CHAPTER 2

REVIEW OF LITERATURE

2.1 INTRODUCTION

Technical training of employees has become one of the major activities in modern industries in India. In the business environment, which has undergone globalization, employee education results in giving an organization competitive advantage. Rapid growth in technology and competition has given continuous learning a strategic importance. Training forms the backbone of the implementation of TQM.

In a rapidly changing society, employee training and development helps in maintaining a valuable and knowledgeable work force. Every organization needs to have well-trained and experienced people to perform their duties. As the job becomes more complex, the importance of employee development also increases.

Stata (1989) observed that the rate at which individuals and organizations learn may become the only sustainable competitive advantage, especially in knowledge-intensive industries.

Hayes and Wheelwright (1984) introduced the term ‘world class manufacturing’ (WCM), and described this as a set of practices, including quality management, continuous improvement, training and investment in technology. The implementation of these “best practices” would lead to
superior performance (Flynn et al 1999). According to Schonberger (1986), WCM means continual and rapid improvement in all areas of the company, and training is the catalyst.

Technical training is important for three key reasons:

1. Technical training has a significant economic impact on employers.
2. It accounts for a sizable percentage of all training offered in the industries.
3. Its importance is growing as organizations scramble to find, keep and leverage talent.

Ashmore (1994) has emphasized the necessity for practical and pragmatic approach towards training throughout UK so that their industries will not lose out to other competing countries in Europe. Companies are finding it increasingly hard to escape the growing training pressure (Forrier and Sels 2003).

The term on the job training (OJT) appears consistently in the Japanese orientation schedules. On the personal front, the new recruits will live together, play together, compare notes, help each other, and form a cohort, a factor which will prove to be most important throughout their career. When quality, production or design problems occur in the future, such networks will greatly assist in the coping with the human dimensions. Personal goals, insights, ambitions and relationships are all part of the corporate concern during the critical period of orientation (Brooke 2003).
McLagan (1989) in his report confirmed the increasing strength of the link between the three classic elements of human resource development – individual career development, organizational development and training. There is extensive evidence that investment in employees’ training enhances the human capital of the organization, which later results in a positive relationship between employee training and organizational performance (Delaney and Huselid 1996, Koch and McGrath 1996).

While arguing for the increasing importance of persistent deployment and continuous training, reference is made to a global increase in the required level of qualifications, as well as those qualifications becoming ever more quickly outdated (Mondy et al 1998).

In Japan, training continues during the whole career of the individual, through the management ranks and, therefore, human resource development remains unbroken. Japan’s main strengths are in its very effective educational system, the approach to training and the role of managers (Lorriman 1995).

Education and training provides the groundwork for social subsystem adjustments and must be customized timely (McKenna 1993). Allen-Bradley, a subsidiary of Rockwell International Corporation, believes training is so critical that it created, with the help of the Milwaukee School of Engineering, a novel educational partnership. This programme teaches basic mathematics skills and familiarizes employees with circuit technology. Other firms are just as serious about training. For example, Exxon Chemical Company invests 20 days annually for employee training and education.

Organizations are recognizing both the importance of training in improving performance and productivity and the significant investments of
time and money that are being devoted to employee training (Burrow and Berardinelli 2003). Organization decision-makers and training professionals want to be sure that training is accomplishing the intended purposes while using resources as efficiently as possible (Pershing and Pershing 2001).

With the cost of training rising rapidly and a high level of employee skill and productivity essential to maintain profitability and a business’ competitive position, questions about training effectiveness are no longer focused exclusively on the perceptions of trainees but are directed at factors such as “did employee performance improve as a result of training?” and “how did training contribute to achieving critical organization goals?” (Sadler-Smith et al 1999, Phillips 1997, 1998).

In the past decade, training has seen an increasing criticism in terms of relevance to key business processes and outcomes. It has been suggested that unless training is targeted at results that make a difference in measures that are significant to the organization, it will not be valued and valuable. Therefore, training professionals have been challenged to document the results of training, using organizational impact measures. Commonly identified measures of organizational impacts are customer satisfaction, quality, productivity, return on investment (ROI), and market share.


The one that Kirkpatrick developed is called the ‘Model of Four Levels’. This is the most widely used by organizations and the most widely referenced in studies about this subject. This model includes four levels that evaluate respectively four aspects of training. The first level measures
workers’ opinion and the degree of satisfaction with the training activity (Kirkpatrick 1998). This is the most frequently used type of evaluation due to the ease of performance and the lack of experience in the assessment of other levels (Plant and Ryan 1992, Tannenbaum and Woods 1992, Alliger et al 1997, Nelson and Dailey 1998).

The second level corresponds to learning evaluation. The third level evaluates behaviour, focusing on the changes observed in performance after undergoing training activities. The fourth and last level evaluates the effects of training on business results: productivity increase and cost reduction.

The fourth level is the most significant from the organization’s point of view, since it checks whether training has fulfilled its goals and whether organizational needs have been covered. Cascio (1989) and Bee and Bee (1997) also recommend the evaluation of the impact of training on business results since training is considered an investment and, therefore, the company must check that the expected return surpasses the minimum necessary to justify training investment.

Despite this fact, very few companies assess this fourth level due to the difficulty and high costs of collecting and interpreting data at this level and the lack of clear and direct methods for measurement (Plant and Ryan 1992, Shelton and Alliger 1993). Even Kirkpatrick (1998) highlighted the complexity of training evaluation at the fourth level, but did not provide techniques for its performance. He suggested going down one or two levels in order to evaluate changes in behaviour, learning or both. He also proposed using a positive result from satisfaction questionnaires as a basis.

Some authors divide the Kirkpatrick’s fourth level into two different ones, proposing models with five evaluation levels. Hamblin’s
model (1974) suggested a fourth level named ‘organization’, which tries to identify those improvements in terms of productivity, quality or employees’ moral that are due to training. The fifth level, ‘ultimate value’, would be measured as the effect of training on overall organizational performance in terms of profitability, survival or growth. Kaufman and Keller (1994) also described a five-level model. Their fourth level evaluated the contribution of training to the benefits achieved by the company, and the fifth evaluates the impact on society.

Phillips’ model (1997) had five levels in which the fourth level was measured results achieved by the organization like quality or customer satisfaction. The fifth compared costs and benefits.

Green (1997) observed that training might bring advantages to firms, producing, for example, a more motivated and competent workforce, manifest in such indicators of workforce performance as reduced absenteeism, lower wastage, increased productivity, etc.

According to Galagan (1990), a quality production process that produces quality products or services depends on a quality workforce. He reported that 20 per cent of the revenues of a manufacturing company were lost by not doing things in a quality way or conforming to customer requirements. According to him Xerox was spending 2.5 to 3 per cent of its revenue on training each year.

Major investments in human capital, both in the form of education and workforce training and in the form of research and development activities, appear to be an increasingly indispensable condition for enabling firms to move towards new markets and up-scale market segments that yield
higher economic returns than standardized mass-commodity markets (Buechtemann and Soloff 1994).

In an era of rapid high-technology changes, all indicators show that the move of technological innovation will continue to accelerate in the future (Adler 1991, Pulakos et al 2000, Quiñones 1997). In an environment of rapid change, it is clear that an individual must be able to adapt to meet new challenges. That is, changing technologies continue to alter the nature of work tasks, requiring employees to learn new knowledge and skills to perform their jobs. Training is one of the crucial strategies for organizations to assist employees to gain those necessary knowledge and skills needed to meet the challenges (Goldstein and Gilliam 1990, Rosow and Zager 1988).) More recent studies indicated that today's organizations will face two oncoming trends, the increasing age of the workforce and the increasing introduction of new technologies, and suggested that training is especially critical, as the workplace introduces further new technologies, such as web-based operation, computerized intelligent systems, and other task technologies (Colquitt et al 2000, Howard 1995, Quiñones 1997).

Ongoing education and training is an effective means of overcoming cultural barriers of advanced manufacturing technology (AMT). However, management often grossly underestimates the cost and time involved in educating and training workers. Education re-orienters employees towards required organizational restructuring by motivating employees to be committed to change. Education accomplishes its objectives by openly and honestly addressing the issues of job security, job redesign and job position. Training provides cognitive, cross-functional, evolutionary learning of procedural and functional knowledge of AMT (Kramer, 1992). Properly educating and training employees in it, creates a competitive advantage.
Measuring the success of operational delivery is the task of the next phase – post-audit feedback.

2.2 SUPERVISOR

Supervisors are in an important position to influence individual and collective tacit knowledge sharing in teams, and thus overall organizational performance. Often supervisors are also called line managers in literature. The main strategic advantage which line managers possess in comparison to senior managers is of being closer to the daily operations and customers. This gives line managers unique knowledge concerning organizational realities, which can inform their understanding of the important issues for implementing strategic choices through people. Supervisors are required to “productively manage the business and continuously be looking for opportunities for quality improvement” (Bunning 1996).

Previously seen as a “super technician”, the supervisor now began to be required to do fewer and fewer technical tasks. Rather, he was required to become increasingly involved in more broad-based areas, such as production planning, resolving customer complaints, process improvement, cost-cutting measures and manpower development, among other areas (Bunning, 1997).

2.3 EFFECT ON THE EMPLOYEE

The learning process must be seen as part of people’s jobs and management must see training as a valuable part of employees’ work. Organizations that successfully implement change understand that their most important resource is people. If organizations fail to empower their employees they will continue to suffer from growing levels of operator dissatisfaction
with a consequent loss in productivity. The process of implementing change in an organization’s culture and ensuring that employees are multi skilled is complex and difficult. It is easier to put up barriers than to overcome them, hence more difficult to allow workers to use new skills than it is to restrict their use. Organizations which invest time and money in effective training will reap rich rewards in the long term. However, companies which invest in training need to be aware that they will only benefit if training meets the needs of the organization and employees are encouraged to use the skills they acquire. For training to be effective it must be part of an overall human resource development plan and of strategic importance to the organization (Hyland et al 1998).

**Flexibility:** If the environment changes rapidly, for example, changes in employee knowledge, then skills and abilities tend to become more urgent. As the characteristics of the future environment become harder to predict, flexibility in terms of knowledge, skills and abilities becomes more of an asset (Kane 1991).

Training will play a critical role in increasing workers’ adaptability and flexibility which employers have found is becoming increasingly important (Tai 2006). Thus, it is important for an organization to maintain a necessary competence in its employees through adequate training.

The need for changes in knowledge, skills and abilities is frequently asserted by business, government and union leaders. In their review article, Stewart and Spatz (1993) suggested that an increase in workforce flexibility had become a major objective.

**Attitude:** A study by Johnson and Welsh (1999) showed that a relatively small investment in training can have significant effects in the
ability of the leaders and supervisors to better manage their workforce through the use of positive reinforcement, such as praise and recognition.

Misumi (1993) after analysing the results of a number of international studies concluded that the unique national differences in work attitudes are not due to social values but to the differences in training and organizational cultures.

**Skill improvement:** In many countries there has been a gradual reduction in the number of mass production jobs with increasing job complexity and skill requirements now being characteristic of all employees (Westhead 1998).

Technological change is obviously still a very important issue, but it is now widely recognized that the mastery of technological change and the effective implementation of new technologies requires flexible organizations and skilled and motivated personnel. What differentiates enterprises in the end is not so much technology, but the human resources that enterprises have at their disposal and the way these resources are utilized (Dankbaar1999).

New technologies often require new or other skills within the same job. Another important tendency in society that reshapes skill requirements is the increase in international competition caused by the entry of new firms on national markets or increased competition on foreign markets (Watkins and Marsick 1993). Education and training support is now one of the leading measures to increase the skill level of the workforce (Blundell et al 1996).

Training for new work structures in production on the one hand aims to improve the skill level of the workforce by emphasizing the need for every worker to master several skills (polyvalence) and to cope with new
process and product technologies. On the other hand, training aims to enable workers to function as team members and to contribute and adapt to new forms of leadership. Finally, training also aims to enable workers to understand and analyse the process in which they are working and to develop and implement ideas for improvement (Dankbaar 1999).

**Skill obsolescence:** A key result from the analysis is that job-specific skills obsolescence is fostered by the degree of technological and organizational developments. Demographic tendencies also matter: a worker with a larger age gap runs a higher risk of job-specific skills obsolescence. Furthermore, the analyses show that the risk of job-specific skills obsolescence is significantly related to a number of developments that take place in society. Three of the four distinguished developments increase the probability of this type of skills obsolescence. These are technological, organizational and demographic developments (Loof and Heshmati 2002).

The “functional flexibility”, or the flexibility of employees to perform tasks that are not part of their job, can counter skills obsolescence by making workers more familiar with continuing change (Rajan 1996).

**Confidence:** 61 per cent of respondents of a study by Devins (2004) reported that they were more confident at work consequential of the training received.

**Motivation:** Training is given to the employees to improve employee motivation (Heyes and Stuart 1995).

**Commitment:** Putterill and Rohrer (1995) summarised commitment as the desire of employees to remain in the organization, exerting work effort while accepting organizational goals.
Involvement: Involvement as the outcome of training has been established in the empirical research work by Delaney and Huselid (1996).


Multi skilled employee: One of the key challenges facing European manufacturing organizations is now believed to consist of ‘multi-skilling’ their work-forces in response to the changing competitive conditions of recent decades favouring decentralized decision-making, smaller business units and continuous innovation Scott and Cockrill (2004). Rolfe et al (1994) suggested that the so called intermediate level of skilled occupations is a key site for such transitions, with pivotal implications for overall business performance and success. The intermediate occupational stratum consists essentially of supervisory and skilled technical positions.

2.4 EFFECT ON THE WORK

Modernization of work: The industry is changing rapidly. The changes affect both the internal organization of enterprises and what can be called their “external” organization, i.e. the competitive structure of the industry, the relations with suppliers, and the organization of distribution. In order to realize these structural changes, it will be necessary to invest in training in new skills, new attitudes, new forms of co-operation, and a new entrepreneurial culture. It is also becoming increasingly clear that this will not be a one-time exercise. Although there is currently a need for additional training to support and facilitate the restructuring process in industry, there
will be a continuous need for further training in the new work structures. Continuing training is a precondition and a consequence of continuous improvement. The industry of the future will be much more training-intensive than the industry of the past (Dankbaar1999).

**Improvement in performance:** Costea (2004) concluded that the organizational performance was linked with the way human resources are managed, which in turn is directly related to the challenges identified. According to the analysis, it could be derived that training and development, employee relations, and efficiency and flexibility are going to be the primary challenges in the next three years at least among Southern EU countries.

**Career improvement:** According to Kane, Callender and Davis (1994) Career development was a major focus and should attempt to move employees through a planned career path to achieve the desired future staffing profile. The individual development strategy also adopted a longer-term view, but was much less centralized and controlled. It was driven by the assumption that helping individuals develop towards their maximum potential would benefit the organization in the long term through increase in employee motivation, job satisfaction, flexibility, creativity and commitment. Employees were also seen as closer to the customer and aware of emerging needs much sooner than are top management, so that organizational strategies may emerge in a “bottom up” manner rather than being imposed from the top. Because of this focus on individual development, career development was seen as a major concern of every supervisor and every individual may well have a unique career plan. Both the individual development and the human resource planning strategies are suitable in competitive situations where the environment is changing rapidly and associated changes in employee knowledge, skills and abilities are needed.
**Work process improvement:** Little work has examined the extent to which trainees effectively apply the knowledge, skills and attitudes acquired in a training context once they are back in the job (Tannenbaum and Yukl 1992, Tracey et al 1995). This is not only an essential criterion against which training effectiveness should be evaluated (Kirkpatrick 1967), but also relates to the concern raised by Patrick (1992), that much of the training conducted within organizations fail to transfer to the work setting. Clearly the success with which individuals apply new skills in the workplace is of importance both to those attending training programmes and to employing organizations who continue to invest heavily in such development activities.

**Empowerment:** Siegel et al (1997) conducted a survey of technology adoption and human resource management strategies in industries adopting advanced manufacturing technologies. The analysis revealed that training is the most prevalent form of empowerment.

Effective person-job match, a good training program, and more opportunities for feedback built into the job are but three ways in which employers can contribute to this important aspect of empowerment (Hackman and Oldham 1980).

**Team work:** Implementation of all variants of teamwork involves considerable training input. Team workers need to be extensively trained to cover jobs other than their own and, in the more autonomous teams, to take on more highly skilled tasks. Team leaders and supervisors need to be trained in their new roles as facilitators to the teams (Smith et al 2003).

Research by Banker et al (1996) has showed that training was a key ingredient for the success and longevity of teams. Teams that did not undergo
extensive training tend not to work well and to disintegrate in a short period of time.

Human Resources Management (HRM) practices such as training and organizational environment can enhance teamwork among employees (Mishra and Mishra 1994, Barney and Wright 1998).

Experience with teamwork has brought a new issue to the fore: the need for a new kind of leadership, especially at what is called the middle-management level. If workers are to work in self-regulating groups; if they are to be encouraged to be creative and make suggestions for technical and organizational improvements; if they are treated as experts instead of “hands”, then they must receive the necessary freedom of action, the time and space to take on such responsibilities. In other words: they must be “empowered” and this requires that managers learn to share and delegate power, to trust and coach their personnel, instead of simply giving orders. The capacity of middle management to adopt such attitudes has been overestimated. There is widespread agreement now, that this will require a considerable (re)training effort and, in quite a few cases, people will have to be replaced because they are unable to take on the new role (Dankbaar 1999).

**Wage:** From the perspective of the individual participant in the training process, research attempting to estimate the benefits which accrue from this activity has tended to focus upon the wage pay-offs (Arulampalam et al 1997, Blundell et al 1999, Booth 1991). Concerning wages of employees in New Jersey, Krueger and Rouse (1998) estimate the return of participation in a training programme as barely 5 per cent.

**Quality improvement:** According to Oakland (1989) training is the single most important factor in actually improving quality. Cocheu (1989)
advocates this and highlights training as being a vital component of a quality improvement strategy in any organization. Training for quality helps all employees to understand why quality is important and to understand the role they have to play in the achievement of quality (Cocheu 1989, 1992, Bolduc and DeGolier 1988).

Quality products and services depend on a quality workforce. According to Kaeter (1991) training has an influence on improvements in quality. A commitment to quality training by top management demonstrates to employees that they need to embrace changes if the company is going to keep up with increasing competition and rising customer expectation (Brecka and Rubach, 1995). Many authors who have written on training for quality emphasized the importance of training all employees within the organization. The literature does not make a distinction among employees in relation to the receipt of training.

Most companies embark on a quality training programme to remain competitive. According to Caudron (1991), Xerox embarked on a quality improvement programme when its market share severely dropped due to Japanese competition. Xerox was aware that its programme was successful when customer satisfaction increased by 40 per cent and complaints decreased by 60 per cent.

Senior management must develop the training strategy which provides the direction and structure people need in order to focus their efforts on continuous improvement (Cothran and Kaeter, 1992). Training of employees for quality is the key differentiator between a quality and a nonquality organization. Quality personalises quality to the employees of the organization and it provides direction to the organization in the transition to a "quality company". Training takes a lead role in quality improvement and is
the intervention that gives people the vision of what the organization needs to become and the skills and the knowledge they need to have to make that transition (Cothran and Kaeter 1992).

Quality as the outcome of training has been established in the empirical research works by Arthur (1994), Holzer et al (1993), Ichniowski et al (1997), and Murray and Raffaele (1997). Training is the critical variable in the success or failure of a company’s quality improvement programme. It enables a company’s workforce to acquire the skills needed to improve and maintain the quality production process (Motwani et al 1994).

2.5 EFFECT ON THE ORGANIZATION

Bassi et al (1996) maintained that firms are transforming themselves into learning organizations that can operate in high performance work systems. After studying the success factors for advanced manufacturing systems, Mize (1987) indicated that between 25 percent and 40 per cent of the total cost of a project would be spent on education and training. Hyland et al (1998), in their study of Australian companies, observed that the companies, particularly in the manufacturing sector, have undergone downsizing, restructuring and reorganization in the previous ten years. Firms needed to ensure that their remaining employees are multi-skilled and able to adapt and respond to ongoing changes. Their study demonstrated the benefits not only to individuals, but to the organization, of adopting an active learning process.

Removing improvement barriers: Many manufacturing firms experience resistance whenever a new technology is introduced. Continuing education and training help to ease the resistance to AMT adoption (Beatty and Gordon 1988).
Cultural improvement: The full benefits of training will only be realized if there is an appropriate organizational culture (Hyland et al 1998). Interviews indicate that the success of the training programme, combined with other tactics, has seen real cultural change taking pace in the organization, and workers believe they have been empowered.

Cothran and Kaeter (1992) argue that a training programme has to relate to the corporate culture so it is like a part of the company, not another trend or fad that the company is trying out for awhile. The training must fit the new corporate culture and employees must believe that management is serious about the new culture.

Profitability: Profitability as the outcome of training has been established in the empirical research work by Delery and Doty (1996). Garavan et al (1995) stress that since the prime objective of any organization is to sustain long-term profitability through high levels of productivity and competitiveness, the training and development of human resources must receive due recognition and status as a critical strategic activity. Training policies and plans are seen as fundamental in highlighting the inter-relationship between organizational objectives and training.

The review paper by Mital et al (1999) shows that there is a dire need to train workers in manufacturing organizations and thereby improve the overall effectiveness and efficiency of such organizations. As technology changes, so do the skills required by the workers. In order to compete successfully in the global market, manufacturing organizations must aim at training workers in skills necessary to produce quality goods. Michalski and Cousins (2000) have summarised that the training evaluation practitioners have long sought to isolate benefits of training in terms of organizational effectiveness and business results. A study by Swierczek and Dhakal (2004)
on the implementation of learning strategies in developing countries in manufacturing industries showed that there is improvement in performance after conducting training programmes.

Gordon and Sohal (2001) conducted a study and identified the manufacturing practices which distinguished the “most successful” plants from the “least successful” plants. Based on responses from a large number of Canadian and Australian manufacturing plants they concluded that the greater emphasis on training at the “most successful” plants indicated a desire to upgrade the skills of individual workers to achieve company objectives. They also observed that the managers at these “most successful” plants actually implemented practices which indicated a desire to maximise their employees' potential.

Costea (2004) concluded that the organizational performance is linked with the way human resources are managed, which in turn is directly related to the challenges identified. According to the analysis, it could be derived that training and development, employee relations, and efficiency and flexibility are going to be the primary challenges in the next three years at least among Southern EU countries.

Overall, training leads to acquiring new skills and/or improvements in existing skills (Carnevale and Goldstein, 1990). These in turn, lead to two distinct economic benefits: (1) improvements in individual choices and earnings, and (2) cost savings for the organization. Economic benefits of training for organizations include significant improvements in productivity (through improvements in quality, reduction in scrap and waste, reduction in throughput time, greater flexibility to respond to needs, etc.), and a competitive advantage of employers and the nation as a whole.
Bunning (1997) has reported that small groups of four to eight supervisors completed a six-month training programme during which they completed a process improvement project within their work area. The work reported the outcomes which showed high satisfaction with the training, very high attainment of National Vocational Qualifications and the contribution of at least £1.5 million to the business. The key to the successful change was the involvement of the group of front-line leaders who now held the titles of supervisors and team leaders. The supervisor typically was assisted by two assistants or team leaders who managed a work group of up to 25 employees. The group worked in a rotating shift system in a heavy manufacturing process that ran non-stop, 24 hours a day, 365 days a year.

Long-term investment in training and staff development (TSD) was felt essential to produce the highly skilled and flexible employees who will be needed by the Australian manufacturing enterprises which were facing enormous pressures in terms of international competition and turbulent external environments (Kane et al., 1994). Their article shed more light on the role TSD played by reporting the results of a survey to which senior managers, in 151 private sector manufacturing enterprises responded. The article focused on the external environment facing these organizations; their internal needs for changes and greater flexibility in employee knowledge and skills; and the extent to which they have responded by adopting a strategic approach to TSD. Governments, unions and employer bodies all appear to agree that Australia's future economic prosperity will be at least partially dependent on the level of knowledge and skills of its workforce. The cost/benefits strategy is closest to the traditional view of training to improve work performance. It emphasized that the direct, measurable benefits of training should be demonstrated to be greater than the total cost of providing such training. These benefits may include savings through reduction in downtime, re-work, accidents, etc., or in profits through increases in
productivity, sales, etc. The focus was very much on the present, with future career development generally being seen as a concern best left to the individual with perhaps some informal encouragement by their supervisor. Regalbuto (1992) indicates that there is a belief that investments in training and development have a direct effect on an organization’s bottom line, but very few companies actually have a system to measure the results.

New technology: Worker re-training needs are most understood in industries where technology has changed dramatically, like the aerospace industry (Deutsch 1987). Anticipating change is part of ongoing corporate planning and the best use of new technology is a high priority in the scheme to remain competitive. Involving the work force in this planning and gearing up in advance for re-training have been built into the arrangements at Boeing Aircraft Company and the International Association of Machinists and Aerospace Workers.

Continual and rapid improvement requires education and training (Hayes and Jaikumar 1988). Previously, training consisted of one-time investment that concentrated on shallow process knowledge designed to provide workers with skills required to perform isolated tasks; education for practical purposes was non-existent. Automating routine tasks effectively increases the complexity of the remaining jobs. Thus, AMT requires greater technical, conceptual, analytical and problem-solving skills. In fact, the most important variable cost associated with AMT may well be training and education costs. However, these costs are well spent since education and training provides direction so that employees do not drift into pursuits counter to organizational goals.

Knowledge conquers fear. Education and training provide employees with the knowledge of how to learn to operate within an AMT
environment. With AMT, employee skills move from being behavioural and experienced based to attitudinal, cognitive, and social (Adler 1988).

**Competitiveness of the organization:** Gowen and Tallon (2003) determined that as the rate of environmental change increases, so does the need for the training and re-training of the workforce. Best practice firms treat training and human resource development as a strategic need, not as a discretionary budget item whose funding may be reduced in off years. Change is becoming routine, stated in their study, and the best organizations emphasize training as a means to remain competitive, be prepared for future uncertainty and new developments, and to speed the payback period for planned changes.

**Continuous improvement:** Continuous improvement is an effort that impacts on the whole enterprise and not just on production. Nevertheless, most activities under this title have focused on production and sometimes involve considerable training. Often, this training is part of the general training for teams. Training for continuous improvement is specific, where it provides insight in the workings of specific processes. It is generic, where it provides workers with tools for the analysis of problems, instills different attitudes towards the organization, and helps people to deal with, and even support, continuous change (Dankbaar 1999).

For most firms the change to a learning organization requires substantial changes in organizational culture. Buhler (1996) stated that to survive in the 1990s and prepare for the challenge of the twenty-first century businesses must change the fundamental ways they operate, and these changes must affect the culture of the organization. Achieving sustainable organizational change is extremely difficult and many organizations fail to reach their goals at the operational level (Galpin 1996). This failure usually
occurs at the implementation stage because employees and production managers are too busy getting the job done, making sure products are ready on time, and dealing with day-to-day problems. Effective implementation needs to change the way work is done through the organization’s operations, systems and procedures; and this is linked to the organization’s culture (Galpin 1996).

Restructuring and downsizing have meant there are fewer people doing that as much if not more than before. To survive with fewer people Buhler (1996) indicated that organizations must utilize teams, and they must do this across functions to reduce costs, improve quality and introduce new processes. Forming teams is more than simply throwing a group of people together and telling them they are a team; they need to understand what is required of them and how they are expected to perform in the team. Organizations need to ensure that employees have the training necessary to function as part of a team, and have acquired the skills they need to carry out all aspects of their jobs.

**Productivity:** Plants which allocate greater resources for the training of the workforce have been shown to have increased productivity (Garvin 1984, Womack et al 1990, Sakakibara et al 1993, and Flynn et al 1994).

Barrett and O’Connell (2001) studied training activities in Ireland and showed that although general training had a statistically positive effect on productivity growth, no such effect was observable for specific training.

According to Beasley and Zuercher (1991), training programmes lead to productivity improvement. The impact areas of training are production
process efficiency, material expenses, inventory levels, materials and work-in-process.

Black and Lynch (1996) discuss a range of inquiries into the effects of training on output and conclude that incomplete or inaccurate data are responsible for failures to give a sound view of the contribution of training to productivity. They conclude that the number of workers trained has no apparent impact on productivity, although point estimates suggest that current training, in period t, lowers productivity, while past training, in t - 2 or t - 3, raises current productivity. New tests with US data (Black and Lynch 2000) suggest that training has a positive effect on productivity and earnings, but the results are still not convincing. They suspect that their estimates, which concern manufacturing only, may underestimate human capital effects due to a lack of variation within this industry. Including more industries may solve this problem. Unfortunately, the data used in their most recent paper are not comparable with earlier data, making an extension of the time range impossible.


The single most important source of Japanese productivity growth remains as the emphasis on learning and training (Grayson and O’Dell 1988).

Training, incentives, organizational commitment and customer orientation have a direct causal impact on employee productivity (Paul and Anantharaman 2003). The fact that training enhances employee productivity
is consistent with prior studies (Bartel 1994, Huselid 1995, Black and Lynch 1996).

**Change management:** The realities of workplace restructuring are being felt in many companies. Common results of such restructuring are role changes. This can lead to personnel being required to move from roles where they have developed substantial expertise into new roles where they are basically novices (Dreyfus 1982). Workplace restructuring implies people changing roles, leading to the deskilling of people who must learn their way back to competence (Houldsworth et al 1997). These changes necessitate intense learning events for the personnel involved as they grow back to competence and beyond. Those managers who understand this change as a learning event seek to provide professional development and training programmes for those who have been displaced (Swieringa and Wierdsma 1992).

Chang (1989) noted that an organization can never realize change by simply hiring engineers and technicians with new technical expertise from outside. A long-term educational and training program should be designed and implemented to train the employees so that reallocation of the human resource for jobs requiring advanced technical expertise can be made possible.

The research by Smith and Hayton (1999) made three key observations that relate to the development of employer training in Australian enterprises at that time. First, workplace change emerged as a key driver for employer training in both the survey and the case studies. Thus the research confirmed the growing strength of the link between training and organization development. Second, the research found that individuals played an increasingly important role in their access to training from their employers. Enterprises reported that training needs were increasingly fragmented to the
individual level and that they were progressively abandoning the traditional approach to training programmes that saw large groups of employees receive the same training regardless of individual need.

Change is an essential business trait. Manufacturing, in particular, is transforming at an unprecedented pace. Profound changes driven by increasingly unpredictable, dynamic and fiercely competitive markets, rapidly expanding manufacturing capabilities worldwide, increasingly available inexpensive microelectronics-based technologies and development of complementary and overlapping organizational practices greatly complicate business (Doll and Vonderembse 1991, Mody 1992).

Any improvement involves change, and training plays an important part in preparing employees for the change process. Several authors argue that the process used to prepare employees for change can be as crucial as the change itself (Ferrini-Mundy et al 1990, Cocheu 1992, Sutton 1992). Kaeter (1992) stated that a culture change causes a great deal of fear and anxiety. Because employees have a fear of the unknown, they will resist the effort to change and cling to the old way of doing things. They can only overcome this fear by being made aware of how the change will benefit them and by being trained properly to fit into the new culture.

Change is a major issue, affecting all organizations, groups and individuals. There are numerous sources of change, and extensive guidance on how to manage change. Yet change remains a difficult area for those managing it and those affected by it. Changes in manufacturing management generally throughout the 1980s and 1990s, provided both theoretical and practical ways forward for those companies wishing to improve. The benefits of increased communications, team working, multi-skilling, total quality
management, etc. are increasingly espoused in a vast literature, prompting companies to consider changes (Staniforth 1996).

The rapid changes are due to the influence of the Japanese car manufacturers, especially Toyota, who have developed some organizational innovations and management techniques, which have enabled them to lead the global industry in productivity, quality and flexibility. Today, it is widely recognized that these organizational innovations, more than any other specific technological advantage, were responsible for the great competitive success of Japanese industries during the past decades. All European car manufacturers and many suppliers are currently undertaking efforts to implement “Japanese lessons” in one way or another. Just-in-time logistics, total quality, total productive maintenance, quality circles, kaizen or continuous improvement, simultaneous engineering, co-makership, and lean production are only a selection of the many names under which these Japanese innovations are being taught.

Business Needs: The research by Smith et al (2003), built on the model of employer training, investigated in depth the relationship between employer training and organizational change in Australian enterprises. In modelling the strength of the impact of various enterprise level factors on the implementation of training, the survey clearly showed that the link to business strategy was the most influential factor.

Innovation: Returns on investment in training may be found in many forms (Dawe 2003). These may include higher levels of value-added activities as a result of greater levels of employee skills, reduced overhead costs to the firm (efficiency of resources or fewer workers compensation claims) and greater ability to innovate in terms of adopting new technology and introducing better work processes. Training may also provide benefits
without direct financial benefits, for example, providing a safer workplace, increasing flexibility amongst employees who can perform a range of tasks, increasing staff morale and confidence, or achieving quality assurance rating.

2.6 FINDINGS FROM THE LITERATURE REVIEW

The literature on the effects of training in manufacturing companies has been reviewed. Little work has examined the extent to which trainees effectively apply the knowledge, skills and attitudes acquired in a training context once they are back in the job (Tannenbaum and Yukl 1992, Tracey et al 1995). Clearly, the success with which individuals apply new skills in the workplace is of importance both to those attending training programmes and to employing organizations who continue to invest heavily in such developmental activities. Several researchers have studied the effects of training focusing on only a few variables like increase in confidence (Devins 2004), empowerment (Siegel et al 1997), success of teams (Banker et al 1996), return on participation in a training programme (Krueger and Rouse 1998), competitiveness of the organization, (Caudron 1991), improvement in performance (Swierczek and Dhakal 2004), achievement of company objectives (Gordon and Sohal 2001) and productivity (Denison 1984, Carnevale and Goldstein 1990). However, there is a need for a comprehensive study on the effect of technical training. A study on the effects of technical training is needed with particular reference to the automobile manufacturing companies because they spend a considerable amount of time and money to train their employees. They want to keep and leverage talent in order not to lose out to the competition.