99	1999/00
Managers/Proprietors	2.3	2.0
Other Assoc. Professionals	1.0	2.2
Science Assoc. Professionals	5.1	2.5
Security	8.2	3.6
Science Professionals	7.1	3.8
Production Operatives	5.4	4.3
Transport & Communications	4.6	5.0
Sales	6.6	5.1
Clerical & Secretarial	5.3	6.1
Labourers/Unskilled	4.5	6.3
Engineering Professionals	11.0	7.1
Other Professionals	3.2	8.9
Computer Professionals	14.9	9.4
Computer Assoc. Professionals	12.9	9.6
Skilled Maintenance & Skilled Prod.	8.6	10.5
Personal Services	7.2	10.6
Engineering Assoc. Professionals	10.6	15.1
TOTAL	5.8	6.4

Source: Adapted from FÁS/Forfás/ESRI, 1999/2000

The Government established the Expert Group on Future Skills Needs for the purpose of identifying, and taking measures to provide for, the main areas of skills need in the Irish economy. As Expert Group Chairman, Dr Danny O'Hare, stated, the work of the Group will help to secure the provision of "the necessary skills base for a competitive, knowledge-driven economy in the areas, which demand immediate attention if we wish to see continued economic growth" (www.skillsireland.ie, 31st July 2001: 2).

The Expert Group on Future Skills Needs is one element of a three-tiered initiative implemented by the Government in 1997 to address this issue. The initiative, which takes the overall form of the Business Education and Training Partnership, comprises the following three elements:

1) **The Business Education and Training Partnership Forum**: which represents the interests of industry, Government, the education and training sectors, and other interested parties.
2) **The Expert Group on Future Skills Needs**: which assumes responsibility for the identification of future skills needs, and the development of proposals to help meet these needs.
3) **The Management Implementation Group**: which is responsible for overseeing the implementation of any recommendations that may be made by the Expert Group.

(The Expert Group on Future Skills Needs, December 1998; February 2000; July 2001).

2.1.2 The Expert Group's Concern With the IT Sector

The Expert Group has agreed three criteria to be used when deciding which sector(s) of the economy to focus its efforts on:

- The importance of a sector to the current and future state of the Irish economy.
- The level of labour and skills shortages in a sector.
- The degree of need for long-term planning in relation to education and training for a sector (some sectors may, for example, necessitate a longer lead-time for skills provision).

(The Expert Group on Future Skills Needs, July 2001).

On the basis of these criteria, the Expert Group decided to focus its efforts on the skills needs of Ireland's IT sector. This is the sector that was seen as offering the greatest growth potential for Irish companies, while exhibiting the greatest demand for skills. Since the IT industry demands mainly high-level skills, the lead-time for the provision of these skills is also long. The IT sector was the sole focus of the Expert Group's first report (published in December 1998), and has since remained a major priority for the Group.

The Expert Group concerns itself with the calculation of projections relating to the average annual demand for IT skills in Ireland. From these demand projections, and

corresponding supply estimates, it is then able to provide an estimate of the annual skills deficit that will occur if co-operative action is not taken by the Government, industry, and education and training providers, to increase the skills base available to industry.

Since the publication of the Expert Group's first report in 1998, the world economy has experienced somewhat of a downturn, spurred by the current weakness of the US economy. The downturn in the US economy commenced in mid-2000, and the effects of this downturn have rippled through the world's other major economies, including Japan and the EU. In terms of Ireland's technology sector, this economic slowdown has manifested itself in widespread job cuts and declining profitability. The demand for exports has been significantly curbed due to reduced demand in the recipient economies, coupled with the persistent strength of the Euro, and the high inflation rate in Ireland. Meanwhile, domestic demand has also been adversely affected by reduced personal consumption. (The Expert Group on Future Skills Needs, January 2002). The growth in employment experienced in the Irish economy between 1999 and 2000, at 4.7% (76,000 additional workers) represented a substantial fall from the growth experienced between 1998 and 1999, at 6.3% (95,000 additional workers). (The Expert Group on Future Skills Needs, July 2001).

2.1.3 **Impact of the Global Slowdown on IT Skills**

The Expert Group has since reviewed its estimates of the skills shortages that are likely to occur if action is not taken. These estimates continue to point to a significant potential IT skills deficit, despite the more unfavourable economic outlook.

In recent years, Ireland has witnessed a slowdown in the rate of growth of its labour force supply. Between 1998 and 1999, the labour force increased by 4.0% (an additional 65,000 people). Between 1999 and 2000 this rate of increase had slowed to 3.3% (an additional 57,000 people). (The Expert Group on Future Skills Needs, July 2001). And this trend is set to continue, with the three main factors influencing labour force supply in decline: the natural population increase is slowing down, due to the plummeting birth rate experienced from 1981 onwards (this means that the proportion of students in relation to the overall workforce population is decreasing); the recent trend of net immigration is likely to become more subdued, due to the less favourable

economic outlook; and finally, the potential for expansion in the rate of female participation has reached its peak, due to the already high incidence of female participation in today's labour market.

This continuing fall in the rate of labour supply growth, coupled with a decelerating rate of employment growth, means that, increasingly, technology companies will have to consider ways of maximising the potential of their current workforce, to meet the ever changing skills needs faced by the technology sector. Peter Rigney, of the Irish Congress of Trade Unions, has noted that it is unrealistic for companies to continue to rely on education and training institutions to provide a fresh supply of skilled workers, while these companies fail to mobilise the full potential of the workers that they currently have. (Business Education & Training Partnership, March 2000).

The stock of knowledge capital, and the adaptability of employees, are, and will continue to be, crucial to the survival of technology companies in the uncertain climate of recent times. In a review of the technology industry in the UK and Ireland, Deloitte & Touche (2002) discovered that technology companies are responding to these uncertainties by looking inwards. 44% of companies surveyed reported that they had conducted a strategic review, and 40% had reviewed their business model. These companies were positioning themselves in such a way so that they would have the capability to embrace any new opportunities that would arise. Many of these companies believed that future high-growth areas would include mobile computing (29% of respondents), Biotech products (27% of respondents) and next generation computers and peripherals (19% of respondents). At the present time, many companies have positioned themselves to provide maintenance services, outsourcing services, and IT security; areas that have been less affected by falling domestic and international IT expenditures.

In light of the changes that are taking place within these technology companies, one challenge that is of critical importance to these companies is ensuring that their employees have the skills and adaptability necessary to embrace these changes. The companies interviewed by Deloitte & Touche remarked that a skilled work force had been the primary driver of past growth, and would be the most necessary ingredient for future growth. In spite of this, UK companies continue to experience considerable IT

skills shortages. The critical success factors identified by Deloitte & Touche included a skilled workforce (48% of respondents), technological innovation (44% of respondents), and a strong management team (42% of respondents).

It would seem, then, that the education and training of the existing workforce is not optional, but indeed necessary, if Irish technology companies are to survive their current loss of productivity and competitiveness. Skills shortages are a reality. If they are not planned for through education and training, market forces will intervene, causing wage inflation and a further loss of competitiveness for Irish technology companies (The Expert Group on Future Skills Needs, December 1998).

The Expert Group on Future Skills Needs concluded that, in the medium- to long-term, an adequate supply of skilled labour should help to protect Irish technology companies from being severely affected by the economic slowdown. There are three reasons for this:

1) Throughout Europe, vast shortages of IT skills still remain to be catered for.
2) Many technology companies are moving into high-value added activities, for which demand is strong.
3) And the European market, which has experienced a less marked slowdown than the US, remains an important market for Irish technology exports.

(The Expert Group on Future Skills Needs, July 2001).

2.2 Extent Of Skills Needs For The IT Sector

In the First Report of the Expert Group on Future Skills Needs (December 1998), the Group published its forecasts for future skills demand in the IT sector. These forecasts have since been updated to take account of the changing economic climate (The Expert Group on Future Skills Needs, July 2001). It should be noted that the Expert Group defines the "IT sector" as incorporating the hardware and software industries, and also the demand for technologists from IT departments in companies and organisations throughout the Irish economy. The Expert Group's projections are based on the

demand for *high-level* (i.e. third-level provided) skills. This category incorporates technologist graduates with the following skills:

- *Professionals* who possess a primary degree or higher.
- *Higher Technicians* who possess a national diploma (which takes three years on a full-time basis).
- *Technicians* who possess a national certificate (which takes two years on a full-time basis).

The projections do not include 'non-technologists', which include skilled and semi-skilled operatives. These workers may possess skills certified by FÁS, Post-Leaving Certificate courses, or other short courses. (The Expert Group on Future Skills Needs, December 1998).

Based on these definitions, the Expert Group identified four categories of high-level skills needs:

In the Software Sector:

- Computer Science Professionals
- Computer Science Technicians

In the Hardware Sector:

- Engineering Professionals
- Engineering Technicians

2.2.1 **1998 Skills Projections**

The projections in the First Report (December 1998) were based on what the Expert Group termed a 'high employment growth scenario'. This scenario was based on the assumption that strong economic growth would continue in Ireland, and that the polices implemented following this report's recommendations would lead to an adequate supply of skilled labour for the IT sector to maintain strong growth.

Projections for the software sector were based on a survey carried out for FÁS by McIver Consulting (1998), and those for the electronics hardware sector were based on a survey carried out for Forfás by Eirlink International (1998).

The skills projections identified in the First Report were in relation to average annual demand up to 2003. The projections were as follows:

***Table 8*: First Report Overall Projections**

Annual Forecasts	Projected Demand	Projected Supply	Annual Shortfall
Engineering & Computer Science *Professionals*	4,400	3,600	800
Engineering & Computer Science	3,900	2,500	1,400
Total	**8,300**	**6,100**	**2,200**

Source: Adapted from The Expert Group on Future Skills Needs, December 1998

It can be seen from this that a total annual shortfall of 2,200 technologists was projected. This shortfall consisted of 800 professionals and 1,400 technicians, despite the fact that the estimates took into account the Government's announcement in 1997 that it would be substantially increasing the number of third level places available for engineering technicians (750 additional places per annum) and computer science professionals (1,000 additional places per annum).

The composition of the projected demand was as follows:

***Table 9*: First Report Demand Projections**

Engineering Professionals	2,000
Engineering Technicians	1,800
Computer Science Professionals	2,400
Computer Science Technicians	2,100
Total Demand	**8,300**

Source: Adapted from The Expert Group on Future Skills Needs, December 1998

The sources of the projected supply included new graduates, immigration of qualified graduates, and up-skilling of the existing workforce:

***Table 10*: First Report Supply Sources**

Annual Forecasts	Graduates	Net Immigration	Up-Skilling	**Total Supply**
Engineering & Computer Science *Professionals*	3,300	150	150	**3,600**
Engineering & Computer Science *Technicians*	2,100	150	250	**2,500**
Total	**5,400**	**300**	**400**	**6,100**

Source: Adapted from The Expert Group on Future Skills Needs, December 1998

This breakdown highlights the relatively low contribution that employee up-skilling made to the projected annual supply, contributing to just 4.2% of professionals, although it did contribute to 10% of technicians. Overall, up-skilling accounted for just 6.6% of the total supply.

The Expert Group has noted that the skills needs of the IT sector change and fluctuate on a regular basis. For this reason it believes that past trends alone would not be a suitable indicator for future skills needs. The Group also recognised this when formulating the annual skills forecasts, and it believes that the annual average balance approach adopted would be the most appropriate for the purposes of policy responses.

2.2.2 2001 Skills Projections

The Third Report of the Expert Group on Future Skills Needs (July 2001) contains revised projections of future demand for IT skills. These projections give due consideration to the slowdown currently being experienced by the world economies. In spite of the slowdown, the Expert Group believes that the demand for IT skills will still remain high. In fact, the annual demand projections for engineering and computer

science professionals have increased substantially since the First Report. The reasons for this increased demand stem mostly from the software sector, and include: the increasing pace with which IT is filtering through the economy; increasing high-level skill requirements in the software sector; the rise of new IT services, relating for example to digital media and the Internet; and the increasing importance of e-Business. The contribution of the hardware sector to this demand consists mainly of demand stemming from the increased importance of high-value added areas of business, such as Integrated Circuit design. Technology companies are also demanding an increasingly broad range of skills from employees, in line with the blurring distinctions between hardware and software engineering, and between technician-level and professional-level employees in the software sector.

The projections set out in the Third Report were based on new studies, carried out again by McIver Consulting (December 2000) for the software sector, and Eirlink International (December 2000) for the electronics hardware sector. Both sectoral studies found that business growth was being constrained by a lack of skilled staff.

Projections in the Third Report relate to the average annual demand for IT skills between 2001-2005. The Expert Group believes that these projections should be robust enough to account for fluctuating economic conditions, since the projections have allowed for some volatility in demand, and also for the different growth dynamics associated with the hardware and software sectors.

The following projections for average annual demand and supply between 2001-2005 were put forward:

***Table 11*: Third Report Overall Projections**

	Demand	Supply	Balance
Professionals	6,842	4,350	**- 2,492**
Of which:			
Computing	4,383	2,770	**- 1,613**
Engineers	2,459	1,580	**- 879**
Technicians	2,462	1,520	**- 840**
Of which:			
Computing	1,623	523	**- 1,100**
Engineers	839	1,099	**260**
Total	**9,304**	**5,972**	**- 3,332**

Source: Adapted from The Expert Group on Future Skills Needs, July 2001

It is clear from these projections that the shortage of professional level employees (at 2,492 per annum) is much more severe than that of technician level employees (at 840 per annum). The Expert Group has explained the slowing expansion of demand for technicians as a consequence of the move towards high-value added activities. This trend appears to have manifested itself more deeply in the electronics hardware sector, where the demand for professionals in place of technicians is actually forecast to result in a surplus of engineering technicians. The Expert Group suggests that this surplus could be used to help reduce the shortfall of computer science technicians, given that employees are now expected to possess a broader range of skills. The Group further asserts that this situation poses an opportunity for industry and education to develop new and innovative ways of training and developing employees.

2.2.3 Addressing the Skills Issue

It is clear from these projections that lack of employee skills is a major issue for Irish technology companies. The Expert Group has called upon the Government to provide support mechanisms that will allow technology companies and their employees to access education and training. The Group acknowledges the fundamental contradiction between the ability of companies to plan for skills needs over a relatively short time

span only, and the time that it takes for the education and training sectors to respond to these needs (generally, the provision of skills can take as long as four years). Therefore, the Expert Group has determined that Government co-operation is necessary for the purposes of forecasting future skills needs, and establishing policies and mechanisms to help meet these needs. (The Expert Group on Future Skills Needs, December 1998; July 2001).

Government interventions have also been designed to address several other inefficiencies in the education and training system, including:

- The range of education and training courses available in Ireland, particularly in areas outside Dublin.
- The range of training options open to Irish SMEs.
- Mechanisms for sourcing education and training providers.
- Mechanisms for ensuring the quality of education and training provision.
- Mechanisms for ensuring that education and training activities are relevant to the needs of the company and of the individual employees.
- Providing access to training for employees (this may include offering multiple delivery options to meet individual preferences, contributing to the cost of training, and releasing employees for training).

(The Expert Group on Future Skills Needs, December 1998; February 2000; August 2000; July 2001).

Although the Government has made a commitment to help tackle these issues, it has emphasised that these endeavours will not be successful without co-operation from industry as a whole (and individual companies in particular), and also from the education and training establishments. Individual companies must still take primary responsibility for providing access to training and development for their employees, and also for encouraging the employees to take advantage of these opportunities.

2.2.4 Non-Technologist Skills Needs

One notable limitation of the work of the Expert Group, and of many of the Government's interventions to date, is the failure to address lower level skills needs, notably in relation to skilled and semi-skilled operatives. Although the Expert Group did not decide to address these needs, they have been acknowledged to a certain extent in previous investments (such as the £IR 250m Scientific and Technological Education (Investment) Fund). The sectoral studies undertaken by McIver Consulting (1998) and Eirlink International (1998) both indicate a substantial level of demand for skilled and semi-skilled operatives, with demand for the former being the most severe.

2.3 What Interventions Have The Government Put In Place To Help Employers?

2.3.1 Recommendations of the Expert Group on Future Skills Needs

The Expert Group has made quite a wide range of recommendations, many of which have led the Government to commit to investments and other initiatives designed to improve the quantity and quality of education and training that is undertaken. Inherent in the recommendations put forward by the Expert Group are the concerns of cost-effectiveness, flexibility, the use of quantitative and qualitative measures (with a more recent move towards qualitative measures), and co-operation.

Cost-Effectiveness

The recommendations contained in the Expert Group reports place a key emphasis on maximising the potential of existing education and training facilities, in order to increase cost-effectiveness.

Flexibility

Improving the flexibility of programmes is an important objective for the Group. The relatively long duration of a course leading to a high-level qualification is adverse to the rate at which skills needs can change within the technology sector. Measures to improve the flexibility of learning can help to ensure that skills acquired remain

relevant to the needs of employers. Such measures include modular programme structures; accreditation of prior learning and experience; multi-skilling and conversion programmes (such as the Graduate Conversion Programme); and accelerated training programmes (such as the Accelerated Technician Programme, which is supported by the Government).

Move Towards Qualitative Measures

The First Report of the Expert Group (December 1998) made recommendations that, for the most part, urged the use of quantitative interventions, designed to increase the quantity of skilled labour available. In 1999, for example, based on the recommendations contained in the First Report, the Government announced an investment of £IR 75m (€ 95.23m) for the provision of 5,400 new places in third-level institutions for courses related to IT skills. However, by the time that the Third Report *(July 2001)* was in production, it was realised that such quantitative measures could not remain effective for much longer, given the deceleration of labour force supply and employment growth. The Expert Group now considers that qualitative measures need to be pursued in order to provide for the skills needs of the future. Such qualitative measures will rely heavily on updating and augmenting the skills of existing employees.

Co-operation

The main focus of the Expert Group's recommendations is on encouraging co-operation from individual technology companies. Ultimately, it will be employers who use and benefit from the skills provided by education and training institutions. It is therefore realistic and necessary that they provide continuous input to ensure that courses provide skills relevant to market needs, that these skills are provided when they are needed, and that the quality of the education or training provision is high. Employers are also urged to contribute to the costs associated with education and training, and to take responsibility for ensuring that employees have access to courses. Employees may undertake study through night classes or part-time study leave. Other options include block and sandwich release programmes, and distance learning through computer-based and home study methods.

The Expert Group has called for companies to work with the Institutes of Technology and other third-level institutions in developing and providing company-

based and company-sponsored programmes, which would include sandwich and block technician courses. The Group recommends that collaboration between individual companies and third-level institutions should be used to pool and share resources, including physical resources (such as training space and facilities) and human and intellectual resources (including staff exchanges for the provision of training, and student exchanges for study or employment). Finally, the Group has proposed that the Government contribute further to help identify training and education priorities for existing employees, and these needs can then be communicated to education and training providers. Forfás, FÁS, the Department of Enterprise Trade and Employment, and the Department of Education and Science, should be involved in these reviews.

(The Expert Group on Future Skills Needs, December 1998; February 2000; August 2000; July 2001).

In line with the Expert Group's recommendations, interventions used by the Government to date have included investment funds directed at increasing the number of third-level places (both full-time and part-time) available for study of IT subjects, and other support mechanisms designed to encourage collaboration between industry partners and education and training institutions, with a view to producing more relevant, demand-led courses, and new innovative solutions to meet skills needs. A further emphasis has also been placed on raising awareness (within the existing and future labour force) of IT skills opportunities.

2.3.2 **Expenditure on IT Places**

Two primary phases of substantial, long-term investment in the education and training of the IT labour force can be identified.

1) In the Third Report of the Expert Group (July 2001), an investment of £IR 130m (€ 165.07m) was proposed, to be spread over five years. The investment was designed to address four key priority areas:

a) **Part-time Education & In-Company Training:** The purpose of this investment is to provide access to education and training for employees who may otherwise find it difficult to find the time and financial resources to

undertake education or training. The Institute Trainee Programme is one of the main programmes to benefit from this investment area.

b) **Post-Graduate Conversion Courses:** Funding for additional Post-Graduate Conversion Courses, particularly those operated on a part-time basis, is designed to make these courses a more permanent part of the Government's plan to tackle skills needs.

c) **Completion Rates:** Completion rates for third-level courses in IT-related subjects have generally been lower than those for other subjects. Improving the flexibility of courses, so that course delivery is more closely matched to individual preferences, and so that students are ensured that the skills they acquire are the skills that employers need, would help to improve completion rates.

d) **Equipment Renewal:** Part of this investment is designed for the renewal of existing equipment, and the purchase of new state-of-the art equipment, for IT-related education.

2) The National Development Plan 2000-2006 has allocated £IR 9.9 billion (€ 12.6 billion) specifically to its Employment and Human Resource Development Operational Programme. This investment is split between two regions: the Southern and Eastern Region; and the Border, Midland and Western Region. The per capita investment for these two regions is set at £IR 2,651 and £IR 2,936 respectively. The higher per capita spend in the Border, Midland and Western Region is one element of the Government's efforts to promote more equal development between the two regions. The £IR 9.9 billion investment is divided into four sub-programmes. The **Employability** sub-programme is intended to promote social inclusion, through sectoral training, for example, of the unemployed and those who have been made redundant. An **Entrepreneurship** sub-programme has been established to provide, amongst other things, Management training to SMEs. The sub-programme for **Adaptability** (which is receiving the highest investment of all four sub-programmes) targets initiatives that will

provide access to skills development, apprenticeship/traineeship, and sectoral training opportunities, with a view to promoting Lifelong Learning for all. This sub-programme is also concerned with improving the quality of education and training. And the final sub-programme, **Equality**, is concerned with the provision of education and training opportunities to people with disabilities, and other groups who have in the past found it difficult to access these opportunities.

(The National Development Plan 2000 – 2006).

Aside from these investments, the Government has recently made a number of other investments, which include:

- ❒ March 1997: The Government announced plans to increase the number of study places for engineering technicians by 750 annually, and the number of places for computer professionals by 1,000 annually.

- ❒ January 1999: additional places were provided on Accelerated Technician Programmes, in order to incorporate the provision of skills in IT-related areas.
- ❒ April 1999: £IR 75m (€ 95.23m) was assigned to the Department of Education and Science for 5,400 new IT places in third-level courses.

- ❒ June 1999: The Government pledged a further £IR 6m (€ 7.62m) to continue the supply of 1,500 places per year on IT-related Post-Graduate Conversion Programmes.

- ❒ December 1999: an extra £IR 3.2m (€ 4.06m) was allocated to FAS for the purposes of training 700 people in IT-related areas.

- ❒ In addition, £IR 250m (€ 317.5m) was allocated to the Scientific and Technological Education (Investment) Fund, which contributes towards the training of skilled and semi-skilled operatives in the technology sector.

2.3.3 Linking Employers With Education/Training Providers

- The Business Education and Training Partnership Forum provides a mechanism through which representatives from industry, education and training institutions, and Government departments, can express their ideas, needs and opinions, which are open to feedback from others. A report is published after each Forum meeting, as a means of further communicating details of the meetings. (Business Education & Training Partnership, March 2000).

- Conversion courses (and other multi-skilling initiatives) have been encouraged and supported by the Government. Such courses provide an effective fast-track mechanism for providing technology skills to graduates from non-technology subjects. These courses are particularly well suited to software-related employment (although unsuitable for engineers), and allow the skills to be highly customised to the needs of the individual organisation. The new Graduate Skills Conversion Programme was introduced in 1999 (in place of the Advanced Technical Skills Programme), and it can be untaken on a full-time or a part-time basis.

- Accelerated Technician Programmes were launched in January 1998, although it was not until 1999 that they were expanded to include technology-related skills. Operated through the Institutes of Technology, these programmes are of 18 months duration, comprising of one six month industrial placement and two six month periods of study. The programmes lead to a National Certificate Qualification, and are open to both new students and current employees. The benefits of these programmes are shared by the Institute of Technology (which benefits from stronger links with industry), the student (who gains a third level qualification), and the employer (who benefits from the worker's skills, and also from their contribution to the course design and student selection).

- Net College is an interactive training system, which is provided online by FÁS. Introduced in 2000, Net College provides a range of e-learning courses, targeted at employers, employees and the unemployed. As the course materials are delivered online, the learner can proceed through the course at a time and pace

that is suitable to them. Indeed, this facility offers all the benefits of a Web-based course, but requires a much lower financial investment from the employer than is often associated with the provision of Web-based courses. A wide range of course options are available. These include Business courses (such as "Finance for the Non-Financial"), Web Design/Programming courses (such as "Object Oriented Analysis and Design"), and Soft Skills / Personal Development courses (such as the "Leading Teams Series"), amongst others. (www.fas-netcollege.com).

- Fastrack to IT (FIT) is an initiative that is being piloted in the Ballymun area of Dublin, and is co-funded by the Department of Enterprise, Trade and Employment. The scheme involves co-operation from major employers in the IT sector (including Microsoft, Oracle, and IBM), to provide members of the long-term unemployed with the skills currently in highest demand in the IT sector.

- The Human Resources for Clients unit of Enterprise Ireland (www.enterprise-ireland.com) is concerned with providing businesses with the marketing skills needed to promote their products or services in export markets. Schemes offered include the 'Marketing Skills for Profitable Export Growth' programme, which assists businesses in the development of a Strategic Marketing Plan, upon completion of which the businesses will receive a Certificate in Marketing Practice from the Marketing Institute; the 'Selling Skills Workshop', which provides clients with the ability to convert overseas contacts into successful business relationships; and 'Business Language Training', which provides clients with the ability to apply their language skills in the real business context.

- The Competitive strand of the Funding for Industry (FOI) initiative involves a collection of funds that are made available for human resource development in industry. One example of the type of funding available is the 'Research, Technology and Innovation' (RTI) grant scheme, which provides financial assistance for industry-led research related to product or process development.

Enterprise Ireland supervises the allocation of these funds, which is carried out on a competitive basis.

(www.enterprise-ireland.com)

- The National Register of Trainers is a listing of registered trainers that is provided by FÁS and Enterprise Ireland. This register allows employers to search for trainers by location, training category, or programme name.

- A number of other services are provided by FÁS in an effort to make training and development more accessible for employers, employees and citizens. The Training Advisory Service is provided on a regional basis, and offers support, advice and programmes to a range of companies, including small firms and companies operating in the software sector. FÁS also offers a range of (in-person) training courses, on a day or evening basis, throughout Ireland. These courses include computing technician traineeships and computer-aided design programmes, as well as soft skills development. A specific Competency Development Programme is run by FÁS, which offers grants of up to 60% of total training costs to develop the core competencies of targeted employees in organisations.

2.3.4 **Linking Employers With Each Other**

- The National Training Fund is an initiative aimed at increasing the quantity and quality of training that is undertaken by services and manufacturing companies. The fund consists of contributions made by companies themselves, although the initiative is supported by the Government. The fund is one mechanism that is used to support the Skillnets initiative.

- Skillnets (www.skillnets.com) is an enterprise-led initiative, which supports the development of 'networks' of companies, which come together in order to develop collective, innovative solutions to training and development needs. Networks are particularly beneficial to SMEs, who benefit from the knowledge and best practice experience of larger companies. Through the networks, SMEs

can also enjoy a level of access to training that they may not have experienced if they were acting individually to meet their training and development needs.

One example of a Skillnets network is the "it@cork" Skillnet (www.itcork.ie). This group of technology companies have joined forces to develop management development modules, aimed at addressing the core management skills deficit that is common in many technology companies. Modules have been made available to the companies in the areas of human resource development, certain management issues specific to the IT sector, and customer development skills.

- The Small Firm Cluster Programme is a programme that is targeted at the owner/managers of small companies in the early stages of development. Clusters of around ten companies are formed on a regional basis. Each company makes a small financial contribution to the programme, for access to twenty days of in-company, customised training over the course of one year. This training is provided by a panel of trainers that is made accessible to all the companies in the cluster. The real benefit of the training derives from the customised content, as each company can choose from a range of training options, and a monthly review takes place in which the precise training needs of the company are idrntified.

2.3.5 **Increasing Awareness of Skills Opportunities**

- STEPS (the Science, Technology & Engineering Programme for Schools) is a partnership initiative, designed to inform post-primary school students of the career and skills opportunities available in the IT sector. It does this by arranging visits for the students to large technology companies, with an aim to facilitating the production of long-term relationships between these students and the technology companies.

- Excellence Through People represents a national standard for quality in human resource development practices. Achieving accreditation of this standard (which is applicable for one year) helps companies to develop best practices in HRD, and also to attract and retain a high quality workforce. Accreditation is open to companies of any size and sector.

- The 1999 'Qualifications (Education and Training) Act' governed the establishment of three bodies concerned with monitoring the quality of education and training provision, namely: the 'National Qualifications Authority of Ireland'; the 'Further Education and Training Awards Council' (FETAC); and the 'Higher Education and Training Awards Council' (HETAC). These developments have gone some way towards ensuring prospective students of the quality of education and training provision.

2.3.6 **Other Sources of Funding and Advice**

- The Non-Competitive strand of the FOI (Funding for Industry) scheme allows Enterprise Ireland to work in collaboration with an individual technology company, in an effort to produce an in-depth understanding of the needs of that company, and of the level of Government support that is required to help the company meet those needs.

  (www.enterprise-ireland.com).

- The Mentor Network (operated by Enterprise Ireland) provides a service that links SMEs and newly developed companies to expert advice in the form of retired or semi-retired managers who have experience in a similar business area.

- The Wider Horizons Training Programme is operated under the International Fund of Ireland, and is concerned with providing training and work experience to trainees from the North and South of Ireland's border region. The placements can take place at home or abroad, and are generally of between one and two months duration. Those aged between 16 and 18 are the target group

for the programme, and placements usually involve a group of between 10 and 25 people.

- FÁS runs a National Traineeship Programme, which involves networks of companies working together with FÁS for the purpose of developing needs-based training provision for trainees. FÁS provides mentoring and coaching to the individual company, which in turn provides a mentor to the trainee. 75% of the training costs are funded by FÁS.

- The Leonardo da Vinci programme is a European Community vocational training programme, which aims to build upon the contribution that vocational training makes to the competitiveness of companies and economies. Under the programme, grants are made available for placements and exchanges.

- The Export Orientation Programme is a graduate placement programme which involves a twelve month place, at least six months of which must take place in a foreign country. This provides the company with an opportunity to establish a presence in a foreign market, and at the same time provides the graduate with invaluable work experience. Enterprise Ireland provides financial support for companies that sponsor a graduate place on the Export Orientation Programme.

- The Socrates programme was set up as a mechanism through which individuals could receive training or education or teach in another European country. The programme provides grant aid for such placements, and this aid covers a wide variety of training and learning activities, including higher education, adult education and open/distance learning.

- Management Development Grants are provided to small companies by FÁS in association with Enterprise Ireland. These grants are structured through a programme that is customised on the basis of the needs of the owner/manager of each company. The aim of the programme is to develop the skills of owner/managers in small, developing companies.

2.4 Conclusion

The Government, primarily through the Expert Group on Future Skills Needs, has identified quite a number of areas, in the education and training of the labour force, that demand improvement if technology companies are to remain competitive into the future. The National Competitiveness Council (2001) has concluded that a substantial effort needs to be made in bringing education and training provision in line with alterations in demographic factors, the lifestyle of employees, new technologies, and the rate of change in relation to the skills requirements of technology companies. Individual companies need to acknowledge their role in providing access to training for their employees, and in ensuring that this training provision is flexible in design and delivery. It is clear that the Government has made a substantial, and long-term, effort to address these issues. What remains to be seen, however, is how effective these interventions have actually been. A key aim of the survey contained in this report is to assess the level of awareness among Irish technology companies of the support mechanisms that have been detailed above. It also intends to identify the extent to which companies have drawn upon these support mechanisms, as a means of meeting their training and development needs. Following from this analysis, a conclusion will be drawn in relation to the overall contribution that Government intervention has made to the training and development situation in the Irish technology sector.

METHODOLOGY

3.1 Introduction

For any given research project, the research problem, questions and objectives, can be seen as existing at a theoretical level. To generate the knowledge needed to address the research problem, answer the questions, and meet the objectives, it is necessary for the researcher to move from the level of the theoretical to that of the empirical – i.e. to collect data. The rules, procedures, and tools for collecting data from research participants are contained in the *research methodology*. (Ghauri and Grønhaug, 2002).

According to Ghauri and Grønhaug (2002), in deciding upon the methodology for a given research effort, two key questions must first be addressed:

1) What is the research approach; is it 'theory before research' or 'research before theory'?
2) Is the research design 'Exploratory', 'Descriptive', or 'Causal'?

The answers to these two questions will have direct implications for the remaining decisions relating to methodological issues.

3.1.1 Research Approach

Ghauri and Grønhaug (2002) have identified two distinct approaches to research.

a) **Theory before research:** this approach is suited to a research problem that is focused upon existing knowledge or theory. The researcher must identify the key concepts from the underlying theory, and adjust these concepts to the new research problem. This approach is related to 'theory testing' and the 'context of justification'.

b) **Research before theory:** in contrast to the previous approach, 'research before theory' is appropriate when the research problem is associated with a lack of previous theory or knowledge. The researcher is effectively

exploring a new or under-researched area, in an attempt to identify important concepts, leading to the construction of theory. This approach is related to 'theory construction' and the 'context of discovery'.

Research before theory is the approach that is adopted in this research, as it is concerned with exploring the training and development practices of the Fast 50 Technology companies, in an attempt to generate new knowledge in relation to training and development in Ireland's technology sector. Another key aim of the research is to build a theory (or framework) for future training and development activities within this sector.

3.1.2 **Research Design**

The research design is determined on the basis of the degree of structure associated with the research problem. As this study is concerned with producing *new* insights into training and development activities (rather than examining a pre-determined issue), the research problem is relatively unstructured – it is concerned with the relatively unexplored area of training and development in Irish Technology companies. The resulting research design is 'exploratory'. The three alternative forms of research design are outlined below (Ghauri and Grønhaug, 2002).

- **Exploratory research:** when designing the data collection instrument for this type of research, the researcher does not have a structured list or definite description of each piece of data needed to answer the research questions. Rather, information gleaned from participants is used to create a picture and identify key issues, while feedback loops allow for instrument adjustment, or follow-up data collection, to expand on important findings. Exploratory research represented a suitable design for the current research, as it allowed more flexibility in terms of the information and knowledge that could be generated as a result of the research process.

- **Descriptive research:** this research design relates to a research problem that is quite well structured, and which aims to *describe* a given situation or state. The researcher will have a definite description of the information that is needed to answer the research questions. An example of such research

would be a study conducted by an organisation in an attempt to determine the size of the market for a given product. Such a design was not felt to be suitable for this research, due to the unstructured nature of the research problem, arising from the scarcity of existing knowledge.

- **Causal research:** this research design is also suited to a research problem that is well structured. Causal research, however, is not concerned with describing an isolated situation or state of affairs, but rather with identifying the existence and extent of cause and effect relations between two or more variables. This design would apply, for example, to a research effort analysing the extent to which diet related changes result in weight loss or gain. As there is currently a lack of empirical data and understanding relating to training and development in the Technology companies that operate in Ireland, cause and effect analysis would be an inappropriate design for the research objectives that need to be met.

The choices of research approach and research design have direct implications for the remainder of the research process, in terms of the choices and activities outlined in the remainder of this chapter.

3.2 Sample Frame

The sample frame chosen to address the research objectives and questions was the 2003 winners list of the Ireland division of the Deloitte & Touche Technology Fast 50 programme. The Deloitte & Touche Technology Fast 50 programme is an initiative that recognises the performance of technology companies in terms of percentage growth in turnover over a three-year period. The technology Fast 50 programme, which was pioneered in Silicon Valley, California, in 1995, and has since spread to over twenty major cities across the globe, is now widely recognised within the United States as a benchmark of growth success.

Eligibility criteria for the Ireland awards are as follows (See: http://www.fast50.co.uk):

1. In business for a minimum of 3 years
2. Considered a technology company defined as:
    - Producing technology
    - Manufacturing technology-related products
    - Technologically intensive or uses unique technology in problem-solving
    - Devoting a high percentage of effort to research and development of technology
3. Parent company must be located in Ireland
4. Turnover must be over €50,000 in 1999

The Ireland division of the Technology Fast 50 programme incorporates companies from both Northern Ireland and the Republic of Ireland. However, for the purposes of this research, the survey was conducted with the companies based in the Republic of Ireland only. The reason for this was to facilitate an analysis of the Government interventions in training and development that have been implemented to date in the Republic of Ireland. It was felt that the complexity of covering the different legislation and interventions relevant to Northern Ireland and the Republic of Ireland would not be accomplishable within the research resources and scope.

The questionnaire form was addressed to the 'Training' or 'Human Resource Management' specialist, and sent to thirty of the companies operating in Ireland. These specialists provided a valuable source of information relating to the level and nature of training and development that is offered to employees in Ireland's fastest growing technology companies. The intention was that the research would identify any notable weaknesses in current training and development systems, and facilitate the identification of benchmarking measures to guide future training and development endeavours.

3.3 Data Collection Methods

Many different authors (e.g. Creswell, 2003; Fink, 2003, Volume 6; Fowler, 2002; Ghauri and Grønhaug, 2002; Moore, 1987) provide alternative lists or categorisations of the various methods of data collection that are available to today's researchers. This section provides a synopsis of these methods, with the associated advantages and disadvantages. An explanation is then provided of the combination of methods that was chosen for this research effort. It was decided that these would be the most suitable methods for this particular research problem, and that they would allow the available resources to be used to their maximum potential.

3.3.1 Survey Research Methods

Fink (2003, Volume 6: 1) has defined 'surveys' as "...systems for collecting information from or about people to describe, compare, or explain their knowledge, attitudes, and behaviour". Survey research encompasses the most widely used research methods, and it generally involves the use of questionnaire forms or interviewing procedures. In deciding upon the survey method(s) most appropriate for a given research project, the researcher must determine whether the participants should be assisted by an interviewer, or alternatively enter the data themselves. In fact, the range of available survey research methods can be categorised into 'Interviewer-Assisted' and 'Self-Administered' methods.

In-Person Interviews

Interviews involve the researcher asking the respondent questions, and recording the answers that are given. This interview session may take one of three forms.

Structured interviews are based around a questionnaire form, with pre-determined questions and response sets. This type of interview allows the interviewer to provide assistance and guidance to the respondents, answering any questions that they may have. The interviewer may also be able to 'probe' unclear or incomplete answers. Uniformity of the interview structure means that each respondent will be subject to the same questions, and duplication of the research effort is also facilitated. The main disadvantage of structured interviews is one associated with any form of personal interview, namely the relatively high resource requirements in terms of time and cost.

Unstructured interviews, for the most part, leave the discussion open to the respondent. The interviewer may simply ask a few open-ended questions to guide the discussion, and ensure that the interview stays on track. In order for such an interview to be successful, the interviewer must build a relationship of trust with the respondent. These interviews often deal with attitudes, opinions, and other sensitive issues. Therefore interviewers must be well trained and thoroughly prepared. Unstructured interviews place a great demand on the respondent, and can also be extremely cumbersome to analyse. The advantages of unstructured interviews relate to the freedom given to the respondent to express his/her real feelings and experiences, resulting in more in-depth information.

Semi-structured interviews combine the advantages of structured and unstructured interviews, often consisting of a combination of closed- and open-ended questions. This is useful for ensuring that all the required information is obtained, while also permitting the respondents to express what they are really thinking. However, like unstructured interviews, semi-structured interviews also place great demands on the skills of the interviewer, and on the patience of the respondent.

For a discussion of in-person interviews, see Moore (1987) and Ghauri and Grønhaug, (2002).

In-Person Group-Based Interviews (Focus Groups)

A focus group is an interview that is conducted with a group of individuals, rather than a lone individual. The interviewer initiates and guides the conversation between the group of respondents, and later analyses the content of the discussion. Since the interaction between the group members is key to the conversation that emerges, the interviewer must be careful not to deter the group from expressing ideas, but must also ensure that the interview is not monopolised by one particular respondent. (Moore, 1987). When planning and conducting a focus group, the interviewer must be aware of the influence that will be exerted by the physical and geographical setting, the size and composition of the group, and by the interaction between the individual group members, and between the group and the interviewer. (Ghauri and Grønhaug, 2002). The main advantage of focus groups is that they provide a relatively inexpensive tool for gathering data from a group of respondents, within a limited time period. On the other hand, the procedure requires a highly skilled interviewer, who is able to ensure

that all the required information is gathered, and recorded, without interrupting the discussions.

Telephone Surveys

A telephone survey usually takes the form of a questionnaire, which is administered over the telephone. The widespread ownership of telephones has made such procedures as 'Random Digit Dialling' practical for researchers. The use of telephone surveys allows researchers to administer surveys, and collect the results, within a relatively short period of time. It is also possible to cover a large sample at a relatively low cost, particularly since this method requires fewer interviewers than do personal interviews, and these interviewers do not need to be in close geographic proximity to the respondents. There are, however, a number of disadvantages associated with telephone surveys. Generally, they are associated with a higher rate of non-response than personal interviews, in addition to being quite limited in terms of the length and complexity of question response rates. Fowler (2002) has also suggested that telephone surveys are an inappropriate mechanism for addressing sensitive questions or topics.

Self-Administered Methods

Mail Surveys

In a case where the researcher has access to a list of reliable postal addresses for each of the sample units, the mail survey method can present itself as an extremely practical and relatively inexpensive option. Although Moore (1987) has contended that open-ended questions are best avoided in mail surveys, he did suggest that it was desirable practice to follow a list of closed questions with one or two open questions, in order to allow the respondent to expand on any issue. In this way, a mail survey can be used to obtain a list of quantitative data that is easy to analyse, while also permitting the respondents to express any opinions that they may have in relation to the survey, or any further issues that they believe may be of relevance.

Mail surveys are a feasible option for small and large studies alike, although they prove particularly beneficial when the survey participants are geographically dispersed or difficult to reach. When compared with alternative methods such as in-person interviews and telephone surveys, mail surveys place less demands on the respondents, allowing them to complete the questionnaire in their own time, and also giving them the chance to check any documentation (or even the opinions of

colleagues) that may be of assistance in answering the questions. With in-person interviews (and, to a certain extent, telephone interviews), there is a risk of bias associated with the relationship that exists between the interviewer and the interviewee, or from variations in the way in which interviews are conducted. Mail surveys do not bear such risks, as each respondent receives the same questionnaire, with questions and answer sets presented in the same order, and no interviewer is present. Schonlau *et al.* (2002) also suggest that mail surveys (and other self-administered modes) tend to elicit more accurate responses to sensitive questions than do interviewer-assisted methods, as the presence of the interviewer in the latter tends to edge the respondent towards more 'socially acceptable' answers.

One of the main concerns with mail surveys is the difficulty in achieving respondent co-operation; once the surveys are mailed to the sample population, there is little that a researcher can do to influence the rate and quality of response. However, Ghauri and Grønhaug (2002) have outlined several practices that the researcher can adopt in an attempt to maximise the response rate. For example, the cover letter (or initial contact with the respondent) should contain a strong appeal to the respondent, detailing the importance of responding to the survey, and answering all the questions correctly. The researcher can use a financial or non-financial incentive mechanism (for example, promising the respondent that they will be kept informed of the research progress, and will receive the final report) to encourage participation. The questionnaire should be designed according to usability guidelines, relating to length, appearance, colour, layout, and readability. A pre-paid (or stamped), self-addressed envelope should be included with the questionnaire for return. And the researcher should show his/her appreciation to those who have taken time to respond, by sending a courteous thank you letter, and also by ensuring that the survey results are made available to respondents as soon as possible.

Group Administered Surveys

Fowler (2002) makes reference to this data collection method, which involves the researcher physically handing questionnaires to groups for completion. The groups fill in the surveys then and there, and hand them back to the researcher upon completion. The researcher is presented with the opportunity of explaining the importance of the survey, and the accurate completion of questions, to the respondents. The respondents, in turn, are given the chance to ask any questions that they may have in relation to the

survey purpose, or to any question on the survey form. Group administered surveys have the potential of eliciting higher response rates than those associated with mail surveys. What is more, this method represents a potentially inexpensive way of gaining information from a large group of people. The researcher has received all of the completed questionnaires by the end of the survey session, thus allowing analysis to commence much sooner than would be expected with mail surveys.

Unfortunately, there are many types of sample populations that this method is not suitable for, such as those that are geographically dispersed, or which consist of busy executives who would not have time to come together for group based surveys.

Internet Surveys

The term "Internet survey" encompasses both e-mail surveys and Web surveys. Given the phenomenal rate with which Internet usage has expanded over the last decade, the use of this medium for the distribution of survey instruments has become an increasingly more realistic option for researchers. Early Internet surveys were predominantly e-mail based. The growth of the World Wide Web, however, has meant that Web based surveys, often encompassing automated error checking and response loading, have become an attractive option to researchers, who are provided with the opportunity of reaching large numbers of people from all over the world (Solomom, 2001). Although e-mail surveys now take a back seat to Web surveys, there are many situations in which e-mail surveys provide a fast and effective way of reaching a target population.

E-mail Surveys

When a survey is distributed via e-mail, the questionnaire may be contained either in the main body of the e-mail message, or alternatively in an attachment to the message. Often, the respondent can complete and return the survey by replying to the original e-mail. E-mail offers an invaluable mechanism for instantaneously delivering questionnaire forms directly to each member of the sample population. E-mail surveys also have the potential to be an extremely inexpensive mode of data collection. A significant amount of time can also be saved by sending one e-mail message to a large number of people, via a 'mail-shot' facility. (Selwyn & Rosbon, Summer 1998). Schonlau *et al* (2002) found that the time saving associated with e-mail surveys is

greatest when e-mail can also be used for the initial contact with participants, and for non-response follow-ups.

In terms of the response time associated with e-mail surveys, Schaefer and Dillman (1998) found that the questionnaires they had sent (and respondents had subsequently returned) by e-mail took an average of 9.16 days to be returned, compared with 14.39 days for the questionnaires that they had sent (and received) by postal mail. However, Tse (1998), in a survey sent throughout a university campus, found that most of those who received the survey via e-mail either responded within the first day, or did not respond at all. This could be viewed as a negative aspect of e-mail, suggesting that respondents disregard the survey unless they decide to return it immediately.

Schonlau *et al.* (2002), from their review of the existing literature on e-mail surveys, also concluded that e-mail surveys have the potential to elicit more lengthy responses to open-ended questions than those obtained from mail surveys. For example, for two open-ended questions posed in a survey by Comley (1996), the responses given by e-mail respondents were longer than those given by mail respondents, to the extent that one e-mail respondent wrote what could be classed as a short essay.

A major drawback of e-mail surveys is that there exist many target populations for which a reliable and complete list of e-mail addresses does not exist. Before a researcher considers using e-mail as a mode of data collection, he/she must first ascertain that all the necessary e-mail addresses are available. Getting the survey to the target destination is one hurdle; often, encouraging the recipient to co-operate with the survey effort is another. Thach (1995) has pointed out the ease with which the recipient of an e-mail questionnaire can dispose of the survey by deleting it, which cannot be done with a printed mail questionnaire. The risk of the recipient taking this action is augmented as e-mail accounts become increasingly swamped with junk mail.

Another important limitation that has become apparent in relation to e-mail surveys is the high associated rate of item non-response. In a review of the survey evidence relating to the number of items/questions left unanswered by a survey respondent in e-mail and mail surveys, Schonlau *et al.* (2002) concluded that the rate of item non-response tends to be higher in e-mail than in mail surveys. For example, in a survey of business school deans and chairpersons, Bachman *et al.* (1996) found that respondents to the mail study arm missed an average of only 0.7% of survey items, compared to 3.7% in the e-mail study arm. Nevertheless, the results of the literature are

not conclusive; there have also been studies that have found the opposite to be true, such as that carried out by Kiesler and Sproull (1986). In this study, 10% of e-mail respondents missed one item, compared with 22% of mail respondents.

Web Surveys

Surveys that are administered over the Web provide an excellent tool for reaching a potentially huge number of people, often allowing the researcher to get in touch with people who would otherwise be difficult to reach, such as minority groups, or sample populations for which reliable listings do not exist (for example, drug users). Web surveys allow for a high degree of automation of the data collection process. This automation can include skip patterns (which direct the respondent to a specified part of the survey, depending on the answers given to previous questions); automatic input validation (which, for example, prevents the respondent from answering both "None of the above" in addition to a multiple choice option, where answering "None of the above" obviously implies that none of the multiple choice options were applicable); and automatic loading of responses into a database. (Schonlau *et al*, 2002). Web surveys can also be designed to allow for complete respondent anonymity, which can encourage participants to give more honest responses to sensitive questions in particular.

The same benefits in relation to speed of response that are associated with e-mail surveys are also relevant to Web surveys. There is also a common perception that Web surveys are a less expensive mode of data collection than conventional mail surveys, partly due to the elimination of postage and printing costs. However, the potential cost savings associated with a Web survey is heavily dependent on the size of the survey sample. For any survey, there are three main cost components: *mailing*, *data entry*, and *labour* (design and operations). No mailing (or telephone) costs are associated with a Web survey if respondents are initially contacted via e-mail or the Web. Since the responses to the questionnaires can be captured electronically in a database, labour costs for data entry are not a major consideration. The main cost consideration that is related to a Web survey is the cost of labour for the construction, pre-testing, and operating of the survey instrument. This cost element is much higher for Web surveys than for mail, telephone, or even e-mail, surveys. Developing a Web survey, and then thoroughly pre-testing the instrument to ensure that it operates as desired across varying hardware and software platforms, and Internet connections, is not only extremely costly, but also time consuming. (Schonlau *et al*, 2002).

Therefore, Web surveys can provide cost savings for sample sizes that are relatively large; as the marginal cost decreases with each additional unit, it can eventually offset the initial set-up and continuing operating costs. For a relatively small survey, then, Web surveys can prove much more expensive than mail, telephone, and even in-person surveys. (Schonlau *et al*, 2002). However, a number of commercial providers of Web surveys are now emerging. These Web survey sites allow a survey to be made available online at a much lower cost than that originally associated with Web surveys. They also offer access security, automatic storing of responses, and a certain degree of automatic statistical analysis. As a result of these commercial Web surveys, it is now feasible for small-scale surveys to be conducted online.

Nonetheless, there are several other disadvantages associated with the use of Web surveys. One important issue is that of access security. Ensuring that only the intended respondents are actually able to access and reply to the questionnaire is crucial to the researcher; a username and password facility may be used to facilitate access security. As the number of surveys carried out over the Web increases, the researcher faces another hurdle in being able to distinguish the survey from the many others that users have been invited to complete. And a final limitation associated with Web surveys is related to coverage bias. Although the last decade has seen an explosive growth in Internet access rates, a large number of people cannot, or do not wish to, access the Internet. Kerka (1995) has pointed out that coverage bias continues to occur due to Internet access divisions along the lines of social class, income, race, age, and gender. For this reason, Web surveys are not appropriate for many types of survey sample, or may not provide a truly representative sample.

Drop-Off Surveys

Fowler (2002) makes reference to another kind of survey research, in which the researcher physically brings the questionnaire form to the respondent, and later picks it up. This method combines some of the advantages of self-administered methods with those of interviewer-assisted methods. For example, the interviewer can take the opportunity to explain, in person, the purpose and importance of the survey, and can also clarify any issues that the participant is unsure about. As with most other self-administered surveys, the participant is given time within which to contemplate the questions, and if necessary can consult records, or ask for the opinions of others. The

response rates associated with this method of data collection can often be as high as those associated with in-person interviews, but do not require such highly trained staff. In spite of these advantages, dropping off a survey to each participant, and then returning to pick it up, is extremely time consuming, and likely to be costly in terms of travel expenses. And although the field staff do not need to be as highly trained as those for in-person interviews, this method is likely to require more staff than would be required for mail or Internet surveys.

The data collection methods discussed so far in this chapter are survey research methods, entailing the use of questionnaires or interview techniques. Other forms of data collection may involve the researcher observing human activity in its natural setting, conducting a controlled experiment to measure independent and dependent variables, reviewing historical documents, conducting in-depth studies of single sample units, or actually setting up and running a pilot project to determine its suitability for extension into other areas. These alternative data collection methods are discussed in the remainder of this section.

3.3.2 **Observations**

When used as a data collection method, observations involve the researcher observing human activity in its natural setting, with the aim of being able to describe and explain this activity. Two main observation techniques are available to the researcher: participant observation, and non-participant observation. In *participant observation* the researcher is a participant in the activity that he/she wants to observe. This allows the researcher to view the situation from the point-of-view of an insider, thus facilitating an understanding of why certain actions or activities occur, rather than knowing simply that they occur. There is, however, a real risk that, after having participated in the activity, the researcher may be unable to step back and look at the situation from an objective angle. In *non-participant observation* the researcher observes a natural activity, but remains detached from the situation. Although this may help the researcher to adopt a more objective stance than in participant observation, non-participant observation may cause the subjects (participants) themselves to act differently. (Ghauri and Grønhaug, 2002).

One major advantage that this method of data collection has over survey research methods is that the researcher can observe what people actually do, rather than

trusting that what people *say* they do is true. Furthermore, as long as the participants are not overly disturbed by the observation, the researcher can be reasonably confident that the witnessed behaviour is undistorted. One of the main disadvantages with observation is the difficulty in recording precisely everything that happens. Related to this, also, is the problem of analysing the resulting data, and being able to present the findings neatly. Observation is also a very time-consuming task, which places a great demand on the skills of the researcher. (Moore, 1987).

3.3.3 **Experimental Research**

Experimental research is a data collection method that is used when a researcher wants to test a hypothesis or theory, usually focusing upon the relationship between an independent variable and a dependent variable. Often, such an experiment will take place in a laboratory setting, in order to ensure that unforeseen changes in other variables do not distort the research findings. However, experimental research can also take place in natural settings. In this case, the researcher may include a control group in the experiment. A control group is a second group/sample, which has the same characteristics as the experimental group/sample, but for which the independent variable is not altered. At the end of the experiment, the values of the dependent variable for the experimental group (for which the independent variable has been altered) are compared not only with the pre-experiment values of the dependent variable for that group, but also with the post- and pre-experiment values of the dependent variable for the control group. Moore (1987) has suggested that this type of research could be used to examine the effects of employee training and development (the independent variable) on the attitude and behaviour (dependent variable) of these employees. However, Moore does issue a word of caution in relation to the interpretation of results from experimental research. Even with the introduction of a control group into the experiment, the researcher can never be sure that every variable has been controlled. Also, when the research involves human participants, the mere fact that they are being experimented on may cause behavioural changes in the control group, which render the results of the research invalid.

3.3.4 **Historical Research**

Historical research entails gathering data about the past from historical records, and from consultations with people who can provide relevant information. In most cases,

historical research is conducted with a view to providing a detailed picture of the past, and perhaps predicting what might happen in the future, although it can also be used to test a hypothesis. The main drawback with historical research is that the research findings are dependent upon the records of human memory and historical documents, the reliability of which may be questionable. (Ghauri and Grønhaug, 2002).

3.3.5 **Case Studies**

A case study involves conducting in-depth research into a small number of sample units. This method allows the researcher to gain detailed understanding of complex issues. For example, case studies can be used to examine and compare alternative solutions to an organisational problem. A further advantage of case studies is that they allow a large amount of information to be gathered with relatively few resources. They are, however, very demanding in terms of the time required to gather the information needed. It is also difficult to know the extent to which the findings of case study research can be generalised beyond the units sampled, as the sample size may be quite small.

3.3.6 **Action Research**

Action research involves actually setting up and implementing a pilot operation in order to determine whether this operation should be made permanent and perhaps extended into other areas. This research can take place in a laboratory setting or in the social world. In order for such a research attempt to be successful, there must be regular and continuous feedback loops, with the operation being constantly modified in accordance with the results of objective evaluation. Adopting the action research method is advantageous in that the researcher is working with something real and tangible, so making the transition from the pilot project to a more permanent arrangement will be made easier. Furthermore, everyone involved in the research will have a vested interest in its success. This, however, can be a drawback if the pilot project proves unsuccessful, as this may be frustrating to those who were involved in running the pilot project.

3.3.7 ***Qualitative and Quantitative Methods***

The literature on research methods often refers to the need to choose between 'qualitative' and 'quantitative' methods. However, many (or perhaps most) of the

available methods can be used to gather qualitative and/or quantitative data. Therefore, it may be more useful to view the qualitative/quantitative distinction in terms of the type of *data* required, rather than viewing *methods* as qualitative or quantitative methods. In this way, the researcher can adjust the research tool (be it an in-person interview, or participant observation) to his/her data requirements. It is, however, generally accepted that certain methods are more suited to the collection of a specific type of data. Ghauri and Grønhaug (2002), for example, suggest that historical reviews, focus groups, and case studies are suited to the collection of qualitative data, while survey research methods and experimental research methods are suited to the collection of quantitative data.

3.4 Chosen Methodology

As the research is exploratory in nature, it was decided that self-administered survey research methods would be the most appropriate means for enabling the research to cover a sample size of thirty companies. In this way, it would be possible to gather both quantitative data (which would facilitate analysis, comparison, and presentation, of findings) and qualitative data (which would provide room to identify issues which had not been identified from previous research), and to allow for the formation of benchmarking measures. Each of the non-survey-based methods was ruled out individually as follows:

Observations: Observations were not considered a suitable data collection method for this research, as each observation would require a great deal of time to carry out and analyse. The research is exploratory in nature. Therefore, at the outset of the research, a clear description did not exist of the exact information required to answer the research questions. Rather, the purpose of the research is to identify the level and nature of training and development activities in the Irish technology sector, in order to establish a benchmarking framework. This would not be possible with a limited number of in-depth observations.

Experimental research: Experimental research was clearly an inappropriate tool for addressing the research questions of this study, as the aim of the study is not to examine the relationship between an independent variable and a dependent variable.

Historical research: As the research intends to address the scarcity of previous research dealing with training and development in Ireland (and in the Technology sector in particular), and to advise on future training and development efforts, historical documents and data are not suitable for the purpose of the research.

Case studies: As case studies entail in-depth analysis of each sample unit, they are therefore limited in terms of the sample size that they can be used upon practically. Case studies also place a great demand on the study participants. A self-administered survey instrument, by contrast, is less demanding, allowing participants to respond in their own time.

Action research: Action research is appropriate for a research effort that would benefit from the introduction of a pilot scheme before extending an operation and making it permanent. This is not the nature of this research.

3.4.1 Considerations in Choosing the Methodology

Cost

Often, one of the major reasons for choosing mail questionnaires as a data collection method is the ability to cover a large sample size at a low cost. With telephone and in-person interviews, interviewer labour costs will almost always be a major consideration. Obviously, mail procedures will incur costs related to printing, postage and packaging (including return), and possibly reminder telephone calls, but for a given sample size mail questionnaires do tend to cost less than telephone interviews, and less again than in-person interviews. In fact, Bourque and Fielder (1995) have suggested that a questionnaire that is sent and returned by mail will, on average, be 50% less expensive than the same questionnaire would be if carried out through telephone interviews, and 75% less expensive than it would be if carried out through in-person interviews. Although this is a highly generalised example, and the overall cost will be

influenced by a multitude of factors (including pre-contact and follow-up procedures, where applicable), it does serve to highlight the cost benefits associated with mail questionnaires. For the current research, it was felt that the cost advantages of mail surveys would result in the maximum possible use of the limited resources (including financial resources, time resources and human resources) available. The cost savings associated with Internet surveys will depend on the sample size, the complexity of the survey instrument (as this will impact on design and operation costs), and pre-contact and follow-up procedures. As explained earlier, web-based surveys are generally associated with lower marginal costs than mail surveys if a large sample responds to the questionnaire, or if a web survey with low set-up and operational costs can be established. For surveys administered and returned through e-mail, the cost is likely to be insignificant.

Facilities

For interviewer-assisted survey methods, a key issue that must be considered is the availability of skilled interviewing staff. Often, the researcher leading a research project will not have experience in conducting interviews, and may be ineffective in enlisting co-operation from respondents. If trained interviewers are not available to hand for a research project, the cost for either recruiting experienced interviewers, or training available people to conduct an interview effectively, may force the researcher to consider using a self-administered data collection method instead. (Fowler, 2002). For this research, it was felt that none of the parties involved possessed the skills necessary to conduct interviews effectively, and the potential risks associated with unskilled interviewers meant that the interview was not a feasible option.

Response Rates

It is generally accepted that interviewer-assisted methods of data collection result in higher response rates than self-administered modes. Generally, this is true for both unit response (i.e. participating in the survey) and item response (i.e. answering each individual question on the survey). In terms of self-administered methods, Schonlau *et al* (2002) have presented evidence to suggest that mail surveys elicit higher response rates than web or e-mail surveys. For example, in a survey of the US military and their spouses carried out by Quigley *et al.* (2000), 77% of respondents chose to respond by mail, compared with 23% who chose to respond on the web. And in a survey carried

out by Kittleson (1995) of health educators, a response rate of 78% was achieved for the mail study arm, compared with only 28% for the e-mail study arm. Schonlau *et al* (2002) also present some evidence to suggest that e-mail surveys are associated with higher rates of item non-response than mail surveys (e.g. Bachman *et al*, 1996) – refer to earlier discussion on e-mail questionnaires). Unit and item response rates for self-administered surveys can be maximised through careful design of the survey instrument (to ensure that it stands alone), clear communication of the survey purpose, and the use of non-response follow-ups. Given these considerations, and since it was not possible to use interviewer-assisted methods of data collection, mail surveys appeared to represent a sound choice as the primary data collection method for the current research.

Timeliness

A clear drawback of mail surveys is the time required from initial contact with participants, until the receipt of the last responses. Schonlau *et al* (2002) have suggested that the fielding period for a mail survey is likely to be a matter of months (rather than weeks), when one considers the time necessary to post the questionnaire to respondents, to receive the initial set of responses, and to make at least one non-response follow-up and allow further time for returns. Mail surveys will generally take longer to conduct than telephone surveys (which can quite realistically be conducted within a matter of days), but can be quicker than in-person interviews, which are extremely time consuming. Internet surveys have the potential to elicit responses much quicker than in-person, mail, and even telephone, surveys, although as with any method, the total field time will be affected by the contact, response and follow-up modes used. For example, if participants for an Internet survey are contacted initially by mail or telephone, and non-response follow-ups are also made by mail or telephone, the speed advantages of using the Internet will be greatly diminished. However, given the slow response associated with mail surveys, it was felt that the use of a supplementary Internet survey would have the potential to increase the speed with which companies responded to the survey.

Sampling

The type and reliability of information pertaining to the sample population that is available to the researcher will impact upon the range of data collection methods that can be used for the research. If the sample is drawn from a pre-fabricated list, the

suitability of e-mail, in-person, mail, or telephone interviews will be dependent upon the incorporation within that list of e-mail addresses, postal addresses, and telephone numbers, as appropriate. In a case where a complete list of addresses is available for a sample, in-person and mail surveys will be practical options, as will telephone surveys, as telephone numbers can be easily obtained for a given address from directory enquiry services. For this research, addresses and contact details for each of the companies in the sample population were obtained from three sources: the Deloitte & Touche Technology Fast 50 list for 2003; individual company websites; and a comprehensive business listing known as the 'Kompass Directory'. With company name and address details easily available from these three sources, the potential advantages of using mail surveys as the primary data collection method were augmented.

Population Characteristics

Self-administered survey methods can be problematic in cases where the target population may not have high levels of literacy, or do not have a particular interest in the subject being studied. In such cases, interviewer-assisted methods may be more fruitful. However, if the survey participants are highly literate, and are working or interested in the subject area, mail, e-mail and Web survey procedures can be used successfully. In relation to the target population for this study, problems of literacy and ability to understand were not relevant (provided of course that the survey instrument was clearly and unambiguously designed).

Type of Questions

Self-administered questionnaires are not particularly suitable for research that entails a large number of open-ended questions, so when using such instruments the researcher must be careful to limit the number of open-ended questions asked. However, mail and Internet surveys are particularly useful for addressing long or complex response sets and for sensitive questions, which may be difficult to address in telephone or in-person interviews. Given the exploratory nature of this particular research effort, much of the data collected related to changes in the use of particular training and development practices, and patterns in the use of these practices for specific occupational groups. Therefore, many of the questions and response sets were quite complicated, and so mail and Internet surveys both posed significant advantages in the ability to address these questions in an unambiguous and non-confusing way.

3.4.2 **The Methodological Structure**

In terms of the specific survey research methodology chosen, the following decisions were made:

- The main survey instrument was a mail questionnaire, which contained mostly closed questions, with open-ended questions placed in the concluding section in order to allow the respondent to express any personal views or to expand on answers given.

- Although the questionnaire form and covering letter were posted to each of the thirty companies, an identical Web-based questionnaire was also made available. Access to the online questionnaire was controlled by the use of a password facility, and the web address and password for the survey were provided to participants in the covering letter that was sent with the postal questionnaire. Participants therefore had the option of completing and returning the mail survey, or completing and submitting the survey online. The primary reasons for supplementing the survey instrument with a Web-based survey were to encourage increased response and greater response speed.

- Non-response follow-ups took the form of a reminder letter sent by postal mail two weeks after the mailing of the survey, followed by a second reminder letter to all remaining non-respondents after a further two weeks.

3.4.3 **Combining Methods**

In the review of the literature on response rates conducted by Schonlau *et al* (2002), research evidence is presented which suggests that combining mail surveys with Internet surveys, to give participants a choice of response mode, can help to improve the overall response rates achieved. For example, a survey of large commercial companies in the US that was conducted via mail and the web achieved an overall response rate of 94% (Nichols, 1998). A survey researching scientific activities with computer networks, which used e-mail and mail as response modes, achieved an overall response rate of 76% (Walsh, 1992). For the current research, the primary motives for offering more than one mode of response were the desire to maximise the response

speed, and the need to maximise the response rate, by making the survey process as participant friendly as possible.

3.5 The Questionnaire

The design of the questionnaire was segregated into the following sections:

Section A: This section of the questionnaire asked the respondents for demographic details, and information regarding the nature and scale of the company's operations. The information requested in this section was done so for the purpose of providing a profile of respondents, and also to allow cross-tabulation of results to examine the effect of company size.

Section B: This section asked questions pertaining to the expenditure on, and approach to, training and development in each company. This includes, for example, the percentage of total expenditure and number of annual training days that are provided to each occupational group; the percentage of total annual expenditure that is dedicated to computer-based training (CBT); the existence of a training and development budget; the level of support for employees who wish to pursue self-development; and the nature of the company's approach to training and development. The data collected through this section relate to Objective 1 of the research.

Section C: In this section of the questionnaire, respondents were asked about the methods, techniques and tool/aids that are used in the companies to support the delivery training and to facilitate learning. The questions for each of these topics were structured in the same way, so that respondents would become familiar with the requirements of the section. Respondents were asked to indicate how frequently each method, technique and tool/aid was

used; which of these the companies intended to use in the future; and the length of time for which they have been in use for each occupational group. In relation to CBT methods, respondents were also asked for information about the customisation of CBT materials. The data collected through this section of the questionnaire relate to Objectives 2 and 3 of the research.

Section D: This section of the questionnaire asked respondents about their awareness of specific Government support mechanisms, and also about the use that the companies have made of this support. Respondents were asked to comment on the significance of the Government's contribution to the provision of training and development in the Technology sector. The data collected in this section pertain to Objective 4 of the research.

Section E: In this section, respondents were invited to make additional comments in relation to the research or to training and development in the Irish Technology sector.

The full questionnaire, as it was administered to the sample, is contained in Appendix 2 of this thesis. The cover letter that accompanied the questionnaire is contained in Appendix 1.

This Chapter has offered an analysis of the decisions that were involved in choosing the methodology for the research. It was decided that a self-administered, survey research method would be the most appropriate data collection method for the research. A mail questionnaire was chosen as the main instrument, although this was supported by the availability of a Web-based version of the questionnaire. The instrument itself was designed carefully to reflect the demands of each research objective. In the next chapter, the data that have been collected through the questionnaire are presented in relation to each of the research objectives.

FINDINGS

The data that was collected from the surveys was inputted and analysed using SPSS statistical analysis software. The findings that emerged from the data collection are analysed below.

4.1 Response to the Survey

Thirty companies received the survey and eleven companies responded, giving a total response rate of 36.7% – a fair response rate for a self-administered survey that was conducted primarily by mail. Of the responses received, 18.2% were submitted online, and the remaining 81.8% were returned by post. The primary motives for including the online version of the questionnaire were to maximise the total response rate and to increase the speed of response. The online questionnaire did elicit the quickest of the responses to the survey. However, given the low proportion of responses that were returned online, this supplementary response mode had little impact on the overall rate of response.

4.2 Limitations of the Survey

The limitations of the survey emanate from a number of factors. In relation to the methodology used, the limitations of mail and Web surveys were discussed in detail in Chapter 3. These limitations relate predominantly to the limited unit response rate achievable through mail and Web surveys.

In relation to the survey sample, the findings to emerge from the survey provide evidence that relates to those companies operating within Ireland's Technology sector that have recently been recognised by Deloitte & Touche for performance excellence. The limitations of this sample in relation to the extent to which the findings can be extended to the wider Technology sector are recognised. However, the sample was not chosen as one that would be wholly representative of those companies operating in the Technology sector, but rather as one that would provide information and understanding of the training practices in use, as well as offering a benchmark against which other companies operating in the Technology sector can compare their own practices.

Although the use of mail and Web surveys will generally result in a limited *unit* response rate, the response rate for each individual *item* (or question) in the survey was, on the whole, very good. Two elements of the survey did, however, receive a low response rate.

Firstly, the questions relating to the intended future use of methods, techniques, and tools/aids (incorporated in questions C1. a), C2. a), and C3. a)) received responses from only a small number of survey respondents. Two possible reasons for this are apparent. The questions and response sets incorporated in Section C of the survey are quite complex and detailed, and require a significant amount of effort from the respondent to complete. For this reason, the respondents may have found that the demands of completing the questions on future use in addition to the other questions in this section were too heavy. This risk was considered in the design of the survey, but the decision was made to retain the questions on future use in order to gather as much evidence as possible in relation to changes in the use of training methods, techniques and tools. It is also possible that the low response rate to these items was due in part to the demographics of the sample population. Many of the companies are relatively small and recently established, and may not therefore have a clear picture of how their training practices are likely to change over the coming years.

Secondly, many of the questions in Section D of the survey, related to Government support for training, also received low response rates (with the exception of questions D1 and D4, which achieved good response rates). Most of the questions in this section are multiple response questions that only require respondents to answer if any of the options are applicable to their company (with the exception of questions D1 and D4, which ask all respondents to select one answer, and D5 which is an open-ended question applicable to all respondents). Therefore, the fact that many of the options remained frequently unselected by respondents could be interpreted as suggesting that respondents were unaware of many of the support measures listed (question D2), and that few of the initiatives have been exploited by the companies (questions D3, and D6 – D9). However, this interpretation must be made with caution. Section D of the survey is extremely inclusive, and coupled with the fact that it is placed at the end of an eleven-page survey, respondents may have been reluctant to read through all of the options to each question in this section. The fact that most respondents did select some responses within this section would suggest that they did read the questions and response sets; nonetheless, it is necessary to make this caution before the findings can

be presented and the results analysed.

4.3 Profile of Respondents

Section A of the survey contained a number of questions relating to the demographics and operations of the companies. The findings from this section allow the following profile of respondents to be outlined.

4.3.1 Location

100% of the responding companies were located in the Dublin area.

4.3.2 Company Size

Table 12 provides a profile of responding companies in terms of company size. In this table, the first column shows the alternative company size categories in terms of the number of employees. The second column shows the percentage of respondents in each size category. Column 3 (Valid Percent) represents the percentage of respondents in each category when missing values (i.e. those respondents who did not answer the question) are deducted. However, since 100% of the survey respondents answered this question, there are no missing values and the valid percent (column 3) is equivalent to the percent (column 2). Finally, the fourth column (Cumulative Percent) shows the valid percentage that the respondents in one category add to the percentage of respondents falling in all previous categories – i.e. the cumulative percentages of successive categories.

As Table 12 shows, all of the responding companies employed less than 150 employees. 27.3% employed less than 10 employees, while most companies (36.4%) employed between 10 – 49 employees. A smaller percentage of companies employed between 50 – 99 employees (18.2%) and between 100 – 149 employees (18.2%).

Table 12: **Profile of Respondents by Number of Employees**

	Percent	Valid Percent	Cumulative Percent
Less Than 10	27.3	27.3	27.3
10 – 49	36.4	36.4	63.6
50 – 99	18.2	18.2	81.8
100 – 149	18.2	18.2	100.0
Total	100.0	100.0	

4.3.3 Markets That the Companies Operate In

Table 13 represents the scope of operations of the responding companies in terms of the market(s) that the companies operate in. Almost all of the companies (90.9%) operate in EU markets, while more than half of the companies (54.5%) operate in markets outside of the EU. In terms of more domestically focused operations, 54.5% of respondents operate in local or regional markets, and 45.5% operate in the national markets.

Table 13: **Profile of Respondents by Market(s) That the Companies Operate In**

	Percentage of Companies
Local/Regional Market	54.5
National Market	45.5
EU	90.9
Outside EU	54.5

4.3.4 Deloitte & Touche Technology Fast 50 Category

Respondents were also asked to indicate the nature of the products/services provided by the company in relation to the Deloitte & Touche Technology Fast 50 company categories. Of the eight categories (plus an "Other" option) offered, all of the responding companies fit within the four categorisations listed in Figure 14. From this chart it is evident that the most frequently occurring category is Hi-Tech (36% of companies), followed by Software (27%), then by Telecommunications (18%) and Networking and Communications (also 18%).

***Figure 14*: Profile of Respondents by Deloitte & Touche Technology Fast 50 Category**

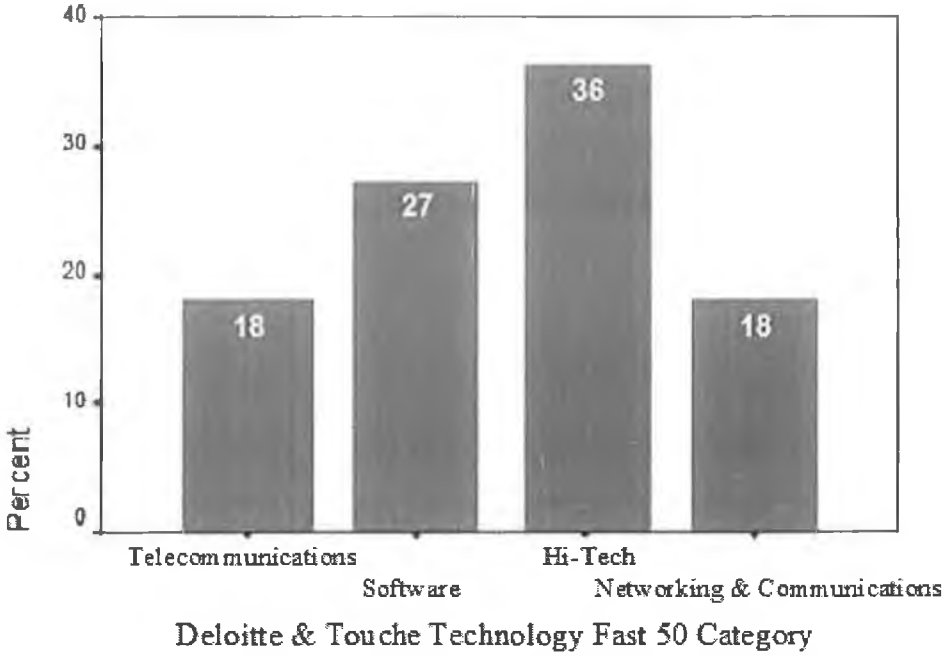


Table 14 gives the precise details of this breakdown.

***Table 14*: Deloitte & Touche Technology Fast 50 Category**

	Percent	Valid Percent	Cumulative Percent
Telecommunications	18.2	18.2	18.2
Software	27.3	27.3	45.5
Hi-Tech	36.4	36.4	81.8
Networking & Communications	18.2	18.2	100.0
Total	100.0	100.0	

4.4 Objective 1: Training Expenditure and Approach

Section B in the survey focused on the provision of training within the companies, in terms of expenditure, the number of training days provided, support for employees wishing to pursue self-development, and overall approach to training and development.

4.4.1 Expenditure on Training and Development

Respondents were asked to specify the total value of expenditure on training and development for the past year, expressed as a percentage of overall payroll. Table 15 shows the findings to this question. The results show that the mean expenditure for all companies is 2.6% of payroll (the median is 2.0%). However, the results vary greatly, with the minimum expenditure reported standing at 0.5%, and the maximum expenditure at standing at 8.0%.

***Table 15*: Statistics on Training and Development Expenditure as Percentage of Payroll**

N	Valid	11
	Missing	0
Mean		2.6364
Median		2.0000
Std. Deviation		2.35681
Range		7.50
Minimum		.50
Maximum		8.00

When the expenditure on training and development is cross-tabulated with company size, the mean expenditure as a percentage of total payroll increases by company size up to the size of 99 employees. Above this, however, expenditure drops considerably. The mean expenditure for companies employing less than 10 employees is 1.8% of payroll, rising to 3.1% for companies employing 10 – 49 employees, and rising again to 4.8% for companies employing 50 – 99 employees. For companies employing 100 – 149 employees, the mean level of expenditure is 0.8% of payroll. However, as only 18% of respondents fall within this company size category, it is necessary to interpret this finding with caution. Nonetheless, the minimum of all responses to this question also occurred in the 100 – 149 employees category. The maximum expenditure from all the responses occurred in the 10 – 49 employees category.

***Table 16*: Cross-Tabulation of Expenditure by Company Size**

Number of Employees	Mean Expenditure	Minimum Expenditure	Maximum Expenditure
Less Than 10	1.8333	1.50	2.00
10 – 49	3.1250	1.00	8.00
50 – 99	4.7500	3.50	6.00
100 - 149	0.7500	0.50	1.00

4.4.2 Was Expenditure Made From a Training and Development Budget?

Respondents were also asked to state whether the expenditure was made from a specific annual budget set aside for training and development. As Figure 15 shows, the responses were divided roughly in half, with a slightly higher percentage of respondents (54.5%) stating that the expenditure was not made from a dedicated budget. 45.5% of companies had established a specific training and development budget.

***Figure 15*: Was the Expenditure Made From a Specific Annual Training and Development Budget?**

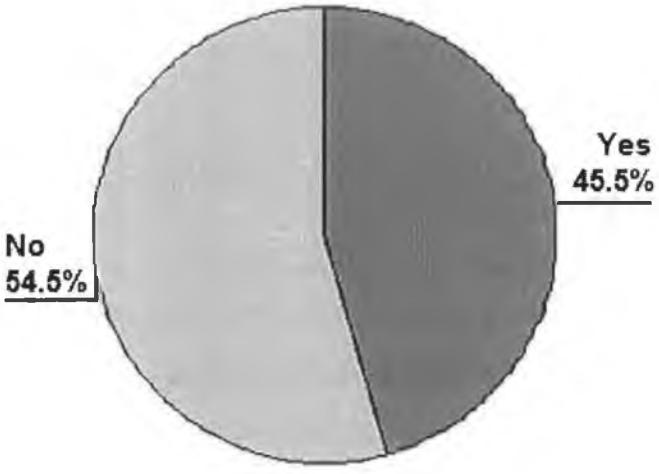


Table 17 shows a cross-tabulation of the average expenditure on training and development by existence of a budget. From these results it is clear that no relationship exists between the existence of a budget and expenditure on training. The mean expenditure as a percentage of overall payroll is 2.8% for those companies that have no training and development budget, and 2.4% for those companies that have established a training and development budget.

***Table 17*: Cross-Tabulation of Expenditure on Training and Development by Existence of Budget**

Existence of Budget	Expenditure	
Yes	Mean	2.4000
	Median	1.5000
No	Mean	2.8333
	Median	2.0000

The relationship between the existence of a budget and company size has also been examined. No strong relationship was found to exist. Table 18 shows that 33% of respondents employing less than 10 employees have established a budget, compared to 50% in each of the 10 – 49, 50 – 99 and 100 – 149 categories.

***Table 18*: Cross-Tabulation of Existence of Budget by Number of Employees**

Number of Employees	Existence of Budget	Percentage of Respondents
Less Than 10	yes	33.3
	no	66.7
	Total	100.0
10 - 49	yes	50.0
	no	50.0
	Total	100.0
50 - 99	yes	50.0
	no	50.0
	Total	100.0
100 - 149	yes	50.0
	no	50.0
	Total	100.0

4.4.3 Proportion of Expenditure Allocated to Each Occupational Group

The survey asked respondents to indicate the precise allocation of expenditure on training and development in terms of the occupational groups receiving the expenditure. Table 19 shows the average percentage of total expenditure being allocated to each occupational group. These results indicate that almost half of all expenditure is being allocated to Technical Staff (47.3%). Professional Staff are receiving the second highest level of expenditure (22.0% of total expenditure), followed by all Other Managers (15.5%). Senior Managers and Directors, Clerical and Administrative Staff, and Manual Workers receive the smallest proportions of the expenditure (8.6%, 5.5%, and 1.1% respectively).

***Table 19*: Percentage of Total Expenditure Allocated to Each Occupational Group**

Occupational Group	Percentage of Total Expenditure	Cumulative Percent
Senior Managers and Directors	8.6364	8.6
All Other Managers	15.4545	24.1
Professional Staff	22.0000	46.1
Technical Staff	47.2727	93.4
Clerical & Administrative Staff	5.5455	98.9
Manual Workers	1.0909	100
TOTAL	**100**	

Table 20 presents a cross-tabulation of expenditure on each occupational group by company size (number of employees). The results in this table show that while smaller companies concentrate on Technical Staff and Professional Staff when allocating expenditure, the larger companies tend to spread the allocation of expenditure to more or all occupational groups.

***Table 20*: Cross-Tabulation of Expenditure on Each Occupational Group by Company Size**

Number of Employees	Occupational Group	Mean Expenditure	Std. Deviation
Less Than 10	Senior Managers and Directors	.0000	.00000
	All Other Managers	.0000	.00000
	Professional Staff	33.3333	28.86751
	Technical Staff	66.6667	28.86751
	Clerical & Administrative Staff	.0000	.00000
	Manual Workers	.0000	.00000
10 - 49	Senior Managers and Directors	8.7500	10.30776
	All Other Managers	25.0000	17.32051
	Professional Staff	18.7500	13.14978
	Technical Staff	36.2500	29.26175
	Clerical & Administrative Staff	11.2500	10.30776
	Manual Workers	.0000	.00000
50 - 99	Senior Managers and Directors	15.0000	7.07107
	All Other Managers	15.0000	7.07107
	Professional Staff	20.0000	21.21320
	Technical Staff	45.0000	35.35534
	Clerical & Administrative Staff	4.0000	1.41421
	Manual Workers	1.0000	1.41421
100 - 149	Senior Managers and Directors	15.0000	7.07107
	All Other Managers	20.0000	.00000
	Professional Staff	13.5000	16.26346
	Technical Staff	42.5000	24.74874
	Clerical & Administrative Staff	4.0000	5.65685
	Manual Workers	5.0000	7.07107

4.4.4 Expenditure on Computer-Based Training

In order to establish the extent to which companies are investing in computer-based training (CBT) methods, respondents were asked to state what percentage of total expenditure on training is taken up by CBT. Table 21 shows that most companies (54.5%) spend more than 20% of total training and development expenditure on CBT. Nonetheless 18.2% of companies still spend nothing on CBT, and a further 18.2% spend less than 10% of total training and development expenditure on CBT. The remaining 9.1% of companies spend between 10% and 20% on CBT. This breakdown is illustrated graphically in Figure 16.

***Table 21*: Percentage of Total Training and Development Expenditure Allocated to CBT**

	Percent	Valid Percent	Cumulative Percent
None	18.2	18.2	18.2
Less Than 10%	18.2	18.2	36.4
10 - 20%	9.1	9.1	45.5
More Than 20%	54.5	54.5	100.0
Total	100.0	100.0	

***Figure 16*: Percentage of Total Training and Development Expenditure Allocated to CBT**

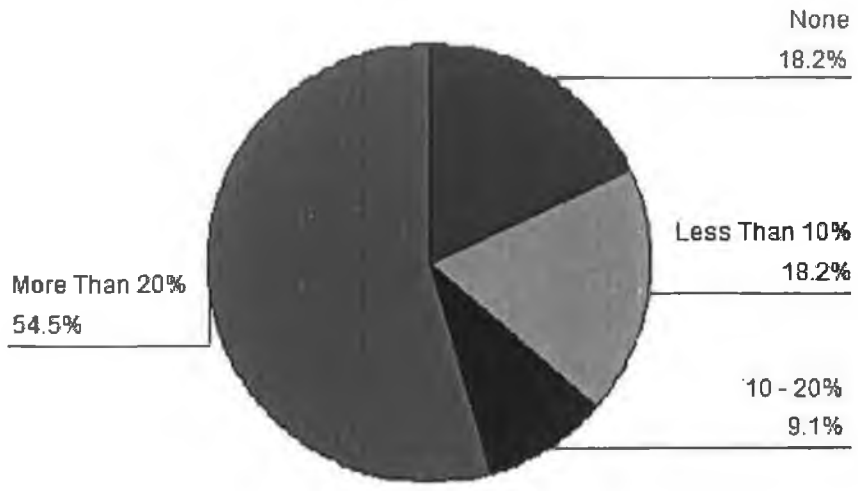


Table 22 presents a cross-tabulation of the percentage of total training and development expenditure that is allocated to CBT by existence of a training budget. From these results it is clear that, while expenditure on CBT constitutes a substantial proportion of total expenditure on training for most companies, for those companies with no budget the expenditure is more likely to be at the lower end of the scale (None, or Less Than 10%) than it is for those companies that have established a budget.

***Table 22*: Cross-Tabulation of Percentage of Total Expenditure Allocated to CBT by Existence of a Training Budget**

		Was This Expenditure Made from a Specific annual Training and Development Budget?		
		yes	no	Total
Percentage of Total Annual Expenditure Allocated to CBT	None	0.0%	33.3%	18.2%
	Less Than 10%	20.0%	16.7%	18.2%
	10 - 20%	20.0%	0.0%	9.1%
	More Than 20%	60.0%	50.0%	54.5%
Total		100.0%	100.0%	100.0%

When the percentage of total annual expenditure that is allocated to CBT was cross-tabulated with company size, no relationship was found to exist (Table 23). For example, while all of the companies with 10 – 49 employees allocate more than 20% of training expenditure to CBT, all of those that employ 100 – 149 employees allocate less than 10% of training expenditure to CBT.

***Table 23*: Cross-Tabulation of Percentage of Total Expenditure Allocated to CBT by Company Size**

	Percentage of Total Annual Expenditure Allocated to CBT				
Number of Employees	None	Less Than 10%	10 - 20%	More Than 20%	Total
Less Than 10	66.7%	---	---	33.3%	100%
10 – 49	---	---	---	100.0%	100%
50 – 99	---	---	50.0%	50.0%	100%
100 – 149	---	100.0%	---	---	100%

4.4.5 Average Number of Training Days by Occupational Group

In addition to asking companies about their expenditure on training and development, respondents were also asked to indicate, for each occupational group, the average number of days spent in training per employee over the past year. No employees received more than 15 days of training over the past year. Table 24 shows that 100% of companies provided some training for Technical staff, while 36.4% of companies did not provide any training days to Senior Managers and Directors, 18.2% did not provide any training days to all Other Managers, and 9.1% did not provide any training days to Professional Staff. The majority of companies (63.6%) did not provide any training

days to Manual Workers, and 18.2% of companies provided no training days to Clerical and Administrative staff. In relation to those companies that did provide some days of training, for all occupational groups most companies provided between 1 and 5 days of training per employee (although where manual workers did receive training days, they were just as likely to have received between 6 and 10 days as they were to have received between 1 and 5 days). The only occupational group to receive more than 10 days of training was Technical staff, for which 27.3% of companies provided between 11 and 15 days of training.

***Table 24*: Average Number of Training Days by Occupational Group**

Occupational Group	*Average Number of Days Training / Percentage of Companies*				
	1 – 5	6 – 10	11 – 15	None / Not Applicable	Total
Senior Managers / Directors	63.6 %	---	---	36.4%	100%
All Other Managers	54.5%	27.3%	---	18.2%	100%
Professional Staff	54.5%	36.4%	---	9.1%	100%
Technical Staff	45.5%	27.3%	27.3%	---	100%
Clerical & Administrative Staff	81.8%	---	---	18.2%	100%
Manual Workers	18.2%	18.2%	---	63.6%	100%

The relationship between company size and the average number of training days provided to employees in each occupational group has also been examined. The results presented in Table 25 indicate that a relationship does exist here, with the provision of training days increasing with company size (number of employees). For example, 33.3% of companies employing less than 10 employees provide between 1 and 5 training days for Senior Managers and Directors; this increases to 50% for companies employing 10 – 49 employees, and to 100% for companies employing 50 – 99, and companies employing 100 – 149, employees. However, the relationship seems to be less clear in relation to Professional staff and Manual workers than it is for the other occupational groups.

Table 25: **Relationship Between Company Size and Average Number of Training Days Per Employee in Each Occupational Group**

Occupational Group / Number of Employees	Average Number of Days Training / Percentage of Companies			
	1 – 5	6 – 10	11 – 15	None / Not Applicable
Senior Managers / Directors				
Less Than 10	33.3%	---	---	66.7%
10 – 49	50.0%	---	---	50.0%
50 – 99	100.0%	---	---	---
100 – 149	100.0%	---	---	---
All Other Managers				
Less Than 10	33.3%	---	---	66.7%
10 – 49	25.0%	75.0%	---	---
50 – 99	100.0%	---	---	---
100 – 149	100.0%	---	---	---
Professional Staff				
Less Than 10	---	66.7%	---	33.3%
10 – 49	100.0%	---	---	---
50 – 99	50.0%	50.0%	---	---
100 – 149	50.0%	50.0%	---	---
Technical Staff				
Less Than 10	33.3%	66.7%	---	---
10 – 49	75.0%	---	25.0%	---
50 – 99	50.0%	---	50.0%	---
100 – 149	---	50.0%	50.0%	---
Clerical & Administrative Staff				
Less Than 10	33.3%	---	---	66.7%
10 – 49	100.0%	---	---	---
50 – 99	100.0%	---	---	---
100 – 149	100.0%	---	---	---
Manual Workers				
Less Than 10	---	33.3%	---	66.7%
10 – 49	25.0%	---	---	75.0%
50 – 99	50.0%	---	---	50.0%
100 – 149	---	50.0%	---	50.0%

4.4.6 Support for Employees Wishing to Pursue Self-Development

In order to determine the level of support provided by companies for employees who wish to undertake training, respondents were asked whether they would contribute to the cost of training that is received through an external institution. As Table 26 indicates, all of the responding companies indicated that they would contribute to the cost of external training. Just over half of the companies are willing to pay part of the cost, and the remainder are willing to pay the full cost.

***Table 26*: Will The Company Contribute to the Cost of Training Through an External Institution?**

	Percent	Valid Percent
Yes, the company will pay part of the cost	54.5	54.5
Yes, the company will pay the full cost	45.5	45.5
Total	100.0	100.0

When a cross-tabulation is performed to examine the effect that the existence of a training and development budget has upon the company's willingness to contribute towards the cost of external training, a strong relationship would appear to exist (Table 27). While 80% of companies that have a dedicated budget are willing to pay the full cost of external training, the corresponding figure for companies that do not have a training budget is a much lower 16.7%.

***Table 27*: Cross-Tabulation of Contribution to Cost of External Training with Existence of Budget**

Was This Expenditure Made from a Specific Training and Development Budget?		Percent
YES	Yes, the company will pay part of the cost	20.0
	Yes, the company will pay the full cost	80.0
	Total	100.0
NO	Yes, the company will pay part of the cost	83.3
	Yes, the company will pay the full cost	16.7
	Total	100.0

The willingness of companies to contribute to the cost of external training has also been cross-tabulated with company size. The results of this cross-tabulation suggest that some relationship does exist between the two variables (Table 28). At the bottom of the size scale, the companies employing less than ten employees are not willing to pay more than part of the cost of external training. On the other hand, those companies that employ either 10 – 49 or 50 – 99 employees are just as likely to pay the full cost as they

are to pay part of the cost. And 100% of the companies that employ between 100 – 149 employees stated that they would meet the full cost of external training.

***Table 28*: Cross-Tabulation of Contribution to Cost of External Training by Company Size**

Number of Employees	Will the Company Contribute to the Cost of Training Through an External Institution?		
	Yes, the Company Will Pay Part of the Cost	Yes, the Company Will Pay the Full Cost	Total
Less Than 10	100.0%	---	100%
10 – 49	50.0%	50.0%	100%
50 – 99	50.0%	50.0%	100%
100 – 149	---	100.0%	100%

A further measure of the level of support from companies for employees who wish to undertake training relates to the willingness of companies to allow employees to take time off work for training. Table 29 shows that the vast majority of companies (63.6%) will usually allow time off, and the remaining companies (36.4%) will sometimes allow time off. No respondents stated that employees would not usually be allowed time off work for training.

***Table 29*: Will the Company Allow Employees to Have Time Off Work for Training?**

	Percent	Valid Percent
Sometimes allow time off	36.4	36.4
Usually allow time off	63.6	63.6
Total	100.0	100.0

As with the provision of financial support for external training, there also seems to be a relationship between the existence of a training and development budget and willingness to allow employees to have time off work for training (Table 30). 80% of companies that have a specific budget will usually allow employees to have time off work for training, compared with 50% of companies that have not established a training and development budget.

***Table 30*: Cross-Tabulation of Willingness to Allow Time Off with Existence of Budget**

Was This Expenditure Made from a Specific Training and Development Budget?		Percent
YES	Sometimes allow time off	20.0
	Usually allow time off	80.0
	Total	100.0
NO	Sometimes allow time off	50.0
	Usually allow time off	50.0
	Total	100.0

A cross-tabulation was also performed to examine the relationship between company size and willingness to allow time off for training. As Table 31 shows, the willingness to allow employees to have time off is higher for the larger companies than it is for those that are smaller in size. All of the companies that employ less than 10 employees stated that they would sometimes allow time off, while 75% of companies employing 10 – 49 employees usually allow time off. All of those companies that employ 50 or more people stated that they would usually allow time off.

***Table 31*: Cross-Tabulation of Willingness to Allow time off by Company Size**

	Will the Company Allow Employees to Have Time Off Work for Training?		
Number of Employees	Sometimes Allow Time Off	Usually Allow Time Off	Total
Less Than 10	100.0%	---	100%
10 – 49	25.0%	75.0%	100%
50 – 99		100.0%	100%
100 – 149	---	100.0%	100%

4.4.7 Training and Development Approach

In the survey, respondents were asked a number of questions that were designed to give an indication of the general approaches to the provision of training and development that are being adopted by these companies. The first of the questions asked respondents to indicate how training is planned, designed and delivered: systematically or

unsystematically. The results (as illustrated in Figure 17) show that the majority of companies (54.5%) plan, design and deliver training in a systematic way, while the remaining 45.5% do so in an unsystematic way.

***Figure 17*: How Training is Planned, Designed and Delivered**

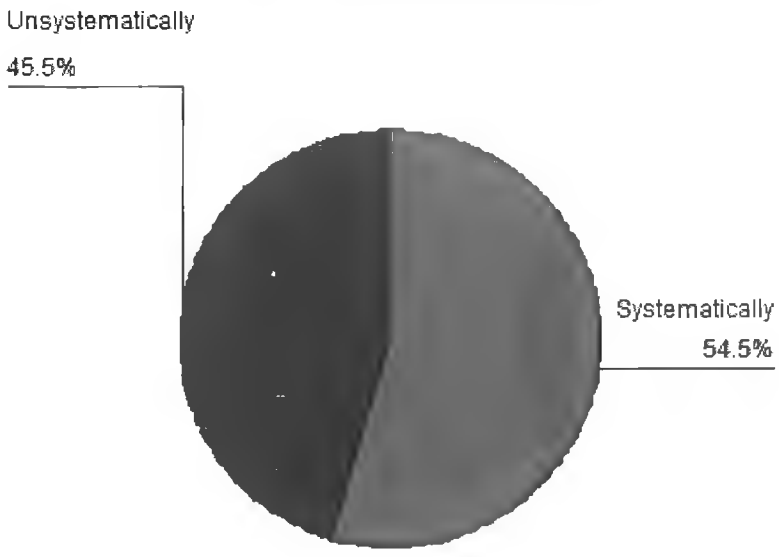


Table 32 presents the results of a cross-tabulation that examines the relationship between the existence of a training and development budget and the way in which training is planned, designed and delivered. From these results, it emerges that those companies that have established a budget are more likely to adopt a systematic approach to training than those companies that have not established a budget (80% compared to 33.3% respectively).

***Table 32*: Cross-Tabulation of How Training is Planned, Designed and Delivered with Existence of Budget**

Was This Expenditure Made from a Specific Training and Development Budget?		Percent
YES	Systematically	80.0
	Unsystematically	20.0
	Total	100.0
NO	Systematically	33.3
	Unsystematically	66.7
	Total	100.0

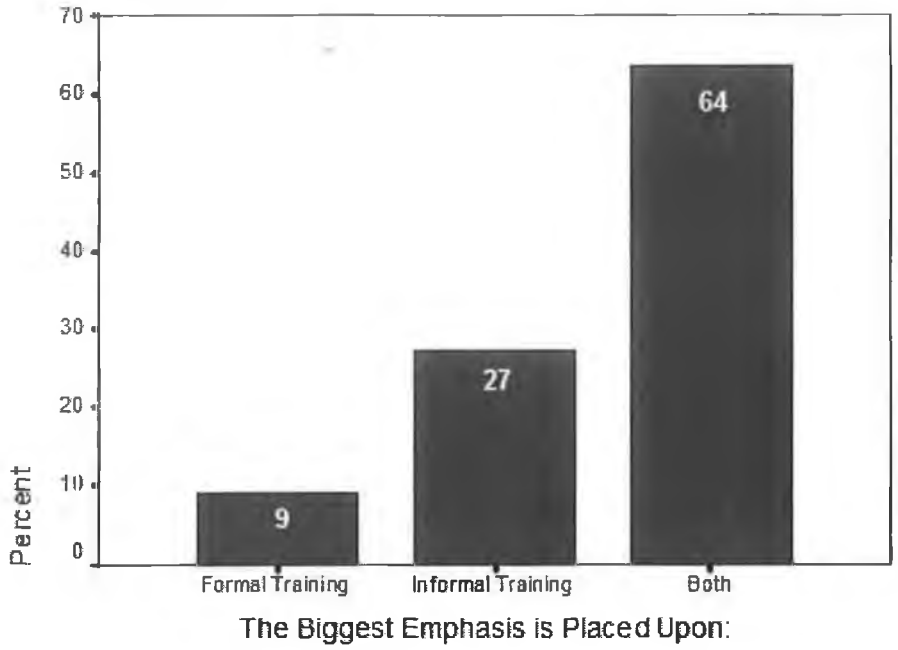
When the results to this question are cross-tabulated with company size, a positive relationship would appear to exist up to the 99 employees mark (Table 33). For example, of those companies employing less than 10 people, 33.3% stated that training was planned, designed and delivered systematically. The corresponding figures for companies employing 10 – 49 people and 50 – 99 people are 75.0% and 100.0% respectively. However, all of those companies employing more than 99 employees stated that training was unsystematic.

***Table 33*: Cross-Tabulation of How Training is Planned, Designed and Delivered with Company Size**

	Training is Planned, Designed and Delivered:		
Number of Employees	Systematically	Unsystematically	Total
Less Than 10	33.3%	66.7%	100%
10 – 49	75.0%	25.0%	100%
50 – 99	100.0%	---	100%
100 – 149	---	100.0%	100%

The second question asked respondents to indicate whether the greatest emphasis was placed upon formal training, informal training or both. As illustrated in Figure 18, most companies (63.6%) utilise a mix of both formal and informal training, while 27.3% concentrate mostly on informal training, and 9.1% concentrate on formal training.

***Figure 18*: The Emphasis of Training and Development**



Again, there would appear to be a relationship between the existence of a training and development budget and the emphasis of training. While all of the companies that do have a budget responded that a balance of formal and informal training is used, the corresponding figure for those companies that do not have a budget is 33.3%. Half of the companies that do not have a budget focus primarily on informal training, and 16.7% place the greatest emphasis on formal training (Table 34).

***Table 34*: Cross-Tabulation of the Emphasis of Training with Existence of a Budget**

Was This Expenditure Made from a Specific Training and Development Budget?		Percent
YES	Both	100.0
NO	Formal Training	16.7
	Informal Training	50.0
	Both	33.3
	Total	100.0

When a cross-tabulation is performed to examine the relationship between company size and the emphasis of training and development, no significant relationship is found

to exist. As Table 35 shows, the larger companies do not place more consideration than smaller companies into ensuring that a mixture of both formal and informal training is provided. It is also interesting that the smaller companies do not tend to rely more than larger companies do on informal training activities.

***Table 35*: Cross-Tabulation of the Emphasis of Training with Company Size**

Number of Employees	The Biggest Emphasis is Placed Upon:			
	Formal Training	Informal Training	Both	Total
Less Than 10	33.3%		66.7%	100%
10 – 49		25.0%	75.0%	100%
50 – 99		50.0%	50.0%	100%
100 – 149		50.0%	50.0%	100%

The third measure of training approach relates to the role of training and development within the companies. Respondents were asked to indicate whether this role was operational, tactical or strategic. In the vast majority of companies (54.5%) training plays an operational role, and for 18.2% it plays a tactical role. Only 27.3% of respondents believed that training and development played a strategic role in their company. These results are illustrated in Figure 19.

***Figure 19*: The Role of Training and Development**

Interestingly, when the role of training is cross-tabulated with the existence of a training and development budget, no relationship would appear to exist. As Table 36 shows, training plays a strategic role in only 20% of those companies that have dedicated training budgets, compared to 33.3% of companies that have no such budgets. Furthermore, for 80% of companies that do have a budget, training plays an operational role, while the corresponding figure for those companies with no budget is 33.3%.

***Table 36*: Cross-Tabulation of the Role of Training with Existence of Budget**

Was This Expenditure Made from a Specific Training and Development Budget?		Percent
YES	Operational	80.0
	Strategic	20.0
	Total	100.0
NO	Operational	33.3
	Tactical	33.3
	Strategic	33.3
	Total	100.0

It can also be said that no positive relationship exists between company size and the role of training in a company. As Table 37 shows, the role of training is operational in all those organisations that employ 100 or more employees, compared to 75.0% of those employing 10 – 49 people and 33.3% of those employing less than 10 people.

***Table 37*: Cross-Tabulation of the Role of Training with Company Size**

	The Role of Training and Development Is:			
Number of Employees	Operational	Tactical	Strategic	Total
Less Than 10	33.3%	66.7%	---	100%
10 – 49	75.0%	---	25.0%	100%
50 – 99	---	---	100.0%	100%
100 – 149	100.0%	---	---	100%

The final question relating to training approach asked respondents whether individual training needs, organisational training needs, or both organisational and individual

training needs were considered in the company's approach to training and development. The results indicate that only a small minority of organisations focus on either individual or organisational training needs (9.1% and 9.1%), as the majority (81.8%) of organisations focus upon both individual and organisational training needs (Figure 20).

***Figure 20*: The Focus of Training and Development**

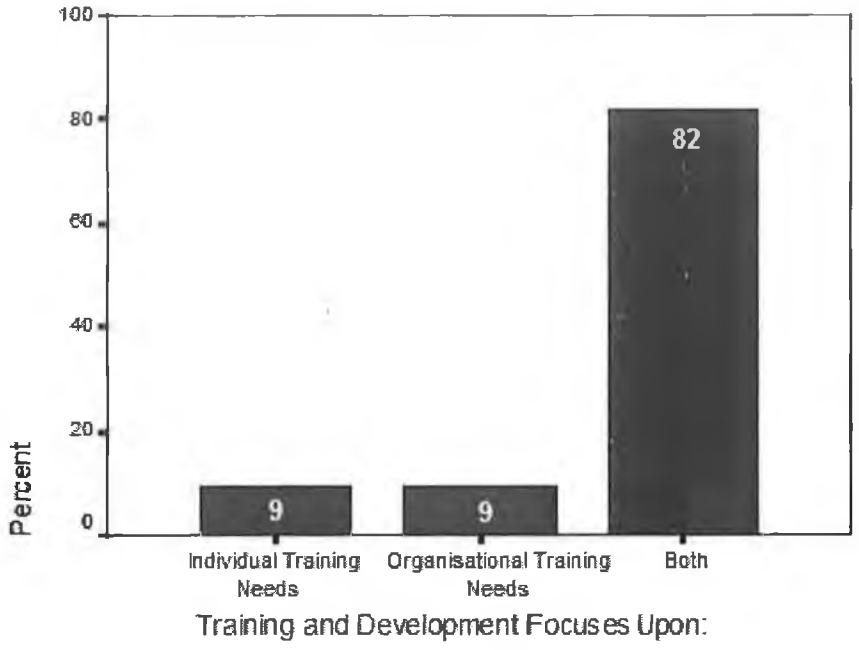


Table 38 shows a cross-tabulation that examines the relationship between the focus of training and the existence of a training and development budget. These results show that, while all of those companies that do have a budget focus on both organisational and individual training needs, 16.7% of the companies that have no budget focus on individual training needs only, and 16.7% focus on organisational training needs only.

***Table 38*: Cross-Tabulation of the Focus of Training with Existence of Budget**

Was This Expenditure Made from a Specific Training and Development Budget?		Percent
YES	Both Organisational and Individual Training Needs	100.0
NO	Individual Training Needs	16.7
	Organisational Training Needs	16.7
	Both Organisational and Individual Training Needs	66.7
	Total	100.0

When the focus of training is cross-tabulated with company size no significant relationship emerges (Table 39). For example, all of the companies that employ less than 10 people stated that they focus on both individual and organisational training needs, compared to 50.0% of companies that employee 100 or more people.

***Table 39*: Cross-Tabulation of the Focus of Training with Company Size**

Number of Employees	Training and Development Focuses Upon:			
	Individual Training Needs	Organisational Training Needs	Both	Total
Less Than 10	---	---	100.0%	100%
10 – 49	---	25.0%	75.0%	100%
50 – 99	---	---	100.0%	100%
100 – 149	50.0%	---	50.0%	100%

A relationship would also appear to exist between the way in which training is planned, designed and delivered (systematically or unsystematically) and the focus of training. As Table 40 shows, all of those companies that have indicated that training is planned, designed and delivered systematically focus on both organisational and individual training needs. The corresponding figure for those companies in which training is unsystematic is 60%; the remainder of these companies focus on either individual training needs (20%) or organisational training needs (20%).

***Table 40*: Cross-Tabulation of How Training is Planned, Designed and Delivered with the Focus of Training**

Training is Planned, Designed and Delivered:	Training and Development Focuses Upon:	Percent
Systematically	Both Organisational and Individual Training Needs	100.0
Unsystematically	Individual Training Needs	20.0
	Organisational Training Needs	20.0
	Both Organisational and Individual Training Needs	60.0
	Total	100.0

4.5 Objective 2: Methods Of Delivering Training

Section C of the survey was concerned with the methods, techniques and tools/aids used to deliver training. The results of Section C are examined under sections 3.5 and 3.6 of this chapter.

4.5.1 Conventional Training Methods

Section C1 of the survey asked respondents about the methods used to deliver training. Table 41 presents the findings in relation to the frequency with which conventional training methods are used. From these results it is clear that on-the-job training is the most frequently used method, and is the only method for which most companies report frequent use (72.7% of companies). Only 9.1% of companies do not use on-the-job training. Conferences and discussions, and formal/professional education, are also used quite frequently by companies, with 36.4% and 27.3% of companies (respectively) stating that these methods are frequently used, and 45.5% stating that each method is used fairly often.

***Table 41*: Frequency of Use of Conventional Training Methods**

	Frequency of Use					
Method	Frequently	Fairly Often	Infrequently	Not at All	No Response	Total
On-the-Job Training	72.7%	18.2%	—	9.1%	—	100%
Videotapes	—	—	27.3%	63.6%	9.1%	100%
Films	—	—	—	90.9%	9.1%	100%
Audiotapes	—	9.1%	9.1%	72.7%	9.1%	100%
Lectures	9.1%	27.3%	18.2%	36.4%	9.1%	100%
Role Plays	—	9.1%	27.3%	54.5%	9.1%	100%
Case Studies	9.1%	27.3%	9.1%	45.5%	9.1%	100%
Games	—	9.1%	27.3%	54.5%	9.1%	100%
Conferences/Discussions	36.4%	45.5%	18.2%	—	—	100%
Formal/Professional Education	27.3%	45.5%	18.2%	—	9.1%	100%
Non-Electronic Open Learning	—	18.2%	45.5%	27.3%	9.1%	100%
Other Off-the-Job Training	9.1%	9.1%	27.3%	36.4%	18.2%	100%

A question was incorporated in the survey that asked respondents to indicate which training methods their company intends to use in the future, whether or not they are currently being used. However, as has been discussed earlier in this chapter, the response to this question in the survey was very low. Therefore, no significant findings have emerged in relation to the future use of methods. Table 42 provides a breakdown of the results. However, for those companies that did respond, the methods that they intend to use in the future include on-the-job training, videotapes, conferences and discussions, formal/professional education, non-electronic open learning, and other off-the-job training methods.

Table 42: **Future Use of Conventional Methods**

Method	Intend to Use In Future	No Response
On-the-Job Training	9.1%	90.9%
Videotapes	9.1%	90.9%
Films	—	100.0%
Audiotapes	—	100.0%
Lectures	—	100.0%
Role Plays	—	100.0%
Case Studies	—	100.0%
Games	—	100.0%
Conferences/Discussions	9.1%	90.9%
Formal/Professional Education	9.1%	90.9%
Non-Electronic Open Learning	9.1%	90.9%
Other Off-the-Job Training	9.1%	90.9%

In order to develop a picture of changing patterns in the use of specific methods for different occupational groups within the companies, respondents were asked to indicate the length of time (in years) for which each method has been in use for the delivery of training to three occupational groups: management, professional/technical staff, and administrative/manual staff. Table 43 summarises the results by indicating the percentage of organisations that use each method for each of the occupational groups. It is notable from these results that there are similar patterns in the use of methods for management and professional/technical staff, while the usage of most methods is lower for administrative/manual staff. These results are consistent with the lower level of training provision for administrative/manual workers, in terms of both training expenditure and number of annual training days. It is also notable that on-the-job training, which has traditionally been associated with the training of manual workers, is used by less organisations to train administrative/manual workers than it is to training management and professional/technical staff (54.5%, 72.7% and 72.7% respectively).

***Table 43*: Use of Conventional Methods by Occupational Group**

	Use by Occupational Group		
Method	Management	Professional/ Technical	Administrative/ Manual
On-the-Job Training	72.7%	72.7%	54.5%
Videotapes	27.3%	27.3%	27.3%
Films	9.1%	9.1%	9.1%
Audiotapes	9.1%	9.1%	18.2%
Lectures	54.5%	54.5%	27.3%
Role Plays	27.3%	27.3%	18.2%
Case Studies	36.4%	36.4%	27.3%
Games	36.4%	36.4%	18.2%
Conferences/Discussions	72.7%	81.8%	45.5%
Formal/Professional Education	54.5%	72.7%	45.5%
Non-Electronic Open Learning	45.5%	54.5%	27.3%
Other Off-the-Job Training	27.3%	27.3%	27.3%

Table 44 details the precise breakdown of results, in terms of the length of time for which companies have been using each method for each occupational group. The responses to this section of the survey would indicate that a large proportion of the methods have been in use for 7 to 9 years, and in most cases this applies to all categories of employee. These methods include on-the-job training, audiotapes, lectures, games, conferences/discussions, and open learning (non-electronic). In relation to role plays, case studies and formal/professional education, most organisations indicate that these methods have been in use for between 1 and 3 years. The use of videotapes and other off-the-job training methods is limited for all categories of employees, although the adoption of these methods ranges from the past year to the past 7 to 9 years for videotapes, and from the past 1 to 3 years to the past 10 or more years for other off-the-job training methods. It would therefore appear that companies are still adopting these methods. In contrast, the use of films is low for all occupational groups, and no companies would appear to have adopted this method in recent years. It is also notable that role plays and case studies would appear to have increased in use in recent years.

Table 44: **Years of Use of Conventional Methods for Each Occupational Group**

Method	< 1	1 – 3	4 – 6	7 – 9	10 +	No Response	Total
On-the-Job Training							
Management	---	27.3%	9.1%	27.3%	9.1%	27.3%	100%
Professional/Technical	---	27.3%	9.1%	27.3%	9.1%	27.3%	100%
Administrative/Manual	---	18.2%	---	27.3%	9.1%	45.5%	100%
Videotapes							
Management	---	9.1%	9.1%	9.1%	---	72.7%	100%
Professional/Technical	9.1%	9.1%	---	9.1%	---	72.7%	100%
Administrative/Manual	9.1%	9.1%	---	9.1%	---	72.7%	100%
Films							
Management	---	---	---	9.1%	---	90.9%	100%
Professional/Technical	---	---	---	9.1%	---	90.9%	100%
Administrative/Manual	---	---	---	9.1%	---	90.9%	100%
Audiotapes							
Management	---	---	---	9.1%	---	90.9%	100%
Professional/Technical	---	---	---	9.1%	---	90.9%	100%
Administrative/Manual	---	---	9.1%	9.1%		81.8%	100%
Lectures							
Management	---	18.2%	---	27.3%	9.1%	45.5%	100%
Professional/Technical	---	18.2%	---	27.3%	9.1%	45.5%	100%
Administrative/Manual	---	9.1%	---	18.2%	---	72.7%	100%
Role Plays							
Management	---	18.2%	---	9.1%	---	72.7%	100%
Professional/Technical	---	18.2%	---	9.1%	---	72.7%	100%
Administrative/Manual	---	9.1%	---	9.1%	---	81.8%	100%
Case Studies							
Management	---	27.3%	---	9.1%	---	63.6%	100%
Professional/Technical	---	18.2%	9.1%	9.1%	---	63.6%	100%
Administrative/Manual	---	18.2%	---	9.1%	---	72.7%	100%
Games							
Management	---	18.2%	---	18.2%	---	63.6%	100%
Professional/Technical	---	9.1%	9.1%	18.2%	---	63.6%	100%
Administrative/Manual	---	9.1%	---	9.1%	---	82.8%	100%
Conferences/Discussions					---		
Management	9.1%	18.2%	18,2%	27.3%	---	27.3%	100%
Professional/Technical	9.1%	18.2%	27.3%	27.3%	---	18.2%	100%
Administrative/Manual	---	18.2%	---	27.3%		54.5%	100%
Formal/Professional Education					---		
Management	---	27.3%	9.1%	18.2%	---	45.5%	100%
Professional/Technical	---	27.3%	27.3%	18.2%	---	27.3%	100%
Administrative/Manual	9.1%	18.2%	---	18.2%		54.5%	100%
Non-Electronic Open Learning							
Management	---	18.2%	9.1%	18.2%	---	54.5%	100%
Professional/Technical	---	18.2%	18.2%	18.2%	---	45.5%	100%
Administrative/Manual	---	9.1%	---	18.2%	---	72.7%	100%
Other Off-the-Job Training							
Management	---	9.1%	9.1%	---	9.1%	72.7%	100%
Professional/Technical	---	9.1%	9.1%	---	9.1%	72.7%	100%
Administrative/Manual	---	9.1%	9.1%	---	9.1%	72.7%	100%

4.5.2 Computer-Based Training Methods

In order to provide a picture of the extent to which computer-based training (CBT) methods are being adopted by companies, the questions in Section C1 of the survey also asked companies about their use of CBT. Table 45 presents the results in relation to the frequency of use of CBT methods. From these findings, it would appear that the Internet is the most frequently used of all the CBT methods, being used frequently by 27.3% of companies and fairly often by a further 36.4%. CD-ROMs and computer-based simulations are the next most frequently used methods. However, from the CBT methods listed, there is no method for which most companies indicated frequent use. Extranets and Intranets appear to be the least frequently used of all the CBT methods, with 63.6% and 54.6% of companies (respectively) representing the "not at all" and "no response" categories.

***Table 45*: Frequency of Use of Computer-Based Training Methods**

	Frequency of Use					
CBT Method	Not at All	Infrequently	Fairly Often	Frequently	No Response	Total
Computer-Based Simulations	18.2%	18.2%	36.4%	18.2%	9.1%	100%
Internet	18.2%	18.2%	36.4%	27.3%	—	100%
Intranets	45.5%	18.2%	18.2%	9.1%	9.1%	100%
Extranets	54.5%	9.1%	18.2%	9.1%	9.1%	100%
CD-ROMs	18.2%	18.2%	36.4%	18.2%	9.1%	100%

Table 46 presents the results in relation to the future use of CBT methods. As with the other questions relating to future use of training practices, the response to this question was low and the findings are therefore limited. It is worth noting that, from those responses that were received, every CBT method was mentioned for future use – the Internet in particular.

***Table 46*: Future Use of Computer-Based Training Methods**

CBT Method	Intend to Use In Future	No Response
Computer-Based Simulations	9.1%	90.9%
Internet	18.2%	81.8%
Intranets	9.1%	90.9%
Extranets	9.1%	90.9%
CD-ROMs	9.1%	90.9%

Table 47 and Table 48 present the results of the questions in the survey relating to the use of CBT methods for each occupational group. Table 47 provides an outline of the results, indicating the percentage of companies that use each CBT method for each occupational group. These results suggest that computer-based simulations, the Internet and CD-ROMs are used mostly for management training, and to a lesser extend for training professional/technical staff. Intranets and Extranets, by contrast, appear to be used just as much for the training of professional/technical staff as they are for the training of managerial workers. Administrative/manual workers receive the least amount of training through CBT methods (this is true for all CBT methods – with the exception of Extranets, the usage of which is low, and equal for all occupational groups).

***Table 47*: Use of Computer-Based Training Methods by Occupational Group**

	Use by Occupational Group		
CBT Method	Management	Professional/ Technical	Administrative/ Manual
Computer-Based Simulations	54.5%	45.5%	27.3%
Internet	72.7%	63.6%	45.5%
Intranets	36.4%	36.4%	27.3%
Extranets	18.2%	18.2%	18.2%
CD-ROMs	63.6%	54.5%	36.4%

Table 48 shows the precise breakdown of results, including the length of time for which each CBT method has been in use for each occupational group. From these results it emerges that a large proportion of the companies have recently (in the last 1 to 3 years) adopted computer-based simulations and the Internet, although this rise is less pronounced for administrative/manual workers. Intranets and Extranets, by contrast, have been in use for a longer period of time (7 to 9 years was the most common response for Intranets, and both 4 to 6 and 7 to 9 years were the most common responses for Extranets). The most common responses for CD-ROMs were 4 to 6 years for management, 1 to 3 and 4 to 6 years for professional/technical staff, and ranging from less than one year to 7 – 9 years for administrative/manual workers. These results would suggest that CD-ROMs have been used for training in these companies for a considerable period, and are still being adopted by the companies.

***Table 48*: Years of Use of Computer-Based Training Methods for Each Occupational Group**

	Years of Use						
CBT Method	< 1	1 – 3	4 – 6	7 – 9	10 +	No Response	Total
Computer-Based Simulations							
Management	—	27.3%	18.2%	9.1%	—	45.5%	100%
Professional/Technical	—	27.3%	9.1%	9.1%	—	54.5%	100%
Administrative/Manual	—	9.1%	9.1%	9.1%	—	72.7%	100%
Internet							
Management	—	36.4%	18.2%	18.2%	—	27.3%	100%
Professional/Technical	—	36.4%	9.1%	18.2%	—	36.4%	100%
Administrative/Manual	—	18.2%	9.1%	18.2%	—	54.5%	100%
Intranets							
Management	—	9.1%	9.1%	18.2%	—	63.6%	100%
Professional/Technical	—	9.1%	9.1%	18.2%	—	63.6%	100%
Administrative/Manual	—	—	9.1%	18.2%	—	72.7%	100%
Extranets							
Management	—	—	9.1%	9.1%	—	81.8%	100%
Professional/Technical	—	—	9.1%	9.1%	—	81.8%	100%
Administrative/Manual	—	—	9.1%	9.1%		81.8%	100%
CD-ROMs							
Management	9.1%	18.2%	27.3%	9.1%	—	36.4%	100%
Professional/Technical	9.1%	18.2%	18.2%	9.1%	—	45.5%	100%
Administrative/Manual	9.1%	9.1%	9.1%	9.1%	—	63.6%	100%

Those companies that have used CBT methods were also asked to specify whether any of the CBT materials had been customised to the specific needs of the company. The results are presented in Table 49, and are illustrated graphically in Figure 21. 44.4% of

companies stated that none of the materials had been customised to their specific needs. For those companies that did have some materials customised, the customisation was twice as likely to have been carried out in-house (22.2%) as it was to have been carried out by external consultants (11.1%). However, a further 22.2% of companies stated that a combination of both in-house and external customisation had been used.

***Table 49*: Customisation of Computer-Based Training Materials**

Have CBT Materials Been Customised to the Specific Needs of the Company?		Percent	Valid Percent	Cumulative Percent
	No	36.4	44.4	44.4
	Yes, by external consultants	9.1	11.1	55.6
	Yes, in-house	18.2	22.2	77.8
	Yes, both in-house and by external consultants	18.2	22.2	100.0
	Total	81.8	100.0	
Missing	0	18.2		
Total		100.0		

***Figure 21*: Customisation of Computer-Based Training Materials**

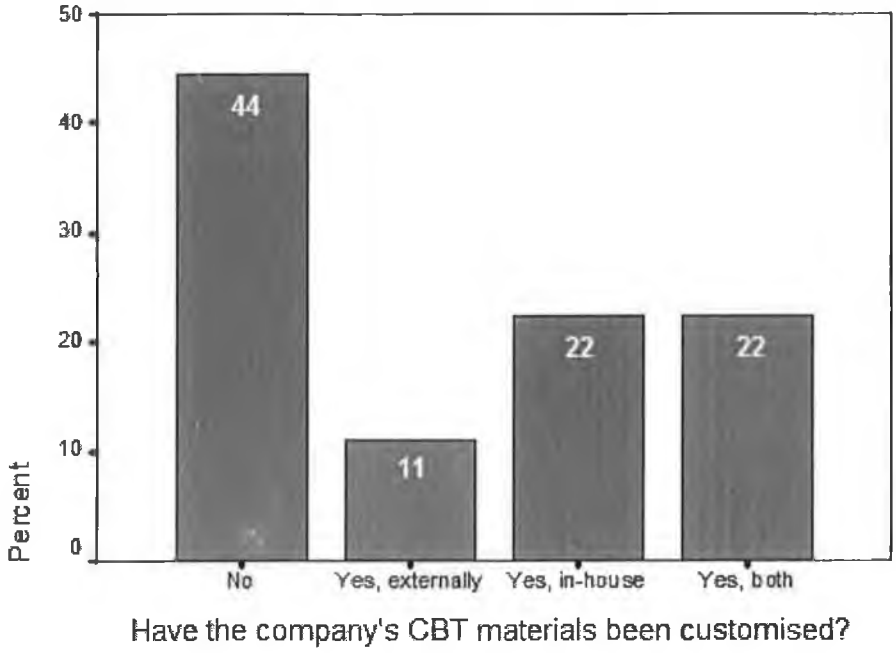


Table 50 shows a cross-tabulation of the customisation of CBT materials by company size. From these results, it is evident that no positive relationship exists here, as larger companies are not more likely than their smaller counterparts to have used customised CBT materials.

***Table 50*: Cross-Tabulation of Customisation of CBT Materials with Company Size**

Number of Employees	Have CBT Materials Been Customised to the Specific Needs of the Company?				
	No	Yes, by external consultants	Yes, in-house	Yes, both	Total
Less Than 10	---	---	---	100.0%	100%
10 – 49	50.0%	---	50.0%	---	100%
50 – 99	---	50.0%		50.0%	100%
100 – 149	100.0%	---	---	---	100%

A cross-tabulation was also performed to examine the relationship between the customisation of CBT materials and the proportion of total training expenditure that is allocated to CBT. It was thought that the high cost associated with the customisation of CBT methods would result in CBT constituting a high proportion of training expenditure in those companies that had used customised materials. Table 51 presents the results of this cross-tabulation. It is clear that the proportion of training expenditure that is allocated to CBT rests at the higher end of the scale for those companies that have developed customised CBT methods, whether internally, externally or both. All those companies that developed customised CBT materials either in-house or externally dedicated more than 20% of their training expenditure to CBT. However, for those organisations that used a combination of in-house and external customisation, half of them had dedicated between 10 and 20% of their training expenditure to CBT, and the other half had dedicated more than 20% to CBT.

***Table 51*: Cross-Tabulation of Customisation of CBT Methods with Expenditure on CBT**

Have CBT Methods Been Customised?	Percentage of Training Expenditure Allocated to CBT	Percent
		---
	Less Than 10%	50.0%
	10 – 20%	---
	More Than 20%	50.0%
	Total	100%

	Less Than 10%	---
	10 – 20%	---
	More Than 20%	100.0%
	Total	100%

	Less Than 10%	---
	10 – 20%	---
	More Than 20%	100.0%
	Total	100%

	Less Than 10%	---
	10 – 20%	50.0%
	More Than 20%	50.0%
	Total	100%

A comment box was included in the survey, asking respondents to specify what they believed to be the main factor deterring their company from developing customised CBT materials. Almost half (45.5%) of the companies responded to this question. From these responses, 60% indicated that cost was the main prohibiting factor, and 40% indicated that most of the training that is carried out using CBT methods is training for certifications or standards, therefore not requiring customisation. These responses are presented in Table 52.

Table 52: **Factors Deterring Companies from Developing Customised Computer-Based Training Materials**

		Percent	Valid Percent
	Training for certifications/standards	18.2	40.0
	Cost	27.3	60.0
	Total	45.5	100.0
Missing	0	45.5	
	System	9.1	
	Total	54.5	
Total		100.0	

4.6 Objective 3: Training Techniques And Tools/Aids

4.6.1 Techniques for Facilitating Learning

Section C2 of the survey asked respondents about the techniques used to facilitate and support learning within their organisations. Table 53 presents the findings in relation to the frequency with which each technique is used. All techniques (with the exception of action learning) appear to be used to a considerable extent by the companies. Networking and benchmarking, experimentation and team development are all used frequently by 36.4% of the companies (although 45.5% of respondents also stated that experimentation was used infrequently or not at all). Moreover, online knowledge exchange, critical incident review, and coaching and mentoring are all used either fairly often or frequently by a large proportion of organisations.

***Table 53*: Frequency of Use of Training Techniques**

	Frequency of Use					
Technique	Not at All	Infrequently	Fairly Often	Frequently	No Response	Total
Networking & Benchmarking	9.1%	9.1%	36.4%	36.4%	9.1%	100%
Online Knowledge Exchange	18.2%	9.1%	45.5%	27.3%	—	100%
Critical Incident Review	9.1%	27.3%	45.5%	18.2%	—	100%
Action Learning	36.4%	27.3%	9.1%	9.1%	18.2%	100%
Experimentation	18.2%	27.3%	9.1%	36.4%	9.1%	100%
Coaching & Mentoring	9.1%	—	54.5%	27.3%	9.1%	100%
Team Development	—	9.1%	54.5%	36.4%	—	100%

Table 54 presents the results in relation to the intended future use of training techniques. As with the previous questions on future use, the results are limited. The techniques that have been pointed out for intended future use are critical incident reviews, online knowledge exchange and team development, and to a lesser extent experimentation and coaching and mentoring.

***Table 54*: Future Use of Training Techniques**

Technique	Intend to Use In Future	No Response
Networking & Benchmarking	---	100.0%
Online Knowledge Exchange	18.2%	81.8%
Critical Incident Review	27.3%	72.7%
Action Learning	---	100.0%
Experimentation	9.1%	90.9%
Coaching & Mentoring	9.1%	90.9%
Team Development	18.2%	81.8%

Tables 55 and 56 present the findings in relation to the length of time for which each technique has been in use for each occupational group. Table 55, which presents a digested view of the results, shows that the majority of the techniques are used mostly for the training of professional/technical workers, followed by management, and then

by administrative/manual workers. However, critical incident reviews and team development would appear to be widely used for all occupational groups.

***Table 55*: Use of Training Techniques by Occupational Group**

	Use by Occupational Group		
Technique	Management	Professional/ Technical	Administrative/ Manual
Networking & Benchmarking	54.5%	72.7%	36.4%
Online Knowledge Exchange	63.6%	63.6%	36.4%
Critical Incident Review	63.6%	72.7%	63.6%
Action Learning	36.4%	36.4%	18.2%
Experimentation	45.5%	54.5%	45.5%
Coaching & Mentoring	45.5%	54.5%	36.4%
Team Development	63.6%	72.7%	54.5%

Table 56 presents the findings in relation to the length of time for which each technique has been in use for each occupational group. From these results it is clear that, while all of the techniques have been in use by the companies for the past 7 – 9 years, many of the techniques have also been recently adopted by companies. In particular, team development, networking and benchmarking, and critical incident reviews have been adopted by many companies in the last 1 to 3 years. In contrast, it emerges that action learning, experimentation and coaching and mentoring have been adopted by most companies in the last 7 to 9 years, where used.

Table 56: **Years of Use of Training Techniques for Each Occupational Group**

Technique	< 1	1 – 3	4 – 6	7 – 9	10 +	No Response	Total
Networking & Benchmarking							
Management	---	27.3%	9.1%	18.2%	---	45.5%	100%
Professional/Technical	---	36.4%	18.2%	18.2%	---	27.3%	100%
Administrative/Manual	---	18.2%	---	18.2%	---	63.6%	100%
Online Knowledge Exchange							
Management	---	18.2%	27.3%	18.2%	---	36.4%	100%
Professional/Technical	---	18.2%	27.3%	18.2%	---	36.4%	100%
Administrative/Manual	---	9.1%	18.2%	18.2%	---	63.6%	100%
Critical Incident Review							
Management	9.1%	27.3%	9.1%	18.2%	---	36.4%	100%
Professional/Technical	9.1%	36.4%	9.1%	18.2%	---	27.3%	100%
Administrative/Manual	9.1%	27.3%	9.1%	18.2%	---	36.4%	100%
Action Learning							
Management	---	---	18.2%	18.2%	---	63.6%	100%
Professional/Technical	---	9.1%	9.1%	18.2%	---	63.6%	100%
Administrative/Manual	---	---	---	18.2%	---	81.8%	100%
Experimentation							
Management	---	18.2%	---	27.3%	---	54.5%	100%
Professional/Technical	---	27.3%	---	27.3%	---	45.5%	100%
Administrative/Manual	---	18.2%	---	27.3%	---	54.5%	100%
Coaching & Mentoring							
Management	---	9.1%	18.2%	18.2%	---	54.5%	100%
Professional/Technical	---	18.2%	18.2%	18.2%	---	45.5%	100%
Administrative/Manual	---	9.1%	9.1%	18.2%	---	63.6%	100%
Team Development							
Management	---	27.3%	18.2%	18.2%	---	36.4%	100%
Professional/Technical	---	36.4%	18.2%	18.2%	---	27.3%	100%
Administrative/Manual	---	27.3%	9.1%	18.2%	---	45.5%	100%

4.6.2 **Tools/Aids for the Delivery of Training**

Section C3 of the survey asked respondents about the finer details of delivering training, in relation to the tools/aids that are used to support delivery. The frequency with which each tool/aid is used is shown in Table 57. LCD/Computer displays emerge as the most frequently used training aids; 90.9% of respondents use these frequently, and the remaining 9.1% use them fairly often. Flip charts also receive regular use in the delivery of training. In relation to the use of overhead projectors and white/black boards for training delivery, it would appear that the companies either use these tools frequently, or – at the other extreme – use them very infrequently. Just under half of the respondents use information about competitors and working papers either

frequently or fairly often. However, the use of photographs and posters/advertising copy would appear to be slightly less pronounced.

***Table 57*: Frequency of Use of Training Tools/Aids**

Tool / Aid	Not at All	Infrequently	Fairly Often	Frequently	No Response	Total
Overhead Projectors	27.3%	18.2%	9.1%	45.5%	---	100%
Table-Top Presenters	54.5%	9.1%	18.2%	---	18.2%	100%
Flip Charts	---	---	36.4%	54.5%	9.1%	100%
White / Black Boards	18.2%	36.4%	9.1%	36.4%	---	100%
LCD / Computer Displays	---	---	9.1%	90.9%	---	100%
Photographs	18.2%	36.4%	27.3%	9.1%	9.1%	100%
Posters / Advertising Copy	27.3%	27.3%	27.3%	9.1%	9.1%	100%
Information About Competitors	9.1%	36.4%	27.3%	18.2%	9.1%	100%
Working Papers	18.2%	27.3%	27.3%	18.2%	9.1%	100%

Table 58 presents the findings relating to the intended future use of training tools/aids. From those responses obtained, every tool/aid (except posters/advertising copy) was indicated for future use. Table-top presenters, photographs, information about competitors and working papers were cited less frequently than any of the other tools/aids selected.

***Table 58*: Future Use of Training Tools/Aids**

Tool / Aid	Intend to Use In Future	No Response
Overhead Projectors	27.3%	72.7%
Table-Top Presenters	9.1%	90.9%
Flip Charts	18.2%	81.8%
White / Black Boards	18.2%	81.8%
LCD / Computer Displays	27.3%	72.7%
Photographs	9.1%	90.9%
Posters / Advertising Copy	---	100.0%
Information About Competitors	9.1%	90.9%
Working Papers	9.1%	90.9%

Reflecting the patterns in the results relating to training techniques, Table 59 shows that the greatest part of the use of tools/aids is for the training of professional/technical staff. Most of the tools mentioned are used to a greater extent for the training of professional/technical staff than for any of the other two occupational groups. Overhead projectors do, however, appear to be used equally for the training of management and of professional/technical staff. Once again, the use of these training tools (with the exception of information about competitors and working papers) is lower for administrative/manual workers than for the other two occupational groups.

***Table 59*: Use of Training Tools/Aids by Occupational Group**

Tool / Aid	Management	Professional/ Technical	Administrative/ Manual
Overhead Projectors	72.7%	72.7%	54.5%
Table-Top Presenters	18.2%	36.4%	9.1%
Flip Charts	72.7%	90.9%	63.6%
White / Black Boards	63.6%	72.7%	54.5%
LCD / Computer Displays	81.8%	90.9%	63.6%
Photographs	54.5%	63.6%	36.4%
Posters / Advertising Copy	45.5%	54.5%	36.4%
Information About Competitors	63.6%	81.8%	63.6%
Working Papers	54.5%	63.6%	54.5%

Table 60 presents the detailed results in relation to the length of time for which each tool/aid has been in use for each occupational group. These results suggest that a number of tools have been used by the companies for the past 7 to 9 years to deliver training, namely: overhead projectors, table-top presenters, white/black boards, and posters/advertising copy. For most of the remaining tools (with the exception of photographs), most companies have adopted them in the last 1 to 3 years. It is significant that there appears to have been a recent take-up of LCD/computer displays for the training of all occupational groups, suggesting greater sophistication in the presentation of training materials. The use of competitor information as an aid to training has also emerged in recent years, again for all occupational groups.

Table 60: **Years of Use of Training Tools/Aids for Each Occupational Group**

Tool / Aid	< 1	1 – 3	4 – 6	7 – 9	10 +	No Response	Total
Overhead Projectors							
Management	---	18.2%	27.3%	27.3%	---	27.3%	100%
Professional/Technical	---	27.3%	18.2%	27.3%	---	27.3%	100%
Administrative/Manual	---	18.2%	9.1%	27.3%	---	45.5%	100%
Table-Top Presenters							
Management	---	---	9.1%	9.1%	---	81.8%	100%
Professional/Technical	---	18.2%	9.1%	9.1%	---	63.6%	100%
Administrative/Manual	---	---	---	9.1%	---	90.9%	100%
Flip Charts							
Management	---	27.3%	9.1%	27.3%	---	72.7%	100%
Professional/Technical	---	45.5%	9.1%	27.3%	---	9.1%	100%
Administrative/Manual	---	27.3%	---	27.3%	9.1%	36.4%	100%
White / Black Boards							
Management	---	27.3%	---	27.3%	---	36.4%	100%
Professional/Technical	---	27.3%	9.1%	27.3%	9.1%	27.3%	100%
Administrative/Manual	---	18.2%	---	27.3%	9.1%	45.5%	100%
LCD / Computer Displays							
Management	---	36.4%	27.3%	18.2%	---	18.2%	100%
Professional/Technical	---	54.5%	18.2%	18.2%	---	9.1%	100%
Administrative/Manual	---	36.4%	9.1%	18.2%	---	36.4%	100%
Photographs							
Management	---	18.2%	18.2%	18.2%	---	45.5%	100%
Professional/Technical	---	27.3%	18.2%	18.2%	---	36.4%	100%
Administrative/Manual	---	9.1%	9.1%	18.2%	---	63.6%	100%
Posters / Advertising Copy							
Management	---	9.1%	18.2%	18.2%	---	54.5%	100%
Professional/Technical	---	18.2%	18.2%	18.2%	---	45.5%	100%
Administrative/Manual	---	9.1%	9.1%	18.2%	---	63.6%	100%
Information About Competitors							
Management	---	27.3%	9.1%	18.2%	9.1%	36.4%	100%
Professional/Technical	---	45.5%	9.1%	18.2%	9.1%	18.2%	100%
Administrative/Manual	---	36.4%	---	18.2%	9.1%	36.4%	100%
Working Papers							
Management	9.1%	18.2%	9.1%	9.1%	9.1%	45.5%	100%
Professional/Technical	---	36.4%	9.1%	9.1%	9.1%	36.4%	100%
Administrative/Manual	9.1%	27.3%	---	9.1%	9.1%	45.5%	100%

4.7 Objective 4: Government Intervention

Section D was the final section of questions in the survey (before respondents were invited to make additional comments). This section was concerned with analysing the awareness and extent of use of government supported training initiatives. It also asked respondents for their views on the contribution that such government initiatives have made to training and development in the technology sector, in addition to seeking information on any factors that are deterring companies from taking advantage of such initiatives. The findings of this section are presented in the remainder of this chapter.

4.7.1 Awareness of the Available Support Mechanisms

The first question on awareness of the available support mechanisms related specifically to the extent to which companies were aware of the Business Education and Training Partnership (BETP) initiative, as this is one of the main programmes concerned with the advocating and monitoring of government support for training and development. Table 61 shows that over half of the companies are completely unaware of the existence and purpose of the BETP initiative, and a further 27.3% have heard of the initiative but are unaware of the work carried out under it. Only a small proportion of companies (18.2%) are fully informed about the existence and purpose of the BETP initiative.

***Table 61*: Awareness of the Business Education and Training Partnership Initiative**

	Percent	Valid Percent	Cumulative Percent
I have not heard of the initiative and am unaware of the work carried out under it	54.5%	54.5%	54.5%
I have heard of the initiative, but am unaware of the work carried out under it	27.3%	27.3%	81.8%
I am aware of the initiative and the work carried out under it	18.2%	18.2%	100.0%
Total	100.0%	100.0%	

Awareness of the BETP initiative does not appear to vary to any great extent by company size. As Table 62 shows, the greatest awareness of the initiative occurs among those companies employing 100 – 149 employees, followed by those employing 10 – 49 employees.

***Table 62*: Cross-Tabulation of Awareness of BETP Initiative by Company Size**

Number of Employees	Awareness of the BETP initiative			
	I have not heard of the initiative, and am unaware of the work	I have heard of the initiative, but am unaware of the work	I am aware of the initiative and the work carried out	Total
Less Than 10	100.0%	---	---	100%
10 – 49	25.0%	50.0%	25.0%	100%
50 – 99	100.0%	---	---	100%
100 – 149	---	50.0%	50.0%	100%

Section D2 of the survey asked companies about their awareness of a number of specific government supported initiatives that have been implemented with a view to helping companies to provide training and development opportunities to their employees. Table 63 shows the results of this section. On the whole, the level of awareness of these support mechanisms is very low. The highest levels of awareness seem to be in relation to the support available through FAS (including FAS training courses, FAS training advisory service, and the FAS Competency Development Programme). It is likely that this is due to the increasing role that FAS is playing in supporting the training and development of employees and citizens, on a nation-wide basis. Just over one-third of respondents are also aware of the Fastrack to IT, Skillnets, and Excellence Through People initiatives. It is significant that four of the support mechanisms listed are not known to any of the respondents.

Table 63: **Awareness of Other Government-Supported Initiatives**

Government Support Mechanism	% of Companies Aware of Mechanism	No Response	Total
The National Training Fund	27.3%	72.7%	100%
National Register of Trainers	18.2%	81.8%	100%
Fastrack to IT	36.4%	63.6%	100%
FAS Competency Development Programme	45.5%	54.5%	100%
FAS Net College	27.3%	72.7%	100%
FAS Training Courses (non-electronic)	63.6%	36.4%	100%
FAS Training Advisory Service / Programmes	63.6%	36.4%	100%
Post-Graduate Conversion Courses	---	100.0%	100%
Accelerated Training Programmes	18.2%	81.8%	100%
Small Firms Cluster Programme	18.2%	81.8%	100%
Leonardo da Vinci Training Programme	9.1%	90.9%	100%
Socrates Programme	18.2%	81.8%	100%
Export Orientation Programme	9.1%	90.9%	100%
The Mentor Network	27.3%	72.7%	100%
Management Development Grants	18.2%	81.8%	100%
Wider Horizons Training Programme	9.1%	90.9%	100%
Skillnets	36.4%	63.6%	100%
Excellence Through People	36.4%	63.6%	100%
Marketing Skills Scheme	9.1%	90.9%	100%
The Funding for Industry Initiative – Competitive Strand	---	100.0%	100%
The Funding for Industry Initiative – Non-Competitive Strand	---	100.0%	100%
STEPS (Science, Technology & Engineering Programme for Schools)	---	100.0%	100%
The Employment & Human Resource Development Operational Programme	18.2%	81.8%	100%
National Traineeship Programme	18.2%	81.8%	100%

4.7.2 Use of the Available Support Mechanisms

The questions contained in Section D3 of the survey asked companies to indicate which (if any) of the available government support mechanisms they had made use of. From the results presented in Table 64 it is clear that the use of these mechanisms has been extremely limited. In relation to the measures that assist in linking employers with education and training providers, only three of these initiatives have been utilised by companies, and the percentage of companies that have utilised them is small. The products/services used were the FAS training advisory service, FAS training courses,

and the National Register of Trainers (also provided by FAS, in conjunction with Enterprise Ireland). The use of measures that allow employers to cooperate or network with each other has been limited to Skillnets – an innovative initiative through which training networks are developed by participating companies. However, the use of this has also been limited to 9.1% of responding companies. Of the support measures that are aimed at increasing the awareness of skills opportunities, only Excellence Through People has been used (18.2% of companies). And in relation to the support provided under the National Development Plan, 9.1% of companies have made use of the measures aimed at promoting employability, and a further 9.1% have taken advantage of the measures aimed at promoting equality.

A number of other support services were listed in the survey, many of which refer to government supported interventions of a more general nature. Of these other support services, the responding companies have made use of management development grants (9.1%) and measures to increase the flexibility of training courses (9.1%). Companies were asked to specify any other support mechanisms that they have used but which had not been listed in the survey. The use of training grants provided by Enterprise Ireland was the only additional support mechanism specified (9.1% of companies).

***Table 64*: Use of Government Supported Initiatives**

Use of Government Supported Initiatives	% of Companies	No Response	Total
The Business Education & Training Partnership Forum	---	100.0%	100%
Post-Graduate Conversion Courses	---	100.0%	100%
FAS Training Advisory Service / Programmes	9.1%	90.9%	100%
FAS Training Courses (non-electronic)	18.2%	81.8%	100%
FAS Net College	---	100.0%	100%
FAS Competency Development Programme	---	100.0%	100%
Accelerated Training Programmes	---	100.0%	100%
Marketing Skills Scheme	---	100.0%	100%
National Register of Trainers	18.2%	81.8%	100%
The Funding for Industry Initiative – Competitive Strand	---	100.0%	100%
Linking Employers With Each Other			
The National Training Fund	---	100.0%	100%
Small Firms Cluster Programme	---	100.0%	100%
Skillnets	9.1%	90.9%	100%
Increasing Awareness of Skills Opportunities			
Excellence Through People	18.2%	81.8%	100%
STEPS	---	100.0%	100%
Support Under the National Development Plan *2000-2006*			
Support aimed at promoting Employability & Social Inclusion	9.1%	90.9%	100%
Management Training and Entrepreneurship Skills Support	---	100.0%	100%
Support aimed at promoting Adaptability and Lifelong Learning	---	100.0%	100%
Support aimed at promoting Equality for disabled & other disadvantaged persons	9.1%	90.9%	100%
Other Support			
The Funding for Industry Initiative – Non-Competitive Strand	---	100.0%	100%
The Mentor Network	---	100.0%	100%
Export Orientation Programme	---	100.0%	100%
National Traineeship Programme	---	100.0%	100%
Socrates Programme	---	100.0%	100%
Wider Horizons Training Programme	---	100.0%	100%
Management Development Grants	9.1%	90.9%	100%
Leonardo da Vinci Training Programme	---	100.0%	100%
Measures to increase the flexibility of courses	9.1%	90.9%	100%
Financial or other support for equipment renewal	---	100.0%	100%
Support for In-Company Training	---	100.0%	100%
Other	9.1%	90.9%	100%

4.7.3 **Perceived Contribution of Government Interventions**

Section D4 in the survey asked respondents to indicate their opinions of the significance of the contribution that Government interventions have made, to date, in the provision of employee training and development in the Technology sector. The responses to this question, as indicated in Table 65, suggest that the companies perceive Government intervention as having made a small to moderate contribution. It is notable that 60% of those who answered believed that the contribution was either not very significant, or small. Furthermore, none of the responding companies believed that the Government had made a very significant contribution to the provision of training and development in the Technology sector.

***Table 65*: Perceived Contribution of Government Interventions**

Perceived Contribution of Government Interventions	Percent	Valid Percent	Cumulative Percent
Not a Very Significant Contribution	9.1%	10.0%	10.0%
A Small Contribution	45.5%	50.0%	60.0%
A Moderately Significant Contribution	36.4%	40.0%	100.0%
A Very Significant Contribution	---	---	100.0%
Total	90.9%	100.0%	
Missing 0	9.1%		
Total	100.0%		

4.7.4 **Deterrents to the Use of Government Support**

Respondents were asked to specify any factors that they felt had deterred them from using those support mechanisms that the Government has made available. The response rate for this item was 45.5% of all survey respondents. The deterrents pointed out by respondents related mostly to lack of knowledge in relation to availability and eligibility (Table 66). 20.0% of responses related to a lack of awareness of the available mechanisms. 40.0%% believed that not enough information had been provided by the Government, or by the relevant bodies, to inform companies about the support available. Related to this previous factor, 20.0% of respondents indicated that no support had been offered to them. And a final factor that was mentioned was the problem of "red tape" associated with applying for and receiving the available services and benefits (20.0%). It is likely that the negative responses to the preceding question (on the contribution that Government interventions have made) emanate both from the

lack of understanding about what is available and from the reluctance to use the support available because of the "red tape" and formalities involved.

***Table 66*: Deterrents to the Use of Government Support**

What is Deterring Companies from Using Government Support?	Percent	Valid Percent	Cumulative Percent
Lack of Knowledge/Awareness	9.1%	20.0%	20.0%
Not Enough Information Provided	18.2%	40.0%	60.0%
Red Tape	9.1%	20.0%	80.0%
Have Not Been Offered Any Support	9.1%	20.0%	100.0%
Total	45.5%	100.0%	
Missing 0	54.5%		
Total	100.0%		

4.7.5 **Other Measures**

Central to the recent efforts by the Government to expand and improve the provision of training and development opportunities to the country's workforce have been concerns of quality, flexibility and cooperation. The final questions in Section D of the survey asked respondents about the use of a number of practices centred around these concerns. Table 67 presents the results of a question that asked about the adoption of measures to improve the flexibility and relevance of training provision. Multi-skilling and conversion programmes have been used by 27.3% of the responding companies, and modular programme structures have been adopted by 9.1%. An additional practice that was identified under the "other" category was the provision of training and development activities that are linked to a performance measurement system (9.1% of companies). No companies reported have using accelerated training programmes or the accreditation of prior learning and experience, both of which are practices that provide flexible training and development for employees.

***Table 67*: Measures to Improve the Flexibility and Relevance of Training Provision**

Measures to Improve the Flexibility and Relevance of Training Provision	% of Companies	No Response	Total
Modular Programme Structures	9.1%	90.9%	100%
Accelerated Training Programmes	---	100.0%	100%
Accreditation of Prior Learning / Experience	---	100.0%	100%
Multi-Skilling / Conversion Programmes	27.3%	72.7%	100%
Other	9.1%	90.9%	100%

Finally, Table 68 shows the extent to which the companies have been cooperating, and pooling resources, with education and training providers. The results show that very little cooperation is taking place between the responding companies and those who provide education and training. Company-sponsored training and company-based training have each been used by 18.2% of respondents, and a smaller proportion of the respondents have cooperated with education/training providers in the design of course materials (9.1%) and in the delivery of course materials (9.1%). None of the companies have reported pooling physical or human resources with education/training providers in order to improve the provision of training.

***Table 68*: Cooperating and Pooling Resources With Education / Training Providers**

Cooperating and Pooling Resources With Education / Training Providers	% of Companies	No Response	Total
Design of Course Materials	9.1%	90.9%	100%
Delivery of Course Materials	9.1%	90.9%	100%
Company-Sponsored Training	18.2%	81.8%	100%
Company-Based Training	18.2%	81.8%	100%
Pooling Physical Resources	---	100.0%	100%
Pooling Human / Intellectual Resources	---	100.0%	100%

4.8 Conclusion

This chapter has outlined all of the findings that have resulted from the SPSS analysis of the survey results. In the chapters that follow, these findings will be compared with the information that is available in the existing research base (Chapter 5), and conclusions will then be made on the basis of this analysis and recommendations for future practice will also be made (Chapter 6).

ANALYSIS AND DISCUSSION OF FINDINGS

The findings from the primary research that were outlined in the previous chapter will in this chapter be analysed and discussed in relation to the research and theories presented in Chapter 1, and the information presented in Chapter 2. Once again, the findings are discussed in relation to each of the research objectives.

5.1 Objective 1: Training Expenditure and Approach

5.1.1 Expenditure on Training and Development

In terms of the average annual expenditure on training and development, as a percentage of total payroll, the findings of this research show a lower expenditure level than those reported in previous studies. For example, the 1995 round of the Cranet E Survey (Heraty and Morley, 1998, 2000) reported that the average annual expenditure in Ireland's Business and Finance Top 2000 Trading and Non-Trading Bodies was 3.59% of payroll. The CIPD Ireland 2001 survey (Heraty and Garavan, 2001) found that the average annual expenditure in Irish companies was 3.85% of payroll. By comparison, the results of this research indicate that the mean expenditure level for the responding companies is 2.6% of overall payroll (see Table 15). However, the results vary greatly, and the mean expenditure was found to increase with company size, up to the level of 99 employees (above which expenditure drops). For example, while the mean expenditure for companies employing less than 10 employees is 1.8%, the results are more favourable for companies employing 10 – 49 employees (3.1%) and 50 – 99 employees (4.75%). When comparing the results of this research with those previously mentioned, it is necessary to bear in mind that the companies that responded to the survey for this research were small in size; 63.6% of the companies employ less than 50 people and 81.8% employ less than 100 people (see Table 12).

5.1.2 **Was Expenditure Made From a Training and Development Budget?**

The CIPD study conducted in Ireland in 2001 also found that in 82% of companies the training and development expenditure was made from a dedicated budget, and the most recent study conducted by the CIPD in the UK (April 2004) reported that 81% of respondents had established such a budget. From this research, it has emerged that a much lower 45.5% of respondents allocate training and development expenditure from a dedicated budget (see Figure 15). The affect of company size differences between this research and the two CIPD studies can be said to be limited, as a restricted relationship was found to exist between company size and the existence of a budget (see Table 18). Although the lowest percentage of companies with a training and development budget (33.3%) occurs in the less than 10 employees category, in the remainder of the size categories the percentage of companies that have a budget stays constant at 50.0%.

5.1.3 **Proportion of Expenditure Allocated to Each Occupational Group**

In relation to the percentage of total training expenditure that is dedicated to each occupational group (see Table 19), this research has found that:

- Senior Managers and Directors receive 8.6% of total expenditure;
- All other Managers receive 15.5%;
- Professional staff receive 22.0%;
- Technical staff receive the largest proportion at 47.3%;
- Clerical and Administrative staff receive 5.5%;
- Manual workers receive the smallest proportion at 1.1%.

Wightman and McAleer (1995) have expressed concern that companies focusing on technology-related products/services often neglect to recognise the importance of managerial skills, arising from the tendency of these companies to recruit their managers from the professional workforce available internally. The results of this research show that 24.1% of the total training expenditure is allocated to managerial level workers. However, expenditure on senior managers constitutes only one-third of this. This is concerning given the responsibility that senior managers have over strategic business decisions and the allocation of resources to various organisational

activities and operations. The results therefore would appear to reinforce the concern expressed by Wightman and McAleer

During the course of the literature review of this thesis, concern was also expressed regarding the lack of literature pertaining to the training and development of those employees working below managerial level. The results suggest that Technical staff are receiving the bulk of the training expenditure, which is not surprising in the Technology sector. Although Professional staff receive the second greatest proportion of training expenditure, this proportion is less than half of that allocated to Technical staff. The proportions of total expenditure that are allocated to Clerical and Administrative staff and to Manual workers are minimal. It is possible that this situation reflects the focus on training for certifications and standards, as identified from the findings relating to the customisation of CBT materials (see Table 52).

5.1.4 **Expenditure on Computer-Based Training**

The survey conducted by the CIPD (April 2002) in the UK found that most organisations (50.3%) spent less than 10% of their training budgets on e-learning materials (CBT materials that exclude unconnected methods such as CD-ROMs). 23.5% of organisations spent between 10 and 25%, and 5.2% spent more than 25% of their training budgets on e-learning. The findings of the present research suggest that a much higher proportion of companies (54.5%) spend in excess of 20% of their training budgets on CBT, and a much smaller proportion (18.2%) spend less than 10% (see Table 21 and Figure 16).

Leonard (1996) and Sadler-Smith *et al* (2000) have expressed concern about the inability of small companies to adopt computer-based training methods due to the relatively high cost of implementing these methods. However, the research conducted by Sadler-Smith *et al* and by Huang (2001) found that there was no significant relationship between company size and the use of computer-based training. The results of the present research, in terms of the percentage of training expenditure that is allocated to CBT, support these findings, as no relationship was found to exist between by company size and expenditure on CBT. For example, all of the responding companies that employ in excess of 100 employees allocate less than 10% of training expenditure to CBT, while 33.3% of companies that employ less than 10 workers allocate more than 20% of expenditure to CBT (See Table 23).

5.1.5 Average Number of Training Days by Occupational Group

As has been pointed out in Chapter 1, the use of expenditure estimates can be problematic in terms of providing an accurate picture of the training and development that is taking place (Heraty and Morley, 1998). The average number of training and development days that are received by employees provides an alternative, and arguably more reliable, measure. The 2001 CIPD Ireland study (Heraty and Garavan, 2001) found that the average number of training days provided across all occupational groups was 5.61. The study also found that Senior Management were the most likely of all occupational groups to receive training days, while Professional and Technical staff were less likely to receive training. The CIPD concluded that most organisations did provide some training to employees.

The results from the research presented in this thesis (see Table 24) indicate that:

- 63.6% of companies provide some training days to Senior Managers and Directors;
- 81.8% provide training for all other Managers;
- 90.9% provide some training for Professional staff;
- 100.0% of companies provide training for Technical staff;
- 81.8% provide some training days to Clerical and Administrative staff;
- 36.4% provide some training days to Manual workers.

It is clear then that for all occupational groups, with the exception of Manual workers, the largest proportion of organisations do provide some training days. These results support the finding in the CIPD 2001 study that most Irish companies do provide some training. In terms of the average number of training days provided to each occupational group, the present research indicates that each occupational group is likely to receive 1 to 5 days of training per year (although where Manual workers receive any training days they are just as likely to receive 6 to 10 training days (18% of companies) as they are to receive 1 to 5 (18% of companies)). In contrast to the results of the CIPD study, the results of this research show that the Professional and Technical occupational groups are the most likely of all employees to receive training days. Technical workers were in fact the only occupational group to receive between 11 and 15 days of training over the last year (see Table 24). Senior Managers and Directors receive much less

training, being one of only two occupational groups to have received no more than 5 days of training over the last year (the other group being Clerical and Administrative staff).

The results also contrast with those from the 1995 Cranet E study (Heraty and Morley, 1998, 2000), which found that Management received 3 to 5 days of training, and Professional and Technical employees received 1 to 3 days of training.

The 1999/2000 round of the Cranet E survey (Heraty and Morley, 2003) focused specifically on the number of Management training days provided. The results of the study indicated that Managers were likely to receive either 1 to 3 (35.1%) or 3 to 5 (35.1%) days of training per annum. Only 15.2% of companies provided between 5 and 10 days of Management training, and 3.6% provided more than 10 days. According to the results of the present research, while none of the responding companies provided Senior Managers and Directors with more than 5 days of training, 27.3% of the companies provided all other Managers with between 6 and 10 days of training. This latter result compares favourably with the Cranet E survey. Less favourable is the finding that none of the responding companies provide more than 10 days of training to either group of Managers. It would appear, however, that the provision of Management training days increases with company size (see Table 25) – a finding that is at odds with the results of the Cranet E study, which reported no relationship between the number of Management training days and company size.

These results compare less favourably to those reported by Wightman and McAleer (1995) in relation to the number of training days provided to Managers in the Northern Ireland software industry. This study reported that Senior Managers received an average of 10.4 training days per annum; Middle Managers received 12.3 days; and Lower Managers received 13.9 days.

5.1.6 **Support for Employees Wishing to Pursue Self-Development**

The CIPD study that was conducted in the UK in 2002 (CIPD, April 2002) asked questions relating to the support that companies provided for employee training in terms of meeting the costs of training and allowing employees to have time off work. The CIPD concluded that most organisations were willing to provide financial support for training, although they were most likely to contribute to the cost of professional qualifications (95% of organisations), followed by vocational training (88%), postgraduate degrees with business content (79%) and undergraduate degrees with

business content (73%). The survey used in the present research asked respondents whether they were willing to contribute to the cost of training provided through an external institution. The results compare favourably with those from the CIPD survey, as 100% of companies indicated that they would make some contribution to the cost of such training, although 54.5% will only pay part of the cost, with the remaining 45.5% indicating that they would pay the full cost (see Table 26). There would appear to be a strong relationship between the existence of a training budget and willingness to meet such costs; while 80% of companies that have a training budget indicated that they would pay the full cost, the corresponding figure for those companies that do not have a budget is a much lower 16.7% (see Table 27).

In terms of the willingness to allow time off for training, the CIPD survey again found that most organisations were supportive of this, with the greatest level of support relating to professional qualifications (92.2%), followed by vocational training (92.1%), postgraduate degrees (76.5%) and undergraduate degrees (71.5%). For the present research, companies were asked whether they were willing to allow employees to have time off work for training. Again the results compare favourably, with 63.6% of companies stating that they would usually allow time off, and the remaining 36.4% indicating they would sometimes allow time off (see Table 29). The existence of a training budget also appears to have a strong impact upon the willingness to allow time off, as 80% of companies that have a budget stated that they would usually allow time off, compared to 50% of companies that have no budget (see Table 30).

5.1.7 Training and Development Approach

Garavan *et al* (1995) have mapped the development of training and development models (or approaches) from the pre-1960s unsystematic models, through the early systematic models that emerged in the 1960s, to the modern strategically focused models. According to the analysis presented by Garavan *et al*, the pre-1960s models were unsystematic and operationally focused, and were offered to a minority of skilled workers. Early systematic models focused on the individual and placed emphasis on formal training activities in an attempt to make the training process more systematic. The more recent, strategically focused models adopt a more holistic approach, incorporating a mix of formal and informal training, and recognising the training and development needs of both the individual and the organisation.

An analysis of the results emerging from the present research would indicate that, on the whole, the training approaches that are being adopted by the responding companies are characterised by elements of the more modern training models identified by Garavan *et al.* The majority of organisations stated that: training is planned, designed and delivered systematically (54.5% of organisations); a mixture of both formal training and informal training is used (63.6%); and both individual and organisational training needs are considered in the design and delivery of training activities (81.8%). In spite of this, the majority of respondents (54.5%) stated that training plays an operational role in their companies. It would seem then that despite the apparent recognition of the importance of training and development activities, this has not yet manifested itself in a link between HR initiatives and business strategy. (See Figures 17 to 20)

In summary, the findings from this section of the survey indicate that expenditure on training and development is slightly lower than that reported in previous studies. In relation to the existence of dedicated training and development budgets, just under half of all respondents have established such a budget. In terms of the provision of training, Technical staff clearly receive the highest provision, followed by Professional staff. The proportion of total training and development expenditure that is allocated to CBT would appear to rest at the higher end of the scale in these companies, which provides a more encouraging picture than the results of previous research. The results relating to the support for employees wishing to pursue self-development are very encouraging, as all companies reported that they were willing to contribute to the cost of training and to allow time off for training. And in relation to the approach to training and development that is adopted by these companies, the vast majority of the results are once again encouraging, although most respondents did indicate that training did not play a strategic role in their companies.

5.2 Objective 2: Methods of Delivering Training

The survey of Irish training practices that was conducted by the CIPD in 2002 asked respondents about the usage and perceived effectiveness of a number of training

methods. The results from the study suggest that organisations continue to focus on traditional training methods, including on-the-job training (used by 95% of organisations) and formal education (used by 88% of organisations). The results of the research presented in this thesis reflect these findings (see Table 41), as 90.9% of organisations use on-the-job training to some extent, and 90.9% also use formal/professional education. The CIPD survey discovered that on-the-job training and formal education were perceived as being among the most effective of all the training methods, and this finding could go some way to explaining the continued reliance on these methods as identified in both the CIPD research and the present research. However, it also emerged from the CIPD study that the use of conferences for training and development is much less effective than many other methods, yet 82% of respondents to the CIPD study, and 100% of respondents to the present study, indicated that they use this method.

The results of the 1995 Cranet E study of training and development in Ireland (Heraty and Morley, 1998, 2000) suggested that organisations are adopting a wider range of methods, rather than relying on either formal or informal, internal or external. However, the findings of the present research indicate that organisations are relying heavily on on-the-job training, conferences/discussions and formal/professional education (these methods are used frequently or fairly often by 90.9%, 81.8% and 72.7% of organisations, respectively). Although lectures and case studies are each used frequently or fairly often by 36.4% of organisations, the remainder of the methods receive very limited use (see Table 41).

However, when one considers the use of computer-based training methods, it is appears that organisations are in fact adopting a wider range of training methods. The Cranet E study found that organisations had substantially increased their use of computer-based packages for training and development; 44.1% of organisations reported that they had increased their use of these packages over the three years preceding the study. The results of the present study show that the Internet, computer-based simulations and CD-ROMs are the most widely used CBT methods, being used to some extent by 81.8%, 72.7% and 72.7% of organisations, respectively (see Table 45). Furthermore, for most organisations, the use of computer-based simulations and the Internet commenced within the last 1 to 3 years (see Table 48). These findings

suggest that organisations are only beginning to embrace computer-based training and that the real impact of these methods has yet to be witnessed.

The e-learning survey that was conducted in the UK by the CIPD (April 2002) found that only 30.5% of organisations used e-learning (which excludes stand-alone CBT) to some extent, while 81.8% of the respondents to the present research use some form of CBT (based upon the percentage of organisations reporting some expenditure on CBT – see Table 21). The CIPD survey found that, of those companies that did use e-learning, almost 70% used it a little, and only 6% used it a lot. The findings from the present research suggest more frequent use of CBT methods. The Internet is used fairly often or frequently for training by 63.7% of organisations, and computer-based simulations and CD-ROMs are each used fairly often or frequently by 54.5% of organisations. Even those CBT methods that receive the lowest use in the responding organisations – namely Intranets and Extranets – are each used fairly often or frequently by 27.3% of respondents (see Table 45).

The CIPD survey discovered that organisations found e-learning methods to be more suitable for technical skills training than for management skills or soft skills training. However, the findings of the research presented in this thesis suggest that organisations use computer-based simulations, CD-ROMs and the Internet more for management training than for the training of any other occupational group, and Intranets and Extranets are used to the same extent for managers as for professional/technical staff (see Table 47).

Respondents to the CIPD survey were also asked whether any of their e-learning materials were customised. The findings suggested that 61% of organisations had developed customised e-learning materials. In terms of how the materials were developed, 10% of organisations reported that external consultants were used, around 40% developed the materials in-house, and half of the companies used a mixture of both. In the current survey, 44.4% of those that responded stated that they have not used customised CBT materials. Of the 55.6% that have used customised CBT, one-fifth have used external consultants, two-fifths have developed materials in-house, and two-fifths have used a mixture of both approaches (see Table 49). These results, then, suggest a slightly lower level of customisation than that reported in the CIPD survey, but overall the results follow a similar pattern. In the current survey, however, the use of external consultants constitutes a higher proportion of total customisation, with a

smaller proportion of companies using a mixture of both. The proportion of companies developing materials in-house is consistent across the two surveys.

As outlined in Section 5.1.4 of this chapter, the CIPD survey reported that, in spite of the high incidence of customisation of e-learning materials, the percentage of total training expenditure that was dedicated to such materials was notably low. The results of the present research do, however, indicate that a relationship exists between the customisation of CBT materials and the percentage of total training expenditure that is dedicated to CBT. It is clear that the expenditure on CBT rests at the higher end of the scale for those companies that have developed customised materials, either in-house or externally (see Table 51).

Following the claim offered by Leonard (1996) that, due to budget pressures, small companies do not have access to bespoke computer-based training materials, but must instead rely on off-the-shelf packages, a cross-tabulation has been performed to examine the relationship between company size and the customisation of CBT materials (see Table 50). The results of this cross-tabulation suggest that no positive relationship exists, and that smaller companies are not characterised by a lower incidence of customisation than larger companies.

In summary, the results of this section suggest that the responding organisations continue to rely on a small number of the conventional training methods – namely, on-the-job training, formal/professional education and conferences/discussions. However, when one brings computer-based training methods into the picture it is clear that the organisations are in fact using a range of methods. From the survey results, there are positive signs that the organisations are embracing CBT methods, with most of the respondents using some form of CBT. The Internet, computer-based simulations and CD-ROMs are the most frequently used of the CBT methods.

5.3 Objective 3: Training Techniques and Tools/Aids

5.3.1 Techniques for Facilitating Learning

MacDonald *et al* (2000) have highlighted a number of factors that should be incorporated in any training and development intervention involving employees in the Technology sector. These factors, which are based upon the principles of adult education, relate to the need for: recognition and use of learners' experience; flexibility to meet the needs of different learning styles; facilitation of group discussions; ensuring that learners find the content relevant; and organisation of learning into modules or chunks. It is clear that all of these factors revolve around one key aspect – recognising the learner as being at the centre of the learning activity. The techniques that are used to facilitate learning in an organisation allow these factors to be incorporated into the training and development of employees.

Networking and benchmarking, according to Violino (April 12, 1999), allows employees in Technology companies to learn from the experience of peers, and to share content and advice with one another. Networking and benchmarking activities are flexible, and can be formal or informal. The results of the survey contained within this thesis suggest that organisations are making substantial use of the learning benefits of networking and benchmarking – it is used fairly often or frequently by 72.8% of organisations (see Table 53). The greatest use of networking and benchmarking is for Professional/Technical staff (72.7% of respondents) and Management (54.5% of respondents); Administrative/Manual workers make much less use (36.4%) (see Table 55). Also, the widespread use of this technique seems to have emerged in recent years, as most organisations stated that they had adopted it in the last 1 to 3 years (see Table 56).

Online knowledge exchange facilitates the sharing of tacit and explicit knowledge that is relevant to the organisation or to specific tasks or functional areas, and also allows group discussions and sharing of experience. From the findings, it emerges that 72.8% of respondents use online knowledge exchange fairly often or frequently. This technique is used equally for the training and development of Management (63.6% of respondents) and of Professional/Technical staff (63.6% of respondents). Only 36.4% of companies use online knowledge exchange for

Administrative/Manual workers. For most organisations, the technique of online knowledge exchange was adopted in the last 4 to 6 years.

Critical incident reviews build upon the experience of someone who has witnessed a critical event in an organisation's history, and use this experience as a learning tool that is highly relevant to the learner. 63.7% of those who responded to the survey indicated that critical incident reviews were used fairly often or frequently. This technique was also the main technique indicated for intended future use (27.3% of organisations – see Table 54). Interestingly, critical incident reviews are used primarily for Professional/Technical staff (72.7% of organisations), although they are also used significantly for Management (63.6%) and Administrative/Manual workers (63.6%). For most organisations, the adoption of this technique has occurred in the last 1 to 3 years.

Action learning, according to Johnson (1998), is an invaluable technique for allocating a set amount of time for the analysis of a pressing organisational problem. The learning process is highly relevant to the current organisational context, involves consideration of the problem through group analysis, builds on the experience of the participants, allows flexibility of approach, and permits learning to be segregated into distinct chunks or problems. From the survey results, action learning is the least frequently used of all the techniques, with only 18.2% of organisations using it fairly often or frequently. Where it is used, it is used equally for Management (36.4% of respondents) and Professional/Technical workers (36.4%), but half as much for Administrative/Manual workers (18.2%). For those organisations that have adopted action learning, most have done so in the past 7 to 9 years. The low use of action learning is surprising given the findings from the 2001 CIPD study of Irish companies (Heraty and Garavan, 2001), which found that most respondents perceived action learning as being extremely effective in instigating learning.

Experimentation allows the individual to experiment through action, correct mistakes, and learn from this experience (Hurley, 2002). Freedom to experiment allows learners to centre the activity around their own learning preferences, and to work on tasks or problems that can be applied directly to the organisational context. The responses to the survey show that 45.5% of organisations use experimentation fairly often or frequently. The greatest part of this 45.5% consists of organisations that use experimentation frequently (36.4%, compared to 9.1% that use it fairly often). However, a further 45.5% state that they use it infrequently or do not use it at all.

Where experimentation is used, the use is spread relatively equally over Management (45.5%), Professional/Technical workers (54.5%) and Administrative/Manual workers (45.5%). For most organisations, experimentation has been in use for the last 7 to 9 years.

Coaching and mentoring are learning techniques that are highly tailored to the developmental needs of the individual learner. These programmes take advantage of the knowledge of experienced advisers, who are able to provide guidance to the learners in relation to their current roles and/or possible future roles within the organisation. The 2001 study of Irish training practices conducted by the CIPD (Heraty and Garavan, 2001) found that coaching and mentoring were used by 84% of organisations, and that these organisations perceived coaching and mentoring as being very effective. The perceived effectiveness of coaching and mentoring is perhaps one of the reasons for the widespread use of these programmes, and the results of the present survey reflect this; coaching and mentoring is used fairly often or frequently by 81.8% of organisations, and this use extends to Management (45.5%), Professional/Technical staff (54.5%) and Administrative/Manual workers (36.4%). For most organisations, coaching and mentoring has been used for 7 to 9 years.

Team development is a learning technique that, according to Barker and Neailey (1999), occurs in some form in most organisations. This technique allows team members to actively discuss a given topic, and to share opinions, ideas and experience relating to the topic. The survey results support Barker and Neailey, as 100% of the respondents to the survey used team development to some extent, with only 9.1% of these using it infrequently, and the remaining 90.9% using it fairly often or frequently. What is more, the use of team development is significant for all categories of employee, as 63.6% of organisations use it for Management, 72.7% use it for Professional/Technical staff, and 54.5% use it for Administrative/Manual workers. It is also notable that most organisations have adopted this technique within the last 1 to 3 years, although a significant proportion have also been using it for the last 4 to 6 or 7 to 9 years.

On the whole, the findings from this section of the survey suggest that the responding organisations are using a wide range of training techniques to facilitate learning within the organisation, and these techniques are being used on a frequent basis. The main exception is action learning, the adoption of which has been limited amongst the

respondents. From the point of view of MacDonald *et al* (2000), such practices allow the learner to be at the centre of the learning activity, by building upon the experience of the individual and ensuring that the learning content remains relevant. Following this argument, the widespread adoption of these training techniques is greatly encouraging, and suggests that the organisations are recognising the value of individual, group and organisational learning.

5.3.2 **Tools/Aids for the Delivery of Training**

Forsyth (1994) has argued that the use of tools and visual aids in the delivery of training can help to reinforce the key messages that underlie a training or development activity. In the survey, organisations were asked about their use of a number of training tools/aids.

Overhead projectors, according to Foxon (November, 1992), are the most widely used and misused of all training tools. The findings from the survey do suggest that around half of the organisations (54.6%) use overhead projectors fairly often or frequently. However, a further 45.5% indicate that they use this tool infrequently or do not use it at all (see Table 57). These results indicate that the organisations either rely frequently on the use of overhead projectors, or use them very infrequently. However, 27.3% of respondents to the survey did indicate that they intended to use overhead projectors in the future (see Table 58), and for most organisations this tool has been in use for the past 7 to 9 years (Table 60). The use of overhead projectors is spread across all occupational groups (see Table 59), although the use for Administrative/Manual staff (54.5% of organisations) is lower than that for Management (72.7%) and Professional/Technical staff (72.7%).

Forsyth (1994) has noted that table-top presenters offer a portable alternative to the use of full-sized flip charts, but because of their discrete size use should be limited to training that involves small groups. However, very few respondents to the survey indicated that they used this tool; 18.2% reported that table-top presenters were used fairly often, and a further 9.1% used them infrequently. Where table-top presenters are used, it is mostly for the training and development of Professional/Technical staff (36.4%, compared to 18.2% and 9.1% for Management and Administrative/Manual workers, respectively). The results suggest no significant findings on how recently table-top presenters have been taken up by the organisations, as the adoption of this method is spread over the past 1 to 9 years.

The flip chart is, according to Dehaas (September, 1999), a simple tool which can nonetheless be a very effective learning aid. The survey results suggest that this is one of the most frequently used training tools – 90.9% of organisations use this tool fairly often or frequently. Most organisations have adopted this tool either in the last 1 to 3 years, or in the last 7 to 9 years. All of the 90.9% of organisations that use flip charts do so for Professional/Technical employees; 72.7% use them for Management; and 63.6% use them for Administrative/Manual workers. Therefore, flip charts are widely used by all organisations, and for all occupational groups.

Whiteboards and blackboards are training tools that are widely available and extremely inexpensive to use. Forsyth (1994), however, cautions that there is a risk of overuse of these tools, especially if the trainer wanders off the key points. Just less than half of the respondents to the survey (45.5%) indicated that they use white/blackboards fairly often or frequently, with the remainder indicating that they use them infrequently or do not use them at all. Most of the organisations that use whiteboards or blackboards have been using them for between 1 and 3 years or between 7 and 9 years. Professional/Technical workers receive the greatest use of white/blackboards (72.7%), followed by Management (63.6%), and then by Administrative/Manual (54.5%).

Pearson (November, 1995) notes that LCD/computer displays can help to give a professional appearance to a training presentation. Significantly, LCD/computer displays are used fairly often or frequently by 100% of respondents in the survey, and they are used substantially for Management (81.8%), Professional/Technical staff (90.9%) and Administrative/Manual workers (63.6%). This widespread use is interesting given the fact that most organisations reported that they have adopted this tool in the last 1 to 3 years. This suggests that the organisations are becoming increasingly concerned with creating professional training presentations.

According to Magellan-Horth and Palus (October, 2003) the use of photographs and images as learning tools allows the learner articulate exactly how he/she perceives or feels about an issue. The findings from the survey suggest that only 36.4% of the organisations use photographs fairly often or frequently as learning tools; 54.6% use them infrequently or do not use them at all. Professional/Technical staff receive the greatest use of photographs (63.6% of organisations), while Management receive slightly lower use (54.5%), and Administrative/Manual workers receive the least use

36.4%). The adoption of this tool has remained relatively constant over the past 1 to 9 years.

Posters and advertising copy can be useful as learning tools or as visual aids during a training or development activity. However, the survey results show that these tools are used fairly often or frequently by only 36.4% of respondents, although a further 27.3% use them infrequently. Around half of the respondents use posters and advertising copy for Management (45.5%) and Professional/Technical workers (54.5%), while just over one-third use them for Administrative/Manual workers (36.4%). For most organisations, these tools have been used for the last 7 to 9 years, although a substantial proportion have adopted them in the last 4 to 6 years.

Fahey (2003) highlights the value of using information about competitors to aid Management development. The survey results show that 45.5% of the responding organisations use competitor information fairly often or frequently as a learning tool. Although the use of this tools is greatest among Professional/Technical workers (81.8% of organisations), it is also used for Management and for Administrative/Manual workers in 63.6% of organisations. As the vast majority of companies that use this tool have adopted it in the last 1 to 3 years, it would appear that the use of competitor information is still emerging as an aid to learning.

Sherman (June, 2003) has suggested that working papers provide an excellent tool for structuring and summarising a training presentation, and help to reinforce the key points for the learners. The survey findings show that working papers are used fairly often or frequently by 45.5% of the responding organisations, and the use is spread relatively evenly across Management (54.5%), Professional/Technical workers (63.6%) and Administrative/Manual workers (54.5%). It is somewhat surprising that most organisations stated that they had adopted this tool in the last 1 to 3 years, and this was also the only tool for which any organisations stated that adoption had occurred within the last year.

The findings of this section of the survey have pointed to a tendency for organisations to use LCD/computer displays and flip charts for the training of all occupational groups, although the use of information about competitors also appears to be emerging as a tool for instigating learning. Although, for most of the tools, the largest part of the use is for Professional/Technical workers, many of them are also used to a large extent for Management and Administrative/Manual workers.

5.4 Objective 4: Government Intervention

Chapter 2 of this thesis was focused around an analysis of the support that has been made available by the Government to facilitate training and development provisions in Irish companies. As outlined, much of this support has been based on the work of the Expert Group on Future Skills Needs, which is one element of the Business Education and Training Partnership initiative. The recommendations of the Expert Group (much of which have focused upon the skills needs of the Information Technology (IT) sector) have made a key contribution to the implementation of a wide range of Government interventions in the area of training and development provision.

Section E of the survey was concerned with identifying the level of awareness among the responding companies of the support that has been made available for training and development. The extent of use of these support mechanisms was also analysed, and companies were asked to indicate whether they perceived the contribution of the Government in this area as being significant or otherwise. Further to this, a number of questions were asked which were intended to gauge the extent to which the responding companies were implementing the recommendations of the Government relating to measures that would improve the relevance and flexibility of training activities. The findings of this section of the survey will now be discussed in relation to the analysis presented in Chapter 2.

The first question in Section D asked respondents about their awareness of the Business Education and Training Partnership initiative. This initiative incorporates three elements: the Business Education and Training Partnership Forum, which provides opportunities for industry, education and training providers and Government bodies to express their needs and interests; the Expert Group on Future Skills Needs, which is concerned with identifying future skills needs, and making proposals for measures that will help to meet these needs; and the Management Implementation Group, which oversees the implementation of any measures resulting from the Expert Group's recommendations. However, the findings from the survey suggest that most of the companies (54.5%) are not aware of the existence of the Business Education and Training Partnership initiative, and a further 27.3% are not aware of the work that is undertaken under the initiative (see Table 61). Only 18.2% of respondents stated that they were aware of the existence and purpose of the Business Education and Training

Partnership initiative. Given that this is the mechanism through which skills needs are identified and catered for, and is a key opportunity for companies to express their needs, the lack of awareness of this initiative is a discouraging indicator.

Organisations were also asked about their awareness and use of a number of other Government interventions. The findings on the awareness of the interventions mirror those of the awareness of the Business Education and Training Partnership initiative; on the whole, awareness appears to be very limited (see Table 62). None of the respondents indicated that they were aware of the following measures:

- Post-Graduate Conversion courses;
- The Funding for Industry Initiative (competitive and non-competitive strands);
- The Science, Technology and Engineering Programme for Schools.

For four other support measures, only 9.1% of respondents indicated that they were aware of each, namely:

- The Leonardo da Vinci Training Programme;
- The Export Orientation Programme;
- The Wider Horizons Training Programme;
- The Marketing Skills Scheme.

And for a further seven measures, only 18.2% of respondents had indicated awareness, namely:

- The National Register of Trainers;
- Accelerated Training Programmes;
- The Small Firms Cluster Programme;
- The Socrates Programme;
- Management Development Grants;
- The Employment and Human Resource Development Operational Programme;
- The National Traineeship Programme.

The greatest level of awareness would appear to relate to the services and courses provided by FÁS. For example, 63.6% of companies were aware of FÁS training courses and FÁS Training Advisory Serivce/Programmes. There are however three other support measures which 35.4% of companies are aware of. These are the Fastrack to IT, Skillnets and Excellence Through People.

Given that the awareness of the majority of these support measures is low, it follows that the up-take of them will also be low. The findings show that this is true for all of the measures, and where measures have been used the extent of use is limited (see Table 64).

A number of the Government support measures are instrumental in linking employers with education and training providers. Of these measures, 18.2% of companies have indicated that they have made use of FÁS training courses (non-electronic). These courses are widely available in many regions throughout Ireland, and cover a range of subjects including technical skills and soft skills. A further 18.2% of companies have made use of the National Register of Trainers, which is also provided by FÁS in conjunction with Enterprise Ireland. This facility goes some way to addressing the problem that many employers face in obtaining information about reliable and high-quality training provision on a regional basis. And 9.1% of companies indicated that they have received help from FÁS Training Advisory Service/Programmes. The programmes and services that are available through this support mechanism are available on a regional basis, and small firms are among the target recipients of the service.

In relation to the support measures that facilitate the networking and cooperation of companies, Skillnets is the only measure that respondents have reported using. This usage is also limited to 9.1% of respondents. Skillnets is a highly innovative approach to the provision of training and development interventions, in which companies network together in order to pool resources. Initiatives such as Skillnets provide an excellent opportunity for companies to meet training and development needs when it would not have been possible to do so independently. The low use of this initiative is therefore discouraging.

The Government has noted its concern with increasing the awareness of skills opportunities among the current and future workforce. Of the measures in the questionnaire that relate to the awareness of skills opportunities, Excellence Through People is the only initiative that respondents have reported using (18.2%). The low

usage (and awareness, as indicated above) of this initiative can be considered as somewhat of a surprise, as Excellence Through People represents the national standard for human resource development excellence. Again, these findings are discouraging.

The National Development Plan 2000 - 2006 incorporates an Employment and Human Resource Development Operational Programme, through which investments in four key policy areas have been made: Employability, Entrepreneurship, Adaptability and Equality. Of these four sub-programmes, the respondents to the survey have reported using support for Employability (9.1%) and Equality (also 9.1%). The investments in Employability have been targeted at the unemployed and people who have been made redundant, in order to allow these people to re-enter the workforce. Equality support is also aimed at promoting social inclusion, although this sub-programme is targeted specifically at those who are disabled or who have been unable to access training and employment opportunities in the past.

A number of other, more general support mechanisms have been made available to employers and employees with the assistance of the Government. Management Development Grants, which are used by 9.1% of the responding companies, are provided through a customised development programme, which is specifically tailored to meet the needs of individual owner/managers in small companies. The Management Development Grants scheme therefore provides an invaluable opportunity for small companies to receive the guidance and develop the skills necessary to guide them through key growth stages. Central to the efforts of the Government to ensure adequate skills provision for the Information Technology sector has been the concern with flexibility – ensuring that skills remain relevant to the needs of employers within this sector. From the responses to the survey, 9.1% reported having made use of Government support aimed at increasing the flexibility of training courses. A further 9.1% of respondents indicated that training grants had been made available to them through Enterprise Ireland. Enterprise Ireland is a Government body which concerns itself with improving the competitiveness of Irish industry, by working in conjunction with companies to meet their developmental needs.

The support measures outlined above are those that have been used by some of the responding organisation. However, the vast majority of the available support that was listed in the survey has not been used by any of the respondents. From the analysis, it is clear that the lack of awareness of the available measures is a crucial prohibitive

factor to the use of these measures. This considered, the use of the support is still exceptionally low among the responding companies.

In the survey, respondents were asked to conclude on the level of contribution that Government interventions have made to the provision of employee training and development in the Technology sector. In spite of the increasing level of investment that the Government have made in the provision of training and development (much of which has focused on the skills needs of the Technology sector), 10% of respondents believe that the contribution of these interventions has not been significant, and 50% believe that the interventions have made only a small contribution (see Table 65). Although a further 40% of the respondents perceive the interventions as having made a moderately significant contribution, no companies indicated that the Government have made "a very significant contribution". During the course of Chapter 2, a wide variety of available support measures were discussed. It is significant that these investments appear to have had little impact on the responding companies.

Further analysis of the survey findings reveals that the primary identifiable reason for the limited impact that these investments have had is the lack of awareness of the available support, as identified earlier in the analysis. From those who provided a response, it would appear that the main factors that deter the companies from taking advantage of the available support relate to a lack of awareness or knowledge on their part of the available support mechanisms (20% of respondents), or a perceived failure of the Government, and associated bodies, to make clear what interventions are available and for which companies (40%). A further 20% of those who responded to this item claimed that they had not been offered any Government support. Cumulatively, this lack of awareness accounts for 80% of the responses provided. Given that the remaining 20% of respondents indicated that the "red tape" involved in applying for support was the primary deterrent, it seems that even when companies are aware of the support available, they may be reluctant to embark upon the formalities of the application process involved (see Table 66). Based upon the recommendations of the Expert Group that the Government must play a central role in helping employers in the Technology sector to keep pace with changing skill requirements, the Government have stepped up the level and scale of investments that are aimed at meeting future Technology skills needs. However, from the analysis presented in this thesis, it would appear that a breakdown in communication between the Government and industry

could be impeding the extent to which companies are benefiting from the investments that are made.

As has been outlined in Chapter 2, the Government have stressed that cooperation from individual Technology companies is essential if strategic investments are to be made in the development of employees. Flexibility has been a key concern of the Government, and they have recommended a number of practices that employers can undertake in order to ensure that training provision remains flexible enough to accommodate changing skill requirements. Multi-skilling and conversion programmes offer flexible and fast-track Technology skills provision for graduates from non-Technology disciplines. From the survey findings, it appears that 27.3% of respondents have made use of such measures (see Table 67). A further 9.1% of respondents have used modular programme structures in training and development programmes, in order to ensure that training content remains relevant to changing skills needs. An additional practice that was reported by the responding companies was the provision of training and development activities that are linked to a performance measurement system (9.1%). This practice is instrumental in ensuring that any training and development that is undertaken is relevant to the performance needs of the company. However, other measures that the Government have recommended for the provision of flexible training and development have not been used by any of the responding companies. These are Accelerated Training Programmes and accreditation of prior learning and experience. Accelerated Training Programmes, as the title suggests, provide skills training on an accelerated time scale, and they also provide employers with the opportunity to contribute to course design. Accreditation of prior learning and experience is a practice that is recommended by the Government as a means of providing flexible approaches to building upon employees' past experience, education and training.

The Expert Group have stressed the need for companies to increase the level of cooperation with education and training providers in the design and delivery of course materials, and in providing company-sponsored and company-based training. They have also recommended that employers and training/education providers should pool resources in order to improve the quantity and quality of training and development that is provided to employees. In the survey, companies were asked to indicate if they have adopted any of these practices. The results show that very little cooperation has taken place between the responding companies and education/training providers (see Table

68). In relation to the level of cooperation in the design of course materials, 91% of the respondents indicated that they have undertaken such cooperation. 9.1% of respondents also indicated that they have co-operated in the delivery of course materials. The use of company-based and company-sponsored training is slightly higher, but still very low. For each of these practices, 18.2% of respondents indicated use. No companies have reported pooling human resources (such as staff or students) or physical resources (such as training space or facilities) with education and training providers. These findings are discouraging, given that it is employers who ultimately use the skills provided through education and training. It is therefore a realistic expectation that employers should contribute and cooperate in the design and delivery of education and training. The Expert Group on Future Skills Needs has discovered that Technology skills shortages will be inevitable in the future if they are not planned for through needs-focused education and training provision. If this provision is not made, skills shortages are likely to result in wage inflation and loss of competitiveness for companies operating in Ireland's Technology sector. Although the Government have been stepping up the investments made in skills provision, it is clear from the results of this section that the level of awareness and use of Government support has been limited, and a gap would appear to exist between the recommendations that Government bodies have made in relation to the contribution that employers must make to these efforts, and what is happening in practice.

5.5 Conclusion

This chapter has focused on an analysis and discussion of the key findings that have emerged from the research, by comparing these findings to the information presented in the Literature Review (Chapter 1) and Government Intervention (Chapter 2) sections of this thesis. In Chapter 6, which is the final chapter of the thesis, conclusions are made in relation to how the findings have succeeded in meeting the research objectives that have governed this research. Recommendations for future practice will also be made.

CONCLUSIONS AND RECOMMENDATIONS

The process of the research that has been carried out commenced with an identification of the research need, resulting from an analysis of the available literature. Following from this, a set of objectives was identified which would govern the research and allow the gaps in the existing knowledge to be addressed. A methodology for the research process (including the research sample and the data collection method) was then developed, and the primary research was carried out. Following input and analysis (using SPSS data analysis software) of the primary data that was collected, the findings from the survey have been presented and discussed. The aim of this chapter is to offer conclusions in relation to how the research objectives have been met, and to provide recommendations based on the outcomes of the research.

6.1 Meeting the Research Objectives

The four key objectives of the research have served to govern the research process and structure the data collection and analysis procedures undertaken. The findings from the research allow the following conclusions to be made.

Objective 1: To identify the nature of expenditure on training and development in the Irish Technology sector. From the research findings, it can be concluded that the average annual expenditure on training and development in the responding companies is 2.6% of overall payroll. Although this indicates a lower level of expenditure than has been indicated by previous studies, the expenditure varies greatly by company size. For just under half of the responding companies, this expenditure is made from a dedicated training and development budget. It is clear that Technical employees are the key focus of most training and development interventions, in terms of both expenditure and the number of training days provided. The occupational groups that are most neglected in the training and development provisions are Senior Managers and Directors, Clerical and Administrative staff and Manual workers. The level of expenditure on computer-based training (CBT) materials is higher than that reported in a study conducted in the UK by the CIPD (2002), and for most companies it rests at the higher end of the scale.

In terms of the support that is provided for employees who wish to pursue self-development, it is safe to conclude that all of the companies are willing to make some provisions, in relation to providing financial support and allowing time off for training. However, it is clear that the responding companies are neglecting to pursue a strategic approach to human resource development, which suggests that the true contribution of human capital to the competitiveness of the organisations has not been fully recognised. Nonetheless, all other elements of the training approaches adopted by these companies provide an encouraging picture, and the companies would appear to be placing increasing emphasis on adopting a systematic and holistic approach to the provision of training and development. It is possible to conclude that, on the whole, the approaches adopted by these companies represent a number of elements of the more modern approaches to training and development.

Objective 2: To ascertain the methods of delivery of training and development activities in the Irish Technology sector. If one considers only the use of conventional training methods by these companies, it appears that there is a continued reliance on three frequently used methods: on-the-job training, formal/professional education, and conferences/discussions. For most other methods, the use is limited. However, the use of computer-based training methods in these companies appears to be high – 81.8% of respondents use some form of CBT. In particular, the Internet, computer-based simulations and CD-ROMs are all used to some extent by the majority of respondents. It is interesting that each of these three CBT methods is used to a greater extent for Management than for Professional/Technical workers, in spite of a widespread view – as reported in the results of a CIPD (2002) study in the UK – that CBT methods are more suitable for technical skills training than for Management skills or soft skills development. When CBT methods are also considered, then, it is possible to conclude that the organisations are, in fact, willing to embrace a range of delivery methods. The research has further established that just over half of those organisations that use CBT have had some of the materials customised to the specific needs of the company, and that the development (or otherwise) of customised materials is not dependent on company size. It was intended that the research would also allow the identification of the training methods that the companies intend to use in the near future. However, it is not possible to offer any significant conclusion on this, as the rate of response to the question on future use of methods in the survey was very low.

Objective 3: To establish the techniques and tools/aids that are used to facilitate learning and to support the delivery of training and development activities in the Irish Technology sector. From the research findings, it is possible to conclude that the organisations are making use of a range of techniques, and that these techniques are used on a frequent basis. Most of the techniques listed in the survey are being used by a high proportion of the responding companies. The main exception is the technique of action learning, which appears to be receiving very infrequent use by the companies. The main techniques that are being used by the companies include networking and benchmarking (which most organisations have adopted in the last 1-3 years), online knowledge exchange (which most organisations have been using for 4-6 years), coaching and mentoring (which most have been using for 7-9 years), and team development (which most organisations have been using for 1-3 years, although a signification proportion also adopted this technique 4-6 or 7-9 years ago). Although networking and benchmarking is used mainly for Professional/Technical staff, and online knowledge exchange is used mainly for Management and Professional/Technical staff, the use of coaching and mentoring and team development is significant for all employee categories, including Administrative/Manual workers. The widespread use of these techniques suggests that organisations are placing emphasis on learning at the individual, group and organisational level. Following MacDonald *et al* (2000), the use of these techniques is also an indication that the learner is being brought to the centre of the learning activities in these organisations.

In relation to the finer details of training delivery, it is possible to conclude that organisations are relying to a large extent on the use of LCD/computer displays and flip charts, and (to a lesser extent) on overhead projectors. These tools and visual aids are used to reinforce the key messages in the training or development content. The use of these tools is substantial across all occupational groups. Although the adoption of these tools in the organisations ranges from the last 1-3 years to the last 7-9 years, the take-up of LCD/computer displays has been more heavily concentrated around the last 1-3 years than has the take-up of flip charts or overhead projectors. It would appear from the widespread use and recent adoption of LCD/computer displays that organisations are becoming increasingly concerned with providing sophisticated training presentations. Again, due to the low response rate for the questions on future use, it has not been possible to reach any significant conclusions on the future use of training techniques or tools/aids. The question regarding the future use of training tools did,

however, receive the most significant responses of all the future use questions. From the results of this question, the tools that are intended for future use appear to include LCD/computer displays, overhead projectors, flip charts and white/blackboards. For the most part then, these responses reflect the current usage patters, and suggest that organisations are planning on continuing the use of the tools that are employed.

Objective 4: To assess the extent of awareness of Government Interventions in the training and development of Ireland's Technology labour force, and to determine the reaction to these interventions. The first two parts of this objective, relating to the investments that the Government have made in the training and development of the Irish Technology labour force and the support mechanisms that have been put in place to facilitate access to training and development, have been met by an analysis of the information available from Government sources (Chapter 2 of this thesis). From the analysis, it is clear that the Government have made a large number of investments and put in place a wide range of support mechanisms, much of which have been governed by the Business Education and Training Partnership.

The primary data collected through the survey was intended to address the remaining portions of this objective, relating to the awareness and use of the investments made, and to the perceived contribution of Government investments in training provision. From the responses received, it is possible to conclude that the level of awareness and use of these measures has been extremely low. In relation to the Business Education and Training Partnership, the vast majority of respondents were not aware of the existence and purpose of the BETP. Much of the awareness of the specific mechanisms made available by the Government is limited to the services and programmes provided by FÁS, including FÁS training courses and FÁS Training Advisory Service/Programmes. A number of companies were also aware of the Fastrack to IT, Skillnets and Excellence Through People. In relation to the extent to which support mechanisms have actually been used by the companies, the use of mechanisms that assist in linking employers with education and training providers has been limited to those services provided by FÁS, including FÁS training courses, FÁS Training Advisory Service/Programmes, and the National Register of Trainers (provided by FÁS and Enterprise Ireland). In relation to the mechanisms that offer opportunities for employers to cooperate or network together, the only mechanism to have been used is Skillnets, while Excellence Through People is the only mechanism to

have been used from those that develop awareness of skills opportunities. From the Employment and Human Resource Development Programme that is operated under the National Development Plan 2000 - 2006, the companies have made use of the measures that are concerned with improving Employability and Equality. And the other support mechanisms that have been used by the responding companies include Management Development Grants, support aimed at increasing the flexibility of courses, and training grants provided through Enterprise Ireland.

To conclude on the contribution that Government interventions have made to the provision of training and development in the Technology sector, it is clear that the responding companies perceive this contribution as being small to moderate. It is also evident that a lack of knowledge of the support available is the key prohibiting factor, with the "red tape" that is involved also playing a part.

In relation to the extent to which the individual companies are pursuing the practices that have been recommended by the Government in order to ensure that training provision remains flexible enough to meet changing skills requirements, a number of practices have been used. These include multi-skilling and conversion programmes, the use of modular programme structures, and the provision of training and development that is linked to a performance measurement system. However, none of the companies have used Accelerated Training Programmes or the accreditation of prior learning and experience for the purpose of ensuring programme flexibility. It is also possible to conclude that the level of cooperation that is taking place between individual employers and education/training providers is very low. None of the companies have made any attempt to pool resources (human or physical) with education and training providers, in order to improve the quality or quantity of training that is made available. However, a very small percentage of the companies indicated that they have cooperated with education/training providers in the design of course materials and in the delivery of course materials. And a slightly greater percentage of companies have cooperated with education/training providers through the provision of company-based training and company sponsored training. The overall conclusion to emerge from this objective is that the general reaction to Government interventions has been extremely poor.

On the whole, the research that has been undertaken has succeeded in meeting the research objectives, and in answering the sub-questions incorporated in these

objectives. The conclusions have been varied; when the activities of the responding companies are considered in isolation, the picture to emerge is primarily positive. However, it is when one considers the extent to which external support (in the form of Government interventions) is integrated into the overall training practices of these companies that significant gaps in practice are identified.

6.2 Recommendations for Future Practice

On the basis of the research process that has been undertaken, including the review of the available literature and analysis of the findings that have resulted from the survey, Figure 22 presents a framework that is intended to guide future training and development practices in Irish Technology companies. This framework relates to the planning and delivery of interventions, and the outcome is strategically focused human resource development interventions. The process must be built upon the recognition, at all levels of the organisation, of the strategic importance of human resource initiatives for the organisation, and as such must be integrated and planned as a strategic activity. This must be accompanied by a supportive learning environment, which fosters a culture of knowledge sharing, participation, tolerance of failure, and lifelong learning. The planning and design of training and development programmes must be addressed as a systematic process, incorporating a needs identification process which involves all employees, HR/training specialists, and management at all levels. The allocation of a dedicated training budget will also help to ensure that the process remains systematic. At a practical level, learning (at the individual, group and organisational level) should be fostered through the use of a range of learning techniques. These techniques should, above all, emphasise the role of the learner as being at the centre of the learning experience. These efforts should be integrated with the selection of a range of delivery methods that suit the needs of the individual learners, the time, human and financial resources that are available for the intervention, and the type of content that is to be delivered. At a lower level, the tools and visual aids that are used to support the delivery of training content should be carefully chosen so as to maximise the impact of key messages in the training content. The final element in the framework requires the integration of the external environment with human resource development interventions, through use of the available Government support and cooperation with

education and training providers. In order for this to be effective, it is necessary for the relevant Government bodies to ensure that companies remain updated about the support that is available. The responsibility also lies with individual companies to ensure that they draw upon the support that is available and integrate this support into their framework for training and development provision. Cooperation with education and training providers will help to ensure that skills provisions are relevant to the needs of the company. This cooperation can also involve the pooling of scarce resources, in order to make development efforts more effective and cost-efficient. The framework also requires companies to take advantage of opportunities to network with other companies that have similar skills needs. Initiatives such as the Skillnets scheme should set the scene for such projects.

This process must be carried out on a continuous basis, in order to ensure that changing skills requirements are catered for. The development opportunities should also be made available to employees at all levels, in order to discourage communication voids and hierarchical thinking.

In conclusion, the adoption of this framework will help the company to leverage the benefits of training and development interventions by integrating these interventions into all levels of the organisation, through a system of strategically focused human resource development. The adoption of this approach will help the organisation to secure the following benefits:

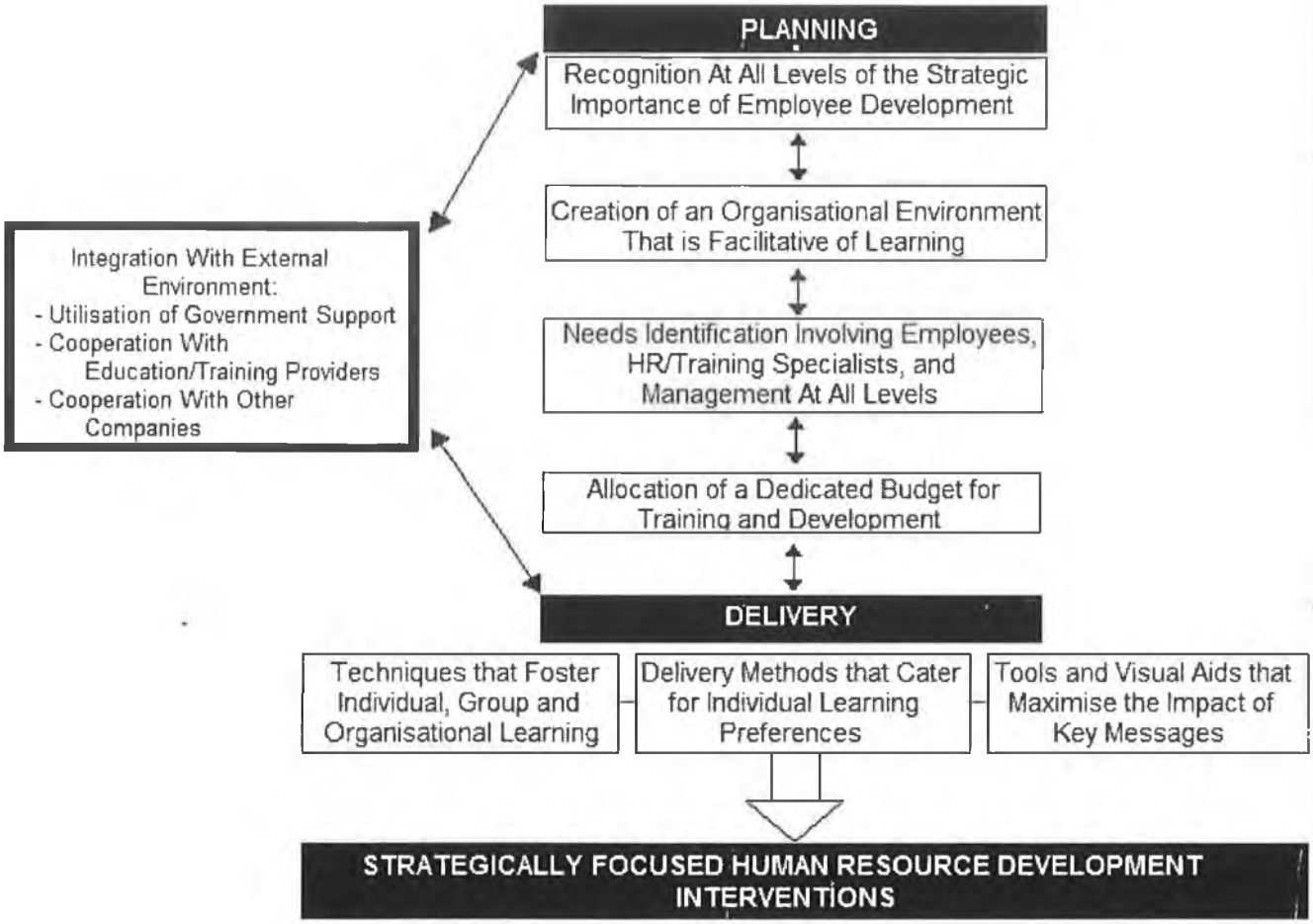
a) **To Ensure the Supply of Necessary Labour and Skills: In** order to counteract the decreasing supply of new entrants to the labour force.
b) **To Ensure that Skills Do Not Become Obsolete:** The increasing pace with which Technology skills needs change requires existing workers to be re-trained (for the benefit of the organisation and for their own employability) in order to ensure that their skills and capabilities, and by extension the skills and capabilities of the company, do not become obsolete
c) **To Leverage Knowledge for Competitive Advantage:** It is crucial that organisations recognise the importance of intellectual capital (which is created and maintained through knowledge), and develop processes to create, develop, and disperse the knowledge that underlies this intellectual capital within the organisation. Knowledge, then, becomes the source of competitive advantage.

d) **To Keep Employees Motivated:** Not only do training and development opportunities motivate employees, but they can also ensure that this motivation is leveraged to link employees goals and objectives with the goals and objectives of the organisation.

Consistent with Heraty and Morley (2000), strategically focused human resource development interventions possess the ability to make a key contribution to the success of an organisation, by encouraging innovation, improving strategic decision making and augmenting overall performance potential. Following Gunnigle and Flood (1992), it is crucial that an organisation is able to achieve integration between the development needs of the organisation and those of the individual employees. By incorporating development activities into the organisation through a system of strategic human resource development, this integration can be achieved.

The aim of this research process has been to build upon and learn from the existing literature, which provides theories, cases and examples, both from a general perspective, and in relation to the Technology sector in particular. Guided by the research objectives, the process has sought to make a contribution to addressing the research gaps, as identified in the Literature Review. However, further research is necessary. It has not been within the scope of this research to address, for example, the needs identification and evaluation procedures that take place in these companies. In order to build a more complete picture of training and development in the Irish Technology sector, it is necessary for future researchers to pursue efforts aimed at providing such knowledge.

Figure 22: Framework for Human Resource Development in Irish Technology Companies



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COVER LETTER

Recipient Name/Address

Return Address

Date

Dear *(name of recipient)*

Survey of Employee Training in Irish Technology Companies

You will find enclosed a short survey relating to the training and development practices of your company. This survey is being sent to you as part of a research project currently being undertaken by myself, Jennifer McKee, at the Institute of Technology, Sligo. I am undertaking this research under the supervision of Jimmy Treacy (lecturer at the Institute of Technology, Sligo), for the award of a Master of Business Studies degree. The information gathered will be an invaluable tool for developing innovative solutions to training and development needs, and will also act as a benchmarking device for Irish technology companies.

The survey should take around 20 minutes to complete. Please answer the questions as fully and accurately as possible, and return in the stamped/addressed envelope provided. Alternatively, if you would prefer to complete and submit the survey **online**, you may do so at:

Website Address for Online Survey

Once you have returned the survey (by post or online), please complete the enclosed postcard and return separately from the survey. Returning this postcard lets us know that you have completed the survey, while at the same time preserving your anonymity.

Please be assured that any information supplied by you will remain strictly confidential. The survey has been designed to allow complete anonymity, and no identifying information will be attached to the research findings.

If you have any queries or would like further information about the research, you may contact me by telephone on *(contact number)*, or by email at *(email address for contact)*.

Thank you for taking time to complete the survey.

Yours sincerely

Jennifer McKee

APPENDIX 2

QUESTIONNAIRE

SECTION A – DEMOGRAPHIC DETAILS

A1. Please indicate your job title: _____

A2. In which area is your company located? *(please tick one only)*

☐ **Dublin** ☐ **Ulster** ☐ **Munster** ☐ **Leinster** ☐ **Connacht**

A3. How many employees does the company have at present? *(please tick one only)*

☐ **< 10** ☐ **10 – 49** ☐ **50 – 99** ☐ **100 – 149**

☐ **150 – 199** ☐ **200 – 249** ☐ **250 +**

A4. Which of the following markets does the company operate in? *(you may tick more than one)*

☐ **Local/Regional** ☐ **National** ☐ **EU** ☐ **Outside EU**

A5. In which of the Deloitte & Touche Technology Fast 50 company categories does the company fit? *(please tick one only)*

☐ **Equipment Manufacturer** ☐ **ASP** ☐ **Telecommunications**

☐ **Biotech/Medical Products** ☐ **Software** ☐ **Hi-Tech**

☐ **Networking & communications** ☐ **ISP**

☐ **Other** (please specify) _____

SECTION B – TRAINING AND DEVELOPMENT

B1. **a)** Please indicate the total value of expenditure on training and development for the past year, expressed as a percentage of overall **payroll:** _____ %

b) Was this expenditure made from a specific annual budget set aside for training and development activities?

☐ **Yes** ☐ **No**

c) On estimate, what percentage of the expenditure was allocated to each of the following occupational groups?

(please ensure that the total adds to 100%)

Occupational Group	%
1. Senior Management/Directors	
2. All Other Managers	
3. Professional Staff	
4. Technical Staff	
5. Clerical & Administrative staff	
6. Manual Workers	
Total	100

d) On estimate, what proportion of the expenditure was allocated to Computer-Based Training?

☐ **None** ☐ **Less than 10%** ☐ **10 – 20%** ☐ **More than 20%**

B2. For each occupational group, please indicate the average number of **days** spent in training per employee over the past year:

	1 - 5	6 - 10	11 - 15	16 - 20	> 20
Senior Management/Directors	☐	☐	☐	☐	☐
All Other Managers	☐	☐	☐	☐	☐
Professional Staff	☐	☐	☐	☐	☐
Technical Staff	☐	☐	☐	☐	☐
Clerical & Administrative Staff	☐	☐	☐	☐	☐
Manual Workers	☐	☐	☐	☐	☐

B3. If an employee is seeking to pursue self-development through an external institution, will your company make a financial contribution to the cost of training? *(please tick one only)*

☐ **Yes, the company will pay the full cost**

☐ **Yes, the company will pay part of the cost**

☐ **No, the company will not contribute to the cost**

B4. In terms of facilitating access to training, does your company usually allow employees to have time off work for training? *(please tick one only)*

☐ **Usually Allow Time Off**

☐ **Sometimes Allow Time Off**

☐ **Will Not Usually Allow Time Off**

B5. For each of the following statement sets, please choose the one that best describes the training and development situation in your company:

a) Training is planned, designed and delivered:

☐ **Systematically** ☐ **Unsystematically**

b) The biggest emphasis is placed upon:

☐ **Formal Training** ☐ **Informal Training** ☐ **Both**

c) The role of training and development is:

☐ **Operational** ☐ **Tactical** ☐ **Strategic**

d) Training and development focuses upon:

☐ **Individual Training Needs**

☐ **Organisational Training Needs**

☐ **Both Organisational and Individual Training Needs**

SECTION C – TRAINING METHODS, TECHNIQUES AND TOOLS

C1. a) Please indicate how often each of the following **methods** is used in the training and development of your employees. For each method, please also indicate (in the far right column) if your company intends to use it in the future, whether or not it is currently being used.

Conventional Methods	Frequently	Fairly Often	Infrequently	Not at All	Intend to Use in Future
On-the-Job Training					
Videotapes					
Films					
Audiotapes					
Lectures					
Role Plays					
Case Studies					
Games					
Conferences/Discussions					
Formal/Professional Education					
Non-Electronic Open Learning					
Other Off-the-Job Training					
Computer-Based Training Methods					
Computer-Based Simulations					
Internet					
Intranets					
Extranets					
CD-ROMs					
Other (please specify below)					

b) For each **method** that is currently being used, please indicate how long your company has been using the method for each occupational group.

Occupational Group /	Management					Professional / Technical					Administrative / Manual				
Years of Use	< 1	1-3	4-6	7-9	10+	< 1	1-3	4-6	7-9	10+	< 1	1-3	4-6	7-9	10+
On-the-Job Training															
Videotapes															
Films															
Audiotapes															
Lectures															
Role Plays															
Case Studies															
Games															
Conferences/Discussions															
Formal/Professional Education															
Non-Electronic Open Learning															
Other Off-the-Job Training															
Computer-Based Training Methods															
Computer-Based Simulations															
Internet															
Intranets															
Extranets															
CD-ROMs															
Other (please specify below)															

c) If Computer-Based Training methods are used, have any of the materials been customised to the specific needs of your company? *(please tick one only)*

☐ **Yes, some customised materials have been developed in-house** *(Go to C2)*

☐ **Yes, some customised materials have been developed by external consultants** *(Go to C2)*

☐ **Yes, customised materials have been developed both in-house and externally** *(Go to C2)*

☐ **No, none of the materials have been customised to the specific needs of the company**

d) In the space below, please state what you believe to be the main factor deterring your company from developing customised Computer-Based Training materials

C2. a) Please indicate how often each of the following **techniques** is used by your company to facilitate learning. For each technique, please also indicate (in the far right column) if your company intends to use it in the future, whether or not it is currently being used.

Technique	Frequently	Fairly Often	Infrequently	Not at All	Intend to Use in Future
Networking & Benchmarking					
Online Knowledge Exchange					
Critical Incident Review					
Action Learning					
Experimentation					
Coaching & Mentoring					
Team Development					
Other (please specify below)					

b) For each **technique** that is <u>currently</u> being used, please indicate how long your company has been using the technique for each occupational group.

Occupational Group /	Management					Professional / Technical					Administrative / Manual				
Years of Use	< 1	1-3	4-6	7-9	10+	< 1	1-3	4-6	7-9	10+	< 1	1-3	4-6	7-9	10+
Networking & Benchmarking															
Online Knowledge Exchange															
Critical Incident Review															
Action Learning															
Experimentation															
Coaching & Mentoring															
Team Development															
Other (please specify below)															

C3. a) Please indicate how often each of the following **tools/aids** is used to support the delivery of training to your employees.

For each tool/aid, please also indicate (in the far right column) if your company intends to use it in the future, whether or not it is currently being used.

Technique	Frequently	Fairly Often	Infrequently	Not at All	Intend to Use in Future
Overhead Projectors					
Table-Top Presenters					
Flip Charts					
White / Black Boards					
LCD / Computer Displays					
Photographs					
Posters / Advertising Copy					
Information About Competitors					
Working Papers					
Other (please specify below)					

b) For each **tool/aid** that is currently being used, please indicate how long your company has been using the tool/aid for each occupational group.

Occupational Group /	Management					Professional / Technical					Administrative / Manual				
Years of Use	< 1	1-3	4-6	7-9	10+	< 1	1-3	4-6	7-9	10+	< 1	1-3	4-6	7-9	10+
Overhead Projectors															
Table-Top Presenters															
Flip Charts															
White / Black Boards															
LCD / Computer Displays															
Photographs															
Posters / Advertising Copy															
Information About Competitors															
Working Papers															
Other (please specify below)															

SECTION D – GOVERNMENT SUPPORT

D1. To what extent are you aware of the work carried out under the **Business Education and Training Partnership** initiative?

- - The Business Education and Training Partnership incorporates the '**Business Education and Training Partnership Forum**', the '**Expert Group on Future Skills Needs**', and the '**Management Implementation Group**'- -

(please tick one only)

☐ **I am aware of the initiative and the work carried out under it**

☐ **I have heard of the initiative, but am unaware of the work carried out under it**

☐ **I have not heard of the initiative and am unaware of the work carried out under it**

D2. From the following list of Government supported initiatives, please tick all those that you are aware of:

☐ **The National Training Fund**
☐ **National Register of Trainers** (FAS / Enterprise Ireland)
☐ **Fastrack to IT**
☐ **FAS Competency Development Programme**
☐ **FAS Net College**
☐ **FAS Training Courses (non-electronic)**
☐ **Post-Graduate Conversion Courses**
☐ **Accelerated Training Programmes**
☐ **Small Firms Cluster Programme** (FAS)
☐ **Leonardo da Vinci Training Programme**
☐ **Socrates Programme**
☐ **Export Orientation Programme** (Enterprise Ireland)
☐ **The Mentor Network** (Enterprise Ireland)
☐ **Management Development Grants** (Enterprise Ireland)
☐ **Wider Horizons Training Programme**
☐ **FAS Training Advisory Service / Programmes**
☐ **Skillnets**
☐ **Excellence Through People**
☐ **Marketing Skills Scheme**
☐ **The Funding for Industry (FOI) Initiative – Competitive Strand**
☐ **The Funding for Industry (FOI) Initiative – Non-Competitive Strand**
☐ **STEPS** (Science, Technology & Engineering Programme for Schools)
☐ **The Employment & Human Resource Development Operational Programme** (set out in the National Development Plan 2000 – 2006)
☐ **National Traineeship Programme** (FAS / Enterprise Ireland)

D3. Please indicate which of the following Government supported initiatives your company has actually made use of for the purposes of training and development:

a) *Linking Employers With Education/Training Providers*

☐ **The Business Education and Training Partnership Forum**
☐ **Post-Graduate Conversion Courses**
☐ **FAS Training Advisory Service / Programmes**
☐ **Accelerated Training Programmes**
☐ **FAS Training Courses (non-electronic)**
☐ **Marketing Skills Scheme** (Enterprise Ireland)
☐ **FAS Competency Development Programme**
☐ **National Register of Trainers** (FAS / Enterprise Ireland)
☐ **FAS Net College**
☐ **The Funding for Industry (FOI) Initiative – Competitive Strand**

Please expand on your answers in the space below

b) *Linking Employers With Each Other*

☐ **The National Training Fund** ☐ **Small Firms Cluster Programme** (FAS) ☐ **Skillnets**

Please expand on your answers in the space below

c) *Increasing Awareness of Skills Opportunities*

☐ **Excellence Through People** ☐ **STEPS** (Science, Technology & Engineering Programme for Schools)

Please expand on your answers in the space below

d) *Support Under the National Development Plan 2000 – 2006*

☐ **Support aimed at promoting *Employability* and Social Inclusion**

☐ **Management Training and *Entrepreneurship* Skills Support**

☐ **Support aimed at promoting *Adaptability* and Lifelong Learning**

☐ **Support aimed at promoting *Equality* for disabled and other disadvantaged persons**

Please expand on your answers in the space below

e) *Other Support*

☐ **The Funding for Industry (FOI) Initiative – Non-Competitive Strand**

☐ **The Mentor Network** (Enterprise Ireland) ☐ **Export Orientation Programme** (Enterprise Ireland)

☐ **National Traineeship Programme** (FAS / Enterprise Ireland) ☐ **Socrates Programme**

☐ **Wider Horizons Training Programme** ☐ **Management Development Grants** (Enterprise Ireland)

☐ **Leonardo da Vinci Training Programme** ☐ **Measures to increase the flexibility of courses**

☐ **Financial or other support for equipment renewal** ☐ **Support for In-Company Training**

☐ **Other** (please specify and expand) _____

Please expand on your answers in the space below

D4. In your opinion, what contribution have Government interventions made, to date, to the provision of employee training and development in the Technology sector?

(please tick one only)

☐ **A Very Significant Contribution** ☐ **A Moderately Significant Contribution**

☐ **A Small Contribution** ☐ **Not a Very Significant Contribution**

D5. Please indicate below what you believe to be the main factor deterring your company from taking advantage of Government support mechanisms.

D6. What measures have been adopted by your company to improve the flexibility and relevance of training provision?

☐ **Modular Programme Structures** ☐ **Accelerated Training Programmes**

☐ **Accreditation of Prior Learning/Experience**

☐ **Multi-Skilling/Conversion Programmes**

☐ **Other** (please specify) _____

D7. Does your company cooperate with education and training providers (such as Universities or Institutes of Technology) in relation to any of the following?
(tick as many as appropriate)

☐ **Design of Course Materials**

☐ **Delivery of Course Materials**

Please expand on your answers in the space below

D8. Does your company cooperate with education and training providers in the form of: *(tick as many as appropriate)*

☐ **Company-Sponsored Training**

☐ **Company-Based Training**

Please expand on your answers in the space below

D9. Does your company pool resources with education and training providers?

(tick as many as appropriate)

- ☐ **Physical Resources (e.g. training space/facilities) are Shared**
- ☐ **Human/Intellectual Resources (e.g. Staff or Students) are Shared**

Please expand on your answers in the space below

SECTION E - COMMENTS

E1. Do you have any further comments that you would like to make in relation to this survey, to training and development in the Irish Technology sector, or to the training and development practices of your company?

Thank you for taking time to complete the survey
Please remember to return the postcard that was enclosed with the mailing
This will let us know that you have completed the survey