CHAPTER 5

MAINTAINING THE TOTAL QUALITY MANAGEMENT

SYSTEM

5.1   Maintaining Total Quality Management

In the previous chapter it was described how a company should go about implementing a system of Total Quality Management (TQM). This chapter will discuss what the critical success factors are for maintaining this system.

Once a company has gone through the process of installing a TQM system, it cannot sit back and expect the system to keep on achieving results. As with any system, problems will occur from time to time and momentum will be lost. These problems must be analysed and adjustments made to the system. If not, the system will run the risk of becoming a paper generator, producing various reports that are of little use because they were drawn up haphazardly and infrequently. People's attention to detail on quality matters will wane as time goes by and with it, their commitment to quality. People may look for any justification to relax on quality issues. Examples may be superiors not attending quality meetings, which will make the employee think that his superiors are not as committed to the process as before and therefore the employee can

also start giving it less attention. Indicators that the system is failing will be seen in the cost of quality rising again as pressure on time and monetary constraints occur. Attendance of quality meetings will decline and less new ideas will be put forward.

There are two requirements in order to ensure the continued success of the Total Quality Management system. These are leadership and management. Leadership involves influencing groups and individuals to do the right things while management, in this context, involves getting them to do things the right way. Leadership involves interpersonal skills while management is more based on technical skills.

5.2   Leadership

Leadership is absolutely crucial to quality improvement. Without it the quality improvement process will be attempted by a group of people with no direction and everyone doing what he thinks is the right thing. Leadership is required to focus the energies of the individuals, thereby creating a team dedicated towards quality improvement. Leadership requires management commitment and is the basis for company wide participation, customer focus and continuous improvement.

Leadership would have been required to implement the TQM system, as discussed in the previous chapter. However, once the system is in place,

further leadership will be required to ensure that it continues to achieve its goals, namely to produce continuous improvement.

According to Hradesky (1995, p. 195) there exists a direct correlation between leadership and the effectiveness of a company's personnel. People should have the authority to make decisions to get their work done properly. Once employees use their leadership authority, they will become role models for other employees. This will lead to continuous motivation for improvement. The ability of leadership to maintain the momentum of the TQM system relies on the ability of the leadership to develop and sustain continued motivation of personnel. Continued motivation is achieved through communication, recognition and rewarding and empowerment.

Effective leadership requires certain characteristics. These are:

- Vision – the ability to conceptualise what is to be achieved and to focus thereon

- Confidence – based on inner strength and the belief in oneself and others to achieve goals

- Risk taking – challenging paradigms, experimenting and exploring options

- Decision making – courage to make the right decisions in difficult situations

- Development of others – patience, decentralising power and sharing responsibility

- Influence on others – inspiring others through energy and enthusiasm

- Communication – clear communication, listening and observing

5.2.1 Motivation through communication

The media, through television, advertisements, etc. is ample proof that people's behaviours and attitudes can be, and is, influenced through communication. This fact would have been realised by any organisation that has implemented a total quality management system. What further has to be realised is that, although good communication is necessary for the implementation process, it is also vital for the maintenance of the system. Without communication, motivation through reinforcement will be impossible. Without communication, feedback regarding problems will be lost and the system will deteriorate. The main functions of communication for quality must be to motivate people to achieve continuous improvement and to facilitate adjustments to the system that might be required to ensure its success.

It is further necessary to keep workers informed regarding changes made by management to the system. As Juran states (1989, p. 314): "We should also

(a) provide means for workers to communicate their views and ideas, and

(b) explain to workers those management actions that on their face value are antagonistic to quality."

5.2.1.1 Types of communication and their use

According to Gerber, Nel and Van Dyk (1987, p. 345) in company communication, "What is important is not what is said, but how it is said".

There are various types of communication. These include verbal communication, written communication, visual communication and examples (Oakland, 1989, p.370).

5.2.1.1.1 Verbal communication

When a manager uses verbal communication to motivate employees, it can be done in various manners. He can have formal or informal conversations with individuals, small groups or large groups. The more people he communicates with, the less two-way communication is likely. When two people have a conversation, they usually readily share

opinions and ideas. Once a group is involved, some people find it difficult to communicate because of fear of humiliation, etc. It also happens that the conversation is hijacked by one or two individuals who are trying to convince everyone of their opinion, causing people to avoid this type of discussion in the future. When a large group of people is involved, the communication usually takes place as a speech or presentation. Although questions might be asked afterwards, this does not allow for much two-way communication.

It is therefore important for a manager to consider the number of people he wishes to involve in verbal communication. In introducing TQM it would have been necessary to start with the whole company in order to introduce them to the concepts involved. Later group discussions would have been held. Conversations with individuals would have been reserved for special situations. Once the TQM system is up and running however, addressing the company as a whole would be reserved for special occasions. Group discussions would be more frequent and regular. Discussions between top management and site management, regarding the quality produced on a construction site, should ideally be held once a month. This type of discussion must not be incorporated with other meetings, e.g. cost report meetings, as this might detract from the importance management is seen to attach to quality.

Group discussions on quality between the people involved in running a project must be held at least once a week. These meetings will be less formal than the monthly meetings, but must not be completely casual. Verbal communication regarding quality between individuals can take on two forms. The first is formal communication where an employee might be required to discuss problems with his performance with his manager. This type of action must be structured towards getting the employee to improve his performance through motivation and not through threat.

The second type of communication between individuals will be informal discussion regarding quality issues. This is probably the most important form of communication for the survival of the TQM system and must be encouraged as far as possible. Any employee must feel comfortable to discuss quality with any other employee, be that his pier or superior. An "open door" attitude must be generated, and employees encouraged to bring suggestions, problems and opportunities to management's attention. The employees must be able to communicate with people on higher levels than their direct supervisors in order to identify problems they may experience with these direct superiors.

Individual conversations between a manager and an employee, to congratulate the employee on good performance, have great impact. It is not practical to give awards and official recognition to every employee for positive behaviour every time, but it is possible for his superior to walk up

to him and give him a pat on the back. The effectiveness of this action must never be underestimated.

Due to its nature, verbal communication has certain requirements for the manager. He needs good individual communication and presentation skills, needs to know the subject and must have credibility with the person or audience.

The directness of the impact of verbal communication is one of its main strengths. It is also useful in getting quick responses and is generally, easier to understand than written communication. It is also not hampered by illiteracy, which is something that has to be kept in mind when dealing with lesser-educated people, as found from time to time in the construction industry. Verbal communication can be used to personalise the quality improvement process.

It is important for managers to prepare for verbal communication. They must work on their presentation and public speaking skills, but also on skills such as effective listening and body language interpretation for times when they are dealing with smaller groups or individuals.

When problem behaviour has been identified, it is important for the manager or supervisor of the person involved to remember that there are certain essentials that have to be kept in mind when addressing the issue

with the employee. The steps taken must never be punitive. The manager must be honest and firm, without humiliating the person in front of other people. The time and place of the meeting must be considered carefully. The aim of the session must be to get the employee to want to do better, not to threaten him into a short-term change in behaviour. It must be remembered that fear generally only stops people from acting incorrectly and does not necessarily motivate them to strive to do better.

5.2.1.1.2   Written communication

Written communication includes reports, newsletters, notices, etc. Written communication is less personal than verbal communication. Different types of written communication will be used in different situations. Reports are formal and will be used mainly in the higher levels of the organisation. It is impractical to expect a foreman to write a report on the effectiveness of the TQM system on a site. He should however, be allowed and even required to give input to his manager when the manager is drafting such a report. Although this input would best be acquired through verbal communication, things like tick-sheets or questionnaires can be used, depending on the level of literacy of the person involved. Formal reports should be tabled at monthly quality meetings held between site management and top management.

Notices and slogans may not have the same impact as verbal communication, but are easier and less time consuming ways of reaching a wider audience. Slogans (which can also be classified as visual communication) on their own must however, never be expected to generate more than fleeting interest. Informative charts on numbers of defects or absenteeism or other issues that effect the cost of quality can be used effectively. These must be made easy to understand and, as with slogans and vision statements, must be placed in the correct areas. The information on these must be accurate and updated regularly. The danger of not updating the information on the charts are that they become like the roadside sign indicating how many motorists were speeding or buckling up: If you see the same statistics that you saw the previous week, the information loses its credibility and therefore its impact. Placement of charts and slogans must receive careful consideration. Informative charts should be placed where the labourer has time to study it, like the designated lunch area. Slogans can be placed throughout the project to act as a reminder of what the company is trying to achieve. Having different slogans and quotes will keep interest higher than repeating only one or two.

Newsletters or company magazines are more informal than the previous forms of written communication. It is up to the employee to read it as and when he wants. It therefore should be adapted to bring the quality message across in a different way. Long lists of statistics will bore

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readers, while highlighting quality effective projects or individuals will have more impact. It can be used to create role models or help re-affirm a manager's commitment towards the quality improvement process by publishing interviews with or articles on these managers.

Newsletters generally only get distributed among salaried staff in the construction company, but thought should be given towards getting it to the general labour, even if this means that some copies get placed at the workers' lunch areas for those who are interested.

When using any form of written communication, it is very important to ensure that the message that is brought across is clear and unambiguous. The grammar must be consistent with the formality of the communication, while consideration must also be given to home language.

A drawback of written communication is that it is restricted in terms of feedback. Written feedback such as a suggestion box does not usually elicit much response, whereas a good verbal communicator would be able to get responses out of virtually any and all employees.

5.2.1.1.3   Visual communication

Visual communication can take the form of posters, films, videos, exhibitions and demonstrations. Posters with slogans can be placed in areas where they will serve as a reminder to the employees of why the quality improvement process is required. Films or videos can be shown to the employees as special training or motivating events. These films should be professionally prepared. Exhibitions and demonstrations can be held from time to time to bring new techniques to the attention of employees or to remind them of the proper methods to be applied.

Most forms of visual communication require simultaneous verbal communication to bring its message across. The main use of visual communication is to enhance training through the use of overhead projectors, slide shows, etc. Simple visual aids like flip charts on which ideas and feedback is recorded can be used to great effect in discussions and meetings.

5.2.1.1.4   The use of examples

Communication through examples takes place when people see how a person goes about his work in such a manner that it is evident that he is committed to the achievement of quality in his work. Showing people how to be more productive through attention to detail, will have a tremendous

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impact on the way they will do their work. The saying goes that "you must practice what you preach" and this is especially true for the manager that wants his personnel to strive towards quality excellence. Personal attitude and attention to quality is very important.

If the contracts manager in a construction company starts putting pressure on his site agent to complete a section of the project within a specific time, without stating that quality must be maintained, he is opening the door for the site agent to believe that quality is less important than time. This perception will quickly be used to justify letting quality slide in the chase for time or financial goals. This perceived change in priorities will spread throughout all levels of management and supervision on site and will require great efforts to correct.

5.2.1.2   Communication with whom?

Not enough emphasis is placed on communication in the construction company. Official communication between top management and middle management is too often restricted to monthly financial meetings, while formal meetings between the different levels of people on a specific project generally tend to be focussed on progress rather than on quality issues. Communication between supervisors and labour regarding quality is generally restricted to verbal rebukes, that quite often resembles verbal

abuse and is usually done in front of other employees. This is absolutely counterproductive to the quality effort and must be avoided at all costs.

Communication must not only take place between managers and workers, but also with the other stakeholders in the quality process i.e. suppliers, subcontractors, unions and clients. Improved communication with suppliers and subcontractors will ensure that the right product of the right quality is delivered or produced on time. Potential problems will be brought to the attention of the main contractor in time for him to assist the supplier or subcontractor in addressing the problem.

Communication with unions, who have a large influence on the South African labour force in general, must receive great attention. According to Humphrey and Hulse (1991, p.32), "If you can include them (Unions) in your planning and organising sessions they are more likely to accept such changes than if you present them with a management decision."

Communication from and with the customer is very important, as it will indicate whether the company is achieving its quality goals. Clear quality expectations from the customer will guide the company when planning and building the product while feedback during the process will help correct errors that might have occurred, timeously. It is essential to get feedback after the contract is complete to ensure that the product is of lasting quality and was not merely dressed up to appear satisfactory.

It is important that communication for quality gets given proper status through formal gatherings where quality is the main discussion point. It is up to top management to set up the required communication system when implementing TQM, and to ensure that the meetings and gatherings required be held after the initial novelty has worn off. Management at all levels must also work at keeping the channels for informal communication open as this is the way through which more suggestions on corrective measures will be generated. Needs must be identified for training people in report writing skills, meeting skills, body language interpretation skills, listening skills and public speaking skills.

5.2.2 Motivation through recognition and reward

Another method of ensuring that employees stay motivated and focussed is through recognition and rewards. Recognising and rewarding people for desired behaviour influences future performance through positive reinforcement.

Recognition is defined as "A reward in the form of an acknowledgement of gratitude perceived as a commendation by the recipient", while a reward is defined as "A gift or prize considered to be of value by the recipient." (Hradesky, 1995, p. 177)

It is a fact that values drive behaviour and behaviour drives performance. To get values from a statement up on the wall to behaviour willingly displayed by the employee can be achieved through the recognition and reward system.

The people administering the recognition and reward system should be representative of all levels of employees in the organisation. As is the case with any system, this system also needs to be adjusted and re-assessed on a regular basis. As the quality culture evolves, so the methods of recognition and type of rewards given must be adjusted. Smaller rewards will reinforce and maintain desired values once the desired performance has been achieved.

Consideration must be given to the type of behaviour that is rewarded. It does not, necessarily, have to be behaviour that has a direct monetary impact. A good example would be giving recognition to a site manager who has sent the most employees on training courses. In direct terms this site manager has spent more money "unproductively" however, he will have helped empower more employees which will have a long-term benefit to the company.

The recognition and reward system must, amongst other things, focus on the following areas:

- Training

- Individual involvement in quality improvement

- Team- or group performance

- Knowledge of the quality vision, mission and value statements

Some of the focus areas for the recognition and reward system can be training, involvement, individual suggestions, group and individual achievements and knowledge of the quality vision, mission and goals.

The timing of rewards must be planned to have the most impact. In the construction industry where projects have a start and completion date, it is essential to give recognition and rewards early in the project to ensure that the benefits of these rewards are received on the same project. This is especially true for the lower levels of employees who are only employed for the duration of specific projects. More senior personnel who are permanently employed by the company, can afford to receive recognition after the contract and will then carry that reinforcement into their future projects. To temporary personnel, who may be re-employed based on the amount of work available, recognition will be meaningless if he is laid of, even for just a short period.

It is important to have regular intervals between making rewards. If it appears to be performed haphazardly, it will detract from its effectiveness. Depending on the level of employee and the potential duration of his employment, recognition and rewarding can be done on a

biweekly (labour), monthly (supervisor), quarterly (site management) or yearly (senior management) basis.

The timing of rewards is critical. The more immediate the reward given after the desired performance is achieved, the more powerful the effect of the reward or recognition becomes. (Hradesky, 1995, p.188)

Recognition and rewarding should be an ongoing process with awards being made at regular intervals. Irregular awards will create the illusion that it is done only when someone remembers to do it and will detract from its impact.

Examples of recognition include:

- Verbal praise by a superior, either in private or public.
- A recognition memo, -certificate or mention in a newsletter or magazine.
- A photo and description on the notice-board.
- An invitation to present a speech to other employees.

Typical rewards can be:

- Pens, pencils or books.
- Tickets to sports events.
- Dinners or lunches.
- Extra vacation.

- Cash bonuses.

- Special increases.

- Company shares. (Hradesky,1995, p. 188)

The recognition and reward system must keep the changing needs of people in mind. These needs change as an employee progresses through his career. In their early careers, employees will seek safety, security and a steady income. Later, in his mid-career he might lean more towards advancement, increased income and development of a speciality or discipline. When a person's career reaches maturity he will strive for independence, power and prestige, recognition and self-actualisation.

5.2.3 Empowerment

Empowerment was discussed in great length in the previous chapter. Empowerment is aimed at enabling people to feel, accept and discharge responsibility (Oakland, 1989, p.320). Empowerment enables effective contributions by individuals.

Through empowerment, the person with the most expertise and who is closest to a problem will be given the responsibility to solve the problem. Empowerment ultimately leads to job satisfaction, which leads to better quality.

Due to the nature of building projects, the construction industry already has the structure to allow empowerment to take place. This is based on the fact that a project team is assigned a project for which they are responsible. This team must complete the project with the available resources and are held accountable, by top management, for the successful completion thereof.

The various levels of management on a project i.e. project director, site manager, foreman and supervisor or gang leader, allows for the delegation of responsibility to the point where the work takes place. This has been done in most construction companies for some time as the management of these companies realised that it was impossible to try and control every aspect of the building process from a centralised point, while the projects were in several locations. The fact that the work was not being done in a single production area like a factory required top management to delegate the responsibility for the management and completion of the projects to the various teams.

To ensure that the TQM system continues to operate, management has to ensure that they do not diminish the responsibility of the project team by forcing them to apply prescribed solutions for all problems. This will allow the team to place the blame for failure at the feet of the prescribed solution with statements such as "We knew it would not work, but who are we to say." Senior management can supply guidelines on how to solve

problems, but due to the uniqueness of the products, and problems, being produced, they must guard against prescribing a solution that does not take this uniqueness into consideration. Only the person or team, who is actively involved with the work where the problem has occurred, will have all the information to make a decision which will best solve the problem.

Empowerment in the construction industry is closely linked to teamwork. If the project team is not functioning well as a team, then there will be no trust within the team. Without trust in each other's abilities, there can be no empowerment.

5.3   Managing to maintain the Total Quality Management system

5.3.1 Team building

5.3.1.1   The need for teamwork

The complexity of modern construction projects makes it impossible for a single person to control an entire project. The only efficient way to complete a construction project is through teamwork. A team in the construction industry typically includes a projects director, a site manager, a quantity surveyor, several foremen and several supervisors or gang leaders. This group is given the task, by management, to complete a

project to the satisfaction of the customer, on behalf of the entire organisation. Failure to produce a quality product will influence the entire organisation through loss of future business, profitability, etc.

The team's focus must be on producing a quality product. It is therefore essential that senior management ensure that the teams on the various projects are managed in such a way that the maximum benefit of the teamwork is extracted.

5.3.1.2   Advantages of teamwork

It takes time and effort to build successful, quality oriented teams. There are however, many advantages in having such teams. These include:

- Improved productivity and quality as the team monitors it own output

- Reduced absenteeism as the team sets its own standards of behaviour

- Less direct supervision is required

- Team members develop a sense of belonging, get support with their problems from other members, and enjoy a feeling of security

- The team members develop a sense of pride in their achievement that reinforces their concern for productivity and quality. The output of a team is usually greater than the sum of the individual efforts of team members. (Humphrey & Hulse, 1991, p. 84)

Further advantages include the fact that problems are exposed to a greater diversity of knowledge, skill and experience resulting in better decisions being made. Better decisions are more likely to be implemented. When properly managed and developed, teams improve the process of problem solving, thus producing results quickly and economically (Oakland, 1989, p.318).

5.3.1.3 Management tasks in team building

A project has, per definition, a start and completion date. It is a temporary undertaking that will produce a unique product. Because a project is a temporary undertaking, the project team also has a temporary existence. In the construction company, different personnel are moved from one project to the next as and when required and available. This means that no team will stay unchanged. The duration of the team's existence will further vary with the duration of the project. Because of these factors, it is essential that the company's management know what is expected of it, to ensure that the project team is up and running quickly and efficiently.

In order to ensure this, management must do the following:

- Provide an environment that encourages creativity and accomplishment and allows empowerment.
- Keep the project teams informed about the company vision, mission, goals, projects and progress.

- Provide teams with enough authority and autonomy to run projects and make decisions.

- Keep open communication channels with other teams and with management.

- Appreciate and acknowledge success

(Hradesky, 1995, p. 217).

Successful team building will result in the team members being committed to the pursuit of the company objectives, co-operating with other team members, management and other teams, communicating effectively with management, and achieving expectations.

Strong teamwork depends on good communication. Good communication within the team will ensure that misunderstandings are avoided and conflicts resolved. Good communication between the team and management will ensure that the team stays focussed on the overall quality goals. Communication with other teams will ensure that effective tools and techniques are spread throughout the company.

The role of the team leader cannot be overemphasised. Management must ensure that the team leader is able to do the following:

- Define the ground rules for the team.

- Agree goals that will be acceptable to management and the team.

- Monitor performance against expectation.

- Help team members identify problems.

- Guide team members towards acceptable resolutions of problems.

- Act as liaison between the team, management, client and suppliers

- Investigate and resolve personality problems within the team.

- Council or discipline team members where necessary.

- Maintain awareness of the TQM goals under team members.

- Provide adequate and meaningful feedback of results.

- Give recognition to achievements by the team and individuals.

- Obtain and organise resources to achieve goals

  (Humphrey & Hulse, 1991, p. 92).

It is the responsibility of management to monitor the team leaders and to provide them with the necessary training and resources to achieve their tasks as described above.

5.3.1.4   Pitfalls for teamwork

There are certain indicators that a team is not functioning optimally. These include excessive conflicts and absenteeism, poor productivity or quality, high wastage, etc. The reasons for this malfunction can be anyone or a combination of the following:

- The team leader is not strong enough.

- Team members are not held accountable for the successful completion of their work.

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- Team members do not have the knowledge and skills to contribute towards successful completion.

- Regular meetings are not held.

- Progress is not reported on.

- Progress is not measured.

  (Hradesky, 1995, p. 223).

Management must be aware of and able to react whenever any of the symptoms of defective teamwork are identified.

5.3.2 Training and Education

"Satisfaction of the workforce and hence motivation and ability to act as a constructive part in the process of continuous improvement depend upon education and training" (Dahlgaard, Kirstensen and Kanji, 1998, p. 238). For a Total Quality Management system to continue to exist and produce results, a system is required whereby employees are vigorously encouraged towards self-improvement through education and training.

Training would have been required during the implementation phase of the TQM system. This training would have focussed on introducing quality improvement to employees and teaching them specific skills towards achieving continuous improvement. Once the system is up and running, training must not be stopped. Its focus and methods may

change, but without continued effort in improving people, no continued improvement will be achieved in the company's products.

The training and education during this phase can take many forms. There need, for instance, to be a continuous concentrated, low level barrage of quality communications to remind and condition people to keep quality improvement in mind (Crosby, 1979, p. 68).

It is necessary for education to become continuous. This will ensure that everyone in the company speaks a common language, has the skills to do their jobs and understand their personal role in ensuring the quality of the product (Crosby, 1984, p.87).

5.3.2.1   Who must be trained and educated?

All levels of employees in the company need to be continuously trained and educated. Training implies teaching specific skills while education is geared towards intellectual development of the employee. Based on this premise, people were first educated in the basics of quality and then trained in specific skills to improve quality during the TQM implementation phase. Once the TQM system is active, the focus will change towards educating people to look for ways to improve the system and giving them more advanced training in things like communication and motivation.

Lower level employees should receive more training in specific skills that directly influence quality whereas higher levels of employees will receive education in order to enable them to think more independently on ways and means to improve quality.

5.3.2.1.1   Executive level: Managing– and Financial Directors

Training and education at executive level needs to ensure the continued commitment to quality of the company executive. These are the people who will ensure that the TQM system receives the required resources to continue its existence, so it is imperative that they believe in the system. The training for upper management should be clearly linked to business goals and be focussed on achieving results, not on teaching techniques. The training for upper management should show the manager what he must do to get the company to improve its quality (Juran, 1989, p. 338).

According to Crosby (1984, p. 89), the purpose of executive education should be to show the executives what their roles in causing quality problems are and to show them what to do to effect improvements.

5.3.2.1.2   Middle management level: Project- and Site Managers

The training and education here must be to keep managers anxious to achieve the benefits of improved quality (Oakland, 1989, p.394). They

must be taught to develop new and creative ideas to work with the system and to be role models to those employees under their control.

Typical training that is required should include using specific quality control tools, leading meetings, communicating with a group and identifying training needs for employees. These managers must have a basic knowledge of the programmes available in order to identify people for specific development. They must also be educated in the philosophy and concepts of teamwork.

5.3.2.1.3   Supervisors: Junior Site Agents and Foremen

Training at this level is quite often non-existent and is the reason why many TQM systems will fail. These are the people who can have the most profound impact on the quality of the product, as they are the closest managerial link to the actual construction process.

The education required here should include methods of convincing these people of the continued commitment to quality by senior management. They must be given training in teamwork, motivation through communication and people skills. Training must further expose these people to the latest techniques and technologies available.

5.3.2.1.4   All other employees

The training and education at this level must be focussed on keeping the people who do the manual labour aware and committed to the TQM system. People must be taught to see the effect that poor work will have in the long run for the company and consequently for their own financial future. They must be given the knowledge of what means there are for them to identify problems and make decisions, and also of the possible rewards that this can have.

These employees must be made aware of the programmes available for them to better themselves and to further their careers. The training and education at this level should be designed with the level of intellect, literacy and the person's home language in mind. It may have to be based on visual and verbal communication rather than written forms of communication.

"On-the-job" training is of vital importance in teaching people the correct way of doing their work. These are also helpful as refresher courses that remind people of the quality improvement effort. Training will be highly productive if the employees can be taught and reminded to think of the quality they are producing in terms of the customer they are producing it for.

In South Africa, where the majority of the people on this level in the construction industry are very poor, training should be aimed at giving them knowledge with which they can improve their personal conditions, while also providing the company with a more knowledgeable workforce. Training should be aimed at enabling the personnel to qualify themselves as artisans, trainee foremen, etc.

5.3.2.2   Who must conduct the training?

When in comes to the actual training process, there are certain key aspects that have to be given serious attention. One of the main aspects is the identity of the trainer. In general, the person who is presenting the training should be knowledgeable about the subject, be able to communicate its ideas effectively and must have the respect of the people he is training.

When looking for someone to present an educational programme to senior managers, it would be unwise to use a young, inexperienced person, even though he may have sound theoretical expertise. Senior managers would much rather listen to executives from other, successful companies. These individuals should have earned public status through their experience and competence and be able to convey their knowledge in such a way that it relates to the business realities faced by upper management (Juran, 1989, p. 339). Due to the training on this level

focussing on strategic issues, it is not necessary for the trainer to come from the same industry. It would in any case be very difficult to find any executive from one company being willing to sell his secrets to competing companies.

From middle-management level down, in-house trainers can be used. Contract- and site managers will listen to colleagues if they have a good knowledge of the subject matter and if they possess good teaching skills. Training on this level should be based on actual cases to have more impact. External specialists may be used for contract managers, but depending on the number of site managers involved, there may be too many to make use of external teachers. It will therefore be necessary to develop people from inside the company to conduct the training.

There will almost definitely be too many foremen and junior managers to use external training specialists while keeping the training groups small enough to be effective. Most South African construction companies will not be willing or able to have a permanent training department or -team and therefore people used to conduct training would have to do so in conjunction with other duties. It is up to upper management to ensure that these people are given sufficient training and support and the necessary resources to fulfil all their tasks. There must also be guarded against using available people rather than the right people. Trainers for this level

must preferably come from middle management, but can include other foremen to help personalise the training for the trainees.

Due to the extremely diverse nature of the South African labour force when it comes to language and culture, the trainers for the workforce need special attention. It would be preferable to conduct training in the trainee's home language and to have it done by a person who understands the culture of the trainee. Supervisory level personnel can be used as trainers due to their direct contact with the labour force, but there must also be a representative from middle management involved to show the necessary commitment to the process.

5.3.2.3   The contents of training

Some information is required before the training and educational material is put together. The first step is to determine the knowledge, skills and attitudes required in completing a specific function successfully. This list must then be compared with the knowledge, skills and attitudes possessed by the individuals or groups at who the training or education will be aimed. The difference between the two sets of information can be called the learning need (Dahlgaard, Kirstensen and Kanji, 1998, p. 286). The establishment of the knowledge, skills and attitudes possessed must be done with input from the individual or group concerned.

A set of expected outcomes for the training, which indicate what and how well the trainee should be able to complete certain tasks, must be drawn up. This will determine the success of the training. The training programme must include time frames for the mastery of the determined knowledge, skills and attitudes.

Training and education can be divided into certain elements. These are:

- The concepts of quality and TQM

- The processes of TQM

- The tools and techniques of TQM

  (Juran, 1989, p. 324)

Although most training for the senior management level will have been done prior to the implementation of TQM, some further education must be done. Executives must be kept up to date with the latest trends and techniques in order for them to identify those that will enhance their own TQM system. This will include further education in communication, quality cost measurements and teamwork. Specific topics should include:

- Strategic quality management

- The infrastructure required for quality improvement

- Re-motivation for improvement

Middle management training and education will be focussed on the application of quality systems and techniques, teamwork and

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communication. The material must emphasise practical problem solving, rather than theoretical perfection (Oakland, 1989, p.398). Exercises and videotapes can be used to demonstrate the application of the techniques discussed. Additional material for self-study must be distributed among these managers to encourage them to become hungry for knowledge.

Supervisors (foremen) should be trained in the correct use of plant and materials, establishment of correct work procedures and the management of people. The quality training should include knowledge and understanding of the quality policy, error and waste prevention, communication with and motivation of the workforce and the quality system and procedures (Oakland, 1989, p.399). It is important for these employees to be able to communicate their knowledge of producing a quality product to the workforce. Examples and role-playing can be used in this training, as the emphasis must be on practice. Specific topics that must be addressed are:

- The quality tools available and their use
- Team leadership
- Problem solving

The quality training for the workforce must be linked to their specific tasks. They must however, be given a basic understanding of the quality concept and policy. They must be shown how their actions influence the satisfaction of the client. The training material should be adjusted for

cultural and language differences taking levels of education into consideration. Because of the high turnover of labour and the sometime short employment periods of labourers, training for the workforce must be carefully planned. Spending large amounts of time and money on training at the latter parts of a project, when many labourers may have to be temporarily or permanently laid off, is not economically sound. It must however be kept in mind that all training will empower labourers, which are not only a necessity of TQM but also a social responsibility. It is therefore necessary to do quality training of the workforce as early as possible during a project

Different levels of intensity of training can be established for use on employees with different expected periods of employment within the company. This means that a carpenter, who will stay on a project longer than a general labourer, can and should receive more training than labourers who might only be on a project for a few weeks. If the company has a lot of work, and the possibility exist that labourers can be transferred to new projects rather than being retrenched, then these labourers should receive more training so that they will be able to use it on the next project, to the benefit of the company.

5.3.2.4   Where and for how long must training sessions be held?

The venue for training is as important as the method. The venue will determine the methods available for training in terms of equipment, etc. It is therefore necessary to ensure that careful consideration is given to the decision on the venue for training.

According to Juran (1989, p.332), upper level managers prefer training away from the office. Taking managers on training weekends is a great way of ensuring that their attention is kept focussed on the training, although it might be very expensive. It must be emphasised that the weekend is for training and not a holiday. Should a training weekend be planned, it must be announced well in advance to ensure that the people involved do not make other plans or have excuses not to attend.

Middle- and lower level managers must be trained away from their normal working environment. This will ensure that interruptions or small problems do not disturb their attention. It would be preferable to have a training room at the company head office. This room must be equipped with the necessary communication equipment to allow effective training. This might include overhead projectors, slide projectors, computers, etc. Things like air-conditioning and beverages will further ensure a comfortable atmosphere conducive to learning.

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The duration of the training sessions should not exceed a day at a time. It might even be necessary to split training into two afternoons, which will give the employees time to attend to some of their responsibilities in the morning while also having time to go over training material for discussions or tests the following day. When training is planned to take place during normal working hours, it must be ensured that there is someone taking care of the trainee's responsibilities during the training. It might therefore be required to stagger training sessions for the employees on a specific site.

Due to the number of people involved, it would be difficult to train the labour force anywhere other than at their workplace. The number of employees attending training at the same time must be kept to a manageable figure. Training must be designed for specific trades such as concrete, brickwork or carpentry. General training on issues such as company policy, waste prevention, etc. can be done with bigger groups and should be planned for periods prior to or after lunch or tea breaks. The trade specific training can then be held after these sessions. This will give the labourers the opportunity to ask questions in a less intimidating environment.

Due to the need for productivity, training of the labour force should not exceed an hour per week. It might be better to have training every week

on a specific day for five weeks than spending five hours in one day on training.

5.3.2.5   Why training fails

There are several reasons why training and education might fail to achieve its objectives. These include:

- Inadequate facilities

- Poor training materials

- Poor trainers

- A lack of committed resources

- Focus on tasks rather than results

Training has failed when it fails to influence behaviour. The employee must be able to apply his new knowledge in his job and then do so freely for training to be termed successful. Without confidence in himself and his training, the trainee will not accept responsibility for his task and therefore empowerment will be impossible.

5.4   The critical success factors required to maintain a Total Quality Management system

In order to maintain the momentum of the Total Quality Management System initiated in the South African Construction Company, the following critical success factors have to be attended to by the company:

- The company needs to provide leadership that motivates its employees to do the right things.

- The company needs management through team building and training and education to get its employees to do things the right way.

- Motivation can only be sustained through excellent communication, relevant recognition and rewarding and empowerment of all employees.

- All the various types of communication must be utilised to suit the requirements of communication on different levels of the organisation and to keep the focus of the entire workforce on producing quality projects.

- The recognition and rewarding must be done according to a system to reinforce positive behaviour. The system must allow for recognition

and rewarding at regular intervals and must make use of relevant rewards.

- Only through empowerment will the company have effective decision-makers at all levels of the organisation and will problems be resolved quickly and correctly. Empowerment will ensure that every employee takes responsibility for achieving the goals of the company.

- Project teams need to be exposed to team building to ensure that the company reaps the benefits of effective, goal-oriented teams. Team leaders must receive special attention to act as the heart of the team.

- All levels of employees must be continuously trained in the use and educated in the principles of the Total Quality Management System.

5.5   Conclusion

No system will continue to produce results without maintenance. This is also true for a Total Quality Management system. The lack of maintenance will soon cause the system to loose momentum and to become just another paper generator.

Good leadership and management will provide continuous motivation,

training and education that will form the basis for the continued success

of the TQM system.