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Managing Work Through People - THE ROLE OF TRAINING FOR PROFESSIONAL DEVELOPMENT

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REALISING VISION THROUGH PEOPLE -
THE ROLE OF TRAINING FOR PROTON R&D ENGINEERS

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It's the MAN that makes the company 'ticks'.

When there is a WILL there is a WAY, inshaAllah
Acknowledgement

In the name of Allah, Most Gracious and Most Merciful

Alhamdulillah.

This thesis has been done with the desire to give credence to the most important asset of a company - its people. As anything living in this world it must be nourished. There is a belief in its strength & usefulness; opportunities however are abundance & this is where training can bring the glittering out of them.

In doing this thesis I would like to thank my wife Hatizah and the children Ummu Aiman, Najibah, Ahmad Syafiq and Muhammad Aufa for their patience & inspirational values. My appreciation to Dr Arif Hassan from UIAM Business Administration Department for his understanding and professional guidance and supervision of this work.

Lastly but not least to the people whose responds have been crucial to this work...thank you all.

Wassalam
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Abstract

Every company has its own Mission and Vision, be it in written form or otherwise. For Proton R & D, its own aspiration of being self independent in designing would require looking at the most important asset in the company - the people. The study looked into the Potential and Development assessment as well as the Training requirements of the engineers. This enables expectations and future programs to be understood.

The data for the study were derived from two sources:

- the performance evaluation documents of the staff [sampling] and
- reports from HR consultants engaged by the company.

Both Potential & Development Assessment as well as Training Requirements were carried out. Based on the assessment of Potential and Development it is discovered that the 'Weakest Competencies' were in Business Sense, Communications and Leadership whereas, the 'Strongest Competencies' were in the areas of Initiative and Drive, Personal Qualities, Working with Others and Decision Making. The training requirements that need to be emphasised would be in the areas of leadership, communications and project management for developmental training and advance CAD, advance CAE, basic CAE for Technical/Functional Training
Chapter 1 - Introduction

1.1 The Purpose - Why the study?

Proton as the first national car manufacture always aspire to design its own product which mean being self independent. In order to attain this, Proton R&D has set-up various programs. One of the department in the R&D Division is the Engineering Design[ED] Department which has the sole responsibility to turn the ideas of the Stylist into engineering design. This involves turning something that can be realised and manufactured.

The ED Department has 80 local staff and 20 consultants working with the local engineers.

In order to achieve this it is very important that a study be done to

[a] assess the potential & development requirements of the engineers as well as the training requirements

[b] understand the expectations of the engineers to attain this self independence.

[c] understand the future programs that are required.

From the study it is expected that one will be able to

[a] gauge the effectiveness of the various training program so far -Strength, Weakness, Opportunity, Threat

[b] highlight the factors that can spur/hinder implementation of the various programs-human, machine, process/methods

[c] propose future training programs & methodology
2. Various Training Model & Business Template.

One of the training model is the 'The 5 Steps in the Training & Development Process' Model [Carolan 1993]. This model involves five main stages as shown below:

<table>
<thead>
<tr>
<th>Needs Analysis</th>
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<tbody>
<tr>
<td>• identify specific job performance skills needed to improve performance &amp; productivity</td>
</tr>
<tr>
<td>• analyse the participants to ensure the training will suit their background &amp; needs</td>
</tr>
<tr>
<td>• develop specific measurable knowledge &amp; performance objectives</td>
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<table>
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<tr>
<th>Instructional Design</th>
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<tr>
<td>• gather training material</td>
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<tr>
<td>• ensure material fits training objectives</td>
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<table>
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<tr>
<th>Validation</th>
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<td>• introduce &amp; validate the training before a representative audience</td>
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<th>Implementation</th>
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<tr>
<td>• Carry out the training</td>
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<th>Evaluation &amp; Follow-Up</th>
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<tr>
<td>• Assess program success according to</td>
</tr>
<tr>
<td>• REACTION-participants immediate response to the training</td>
</tr>
<tr>
<td>• LEARNING-use feedback devices or pre/post tests measures to gauge what actually have been learned</td>
</tr>
<tr>
<td>• BEHAVIOR-note the supervisor's reaction onto the subordinates following the completion of training</td>
</tr>
<tr>
<td>• RESULTS-determine the level of improvement in job performance &amp; assess needed maintenance.</td>
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</table>
The first step in training is to determine what training if any is required. We need to determine what the job entails and break them down to sub-tasks so that the employee can be taught. One can either use the Task Analysis [analysis of the jobs requirements especially for new staff] or the Performance Analysis [appraise the performance of current employee] to determine whether training could reduce performance problems [Dessler 1984]. Other techniques could include Supervisors Report & Management Request for identifying these needs. What is always important is to ensure that input from the employee is obtained since no one know about the job better than him. The next step after this Needs Analysis is to set Training Objectives which should be concrete and measurable. The trainee should be able to accomplish these targets after the training and would also allow focus for both the trainee and trainer and also allow a benchmarking for evaluating the success of the training program. Next is to design the training program and subsequently is to implement them. Finally we must evaluate the training effort to see the effectiveness of the training [Dessler 1984].

There are also many approaches to training. These include:

[a] apprenticeship program where classroom training is systematically combined with On-Job Training [OJT]

[b] executive training program where managers are sent to specialised outside program or alternatively experts are brought inhouse to learn on general management skills
Corporate Universities example University Telekom where it centers on the company’s training needs on a full time basis.

However whether a training is formal or informal, no one approach is ideal. The best is to use many different approaches.

3. Effective Training

There are four major principles that make training effective [Greenberg and Baron 1997]. These are:

[a] Participation

Active participation in the process of learning leads to more effective learning.

[b] Repetition

‘Practise makes Perfect’. Therefore by doing a repeated task it can be learned and more so if it is learned over time rather than as a lump.

[c] Transfer of training

For training to be most effective, what is learned during the training session must be applied on the job.

[d] Feedback

Feedback which is the knowledge of the results of one’s action provides information about the effectiveness of one’s training.

Training must also be understood as a continuous process which gradually reinforces the knowledge that a person must have from ‘what’ has to be done, ‘how’ it must be done, ‘why’ it must be done. Training includes knowing and
Managers must take responsibility for each of their workers receiving the training. Training will become an interactive dynamic that will take place in class and in the work area.

Successful companies have created internal consultants eventhough they have relied on external consultants and have assigned top level resources to support TQM implementation. The effectiveness of a training program must not be measured in hours spent in a classroom but according to the worker's ability to apply in his job [Kenshu No 148 1998]

4. Why do the workers need to be trained?

In order to diagnose the employee's performance on why the employee is not doing what he is supposed to do, 5 basis questions can be asked [Winteley 1991]. These are:

[a] Does the person know what he is supposed to do i.e., his basic mission in the organization?

[b] Does he know the tasks he should do to accomplish the basic mission?

[c] Does he has the skills to perform the tasks?

[d] Does he has sufficient resources to do the job?

[e] Could the person do the job if his life is dependent on it?

If the answer to Q1,2,and/or 3 is 'NO', the company has a training problem. If Q4 is 'NO' the problem is on resource and if Q5 is 'YES' then the company has motivational problem.
Quite often there are many instances of workers learning their jobs from other workers. At times there is little training or none at all and also quite often workers do not even know if they have done their jobs correctly i.e., what may be acceptable one day may not be acceptable the other day. Also when new equipment are introduced there must be retraining as well. Dr. Deming describes the process of workers who learn from other workers as the 'Circle Game' i.e., '...a number of person sits in a circle. Someone whispers words to the next person who whispers it onwards. By the time the words make the first circle, they may be distorted beyond recognition. That is what you get when worker trains worker'[Walton 1986]

1.2.2. Understanding The R&D Culture

1. The R&D People Needs.

Attitudes are closely related to the R&D engineers special value set. Each individual creates a psychological work 'contract' specifying expectations brought to work, the desired work environment and what he expects to carry away from work. The engineers will quickly generate negative attitudes if they feel that management has abrogated this 'contract'.

The individual expects:

[a] A Professional Organization of Professionals

[b] Leadership Management Quality.

Gaining technological respect is critical, for in leading the R&D personnel, the authority accorded is the authority of knowledge and experience not the authority of position.
[c] Freedom - Conformity Balance

Freedom at all levels including in decision making, conduct of work and expression is the underlying expectations of the engineers. The balance expected between conformity i.e., the requirements to do it the company's way and freedom is individual.

[d] Opportunity To Achieve

Engineers must be given tasks which fit their risk tolerance range, which have a probability of success, fitting their needs but requiring stretching to achieve and which have an identifiable end results.

[e] Team Spirit

It is an environment where team formation is encouraged and where the synergism of different knowledge and experience bases are utilised. They learn about learning together and working together to achieve effectiveness and make work more fun.

[f] Minimal Rules, Restrictions and Limits

Engineers view rule bound behavior on the part of others in the organization as inhibiting creativity & individual vitality.

[g] Job Change and Career Change Freedom

Organizations are training their engineers as career coaches, setting up information and career centres to provide support in improving the job/person match on a continuity basis. Continuing education, individual development and encouragement for job rotation for broadening are important.
[h] Open Communication

Engineers are to participate and be informed on strategy, plans and objectives. They are sensitive if being left out of communication.

[i] Recognition of Career and Work Realities

All must accept that there are procedures to be followed and steps to be taken before decisions are made.

[j] Challenge

Engineers are required to apply their expertise and are required to stretch in order to succeed. [Miller 1990]

2. Performance and Motivation Criteria

In order to understand the 'Push' and 'Pull' factors in R&D culture it is best that the performance and motivation criteria be clarified.

The Hay Consultants [Hay 1995] has come out with the 'Competency Model' to explain these 'push/pull' factors. The model describes three areas of focus which are 'Ensuring Quality Orientation'[Focus Area A], 'Achieving Results'[Focus Area B] and 'Fostering Partnership'[Focus Area C]. Each focus area has its own list of competencies as shown in the diagram below.
If we focus on the first cluster of ‘Ensuring Quality Orientation’ the competencies are

(a) Achievement Motivation

Here engineers want to perform well in order to meet one’s own standard of excellence. This also means striving for improvement, setting challenging goals with a results orientated view and may include being competitive and innovative for the sake of doing things better.

(b) Concern for Order and Quality

This would require the engineer to have the underlying drive to reduce uncertainty in the surrounding environment with an emphasis towards ensuring quality in products and services.
[c] Customer Service Orientation

This criterion implies the desire to help or serve others in meeting their needs. This means focusing one's efforts on discovering and meeting the customer or client's needs.

In order to build and sustain an effective R&D organization it is important that the engineers acquire the competencies as listed in the three focus areas of 'Ensuring Quality Orientation', 'Achieving Results' and 'Fostering Partnership'. These competencies could be acquired through training.

2. Learning and Development Requirement

Vital for the future, the R&D organization need to develop personnel in terms of expertise and leadership to be able to be self sufficient in terms of expertise and leadership. This is to be able to be self sufficient and hold one's own in term of being globally competitive. One must also allows continuous improvement in processes and products as well as innovativeness. This involves fostering long term learning and development of others with an appropriate level of need analysis, thoughts and efforts.

3. Training Requirements

Most Western companies spend far less than Japanese companies do on educating and training their people—as little as one fourth as much [Winteley 1991]. They invest in training that is focused on supporting the vision and on providing the
skills that will enable people to fulfill that vision. Also by training the staff it creates confidence in them. The key features for the managers are to train people who work for them. Once we have given them the training that is required, managers will get to have the confidence that their subordinates can do the job and empower them to do so. Managers must also not be afraid that the subordinates are going to do better on the job than he himself after the training.

Most people will try to train by telling people how to do something but research has clearly indicated that the most efficient way of teaching people is to get them actively with the subject [Winteley 1991]. We must also educate our workers well and continuously. A study by MIT revealed that Japanese auto workers got two and a half times more formal training than their USA counterparts. If one is to include informal training such as help from a senior worker, the Japanese worker got three times as much as the American [Winteley 1991]. Continuous training is vital for three reasons:

[a] It provides the opportunity to communicate and reemphasise the company's vision

[b] It provides concrete skills that employees need

[c] It shows people alternatives to old ways—alternatives from which they can create their own new ways of doing things that serve their 'customer' better.

This leads to continuous improvements to the workers.

Good training is essential in transforming a company so that it will serve the customer. Good training also enables people to engage in and sustain the right kind of behavior on the job—quickly.
Also for effective training:

[a] First one must understand how people are behaving before the training

[b] Then define how they should behave when training is completed. We must teach knowledge related skills & corporate vision to the workers.

1.2.3. The R&D Engineers Skill Ladder

1. The Vision

As computer technology advances, the traditional work of design engineers is becoming more and more computerized. At the same time, design and development techniques are changing as industry becomes increasingly mechanized. However, no matter how many machines a factory may have, it is in the end human beings who must use them. Even today, when CAD (computer-aided design) is widely used in the design process, most design work still goes on in the heads of design engineers. The use of training to increase the knowledge carried in the heads of individual designers, improve their thinking processes and upgrade their design abilities helps to improve the design process itself. Improving the design processes means raising the abilities of design engineers as well as doing things like improving design and development systems, standardizing and introducing CAD.

Although the term “training” is used rather than “improvement” to describe the raising of the abilities of design engineers, this does not mean that design departments see training as being some other department’s responsibility.
2. Developing Technical and Leadership Competencies

Technology can be defined as "A means of efficiently accomplishing objectives by utilizing the natural laws and principles regulating the relationships among things".

In view of this, engineers should be equipped with the following attributes:

[a] Knowledge

In order to utilize a principle, one has to know it. The more natural laws and principles an engineer knows, the greater the number of choices available to him or her and the more likely he or she is to devise efficient methods of accomplishing the objectives. The most important attribute of a good engineer is to know as many natural laws and principles as possible.

[b] The ability to synthesize

However, knowledge alone is insufficient for accomplishing an objective. We also need the ability to apply the functions of our tools and materials in combination with each other in line with our objective. The second most important attribute of a good engineer is the ability to synthesize – that is, the ability to combine large numbers of natural laws and principles organically, utilizing the characteristics of each to achieve the desired objectives.

[c] The ability to elucidate principles

Many problems cannot be solved satisfactorily with existing knowledge and experience alone. In such cases, it is necessary to discover the laws and principles governing the phenomenon that constitutes the problem and devise strategies for achieving the intended results. The third most important attribute of a good
engineer is the ability to discover the underlying principles by understanding data correctly and conducting effective experiments.

[d] Evaluation ability

When utilizing technology developed wholly outside our organization, or when commissioning a third party to carry out part of a development project, we have to be clear about what we require and what we need to ask for. We also have to be able to accurately evaluate what we are provided with in order to decide whether or not it meets our requirements. In such cases, we need the ability to judge whether or not the technology supplied is suitable for accomplishing our objectives. Even when a design is being carried out by our own organization's design department, design engineers in management positions rarely do the design work themselves; their main job is to direct and assess the design work, so it is important for them to possess evaluation ability in this situation as well.

The Knowledge Attribute above consists of knowledge specific to particular engineering fields. And is often referred to as specific engineering technology, or proprietary technology. Similarly the Ability to Synthesize is regarded as depending to a great extent on the inborn talents of individual engineers and is developed through experience in particular fields. Some aspects of this attribute cannot be developed through training and experience alone. The Ability to Elucidate Principles reflects the designer's ability to conduct scientific research and its level can be raised through training in statistical concepts and techniques. On the other hand Evaluation Ability is the relatively sophisticated ability to perform
an overall assessment of a technology and make correct judgments about it. It can be developed through learning and study based on experience.

Although the general theory relating to technical matters is taught in schools and universities, almost nothing is taught about techniques for designing the specific products handled by individual companies. In fact, it is impossible to go as far as teaching these in an academic setting. The companies themselves have to provide the training needed in order to equip incoming school-leavers and graduates with the necessary technical knowledge and practical ability.

The other aspect which is important for engineers is the training as Organization Members. The range of technology involved in product development today is vast and even within individual companies, the work is very often accomplished by large numbers of experts working together. The design department has to keep the production engineering, materials, manufacturing, sales, service and other in-house departments informed of the various problems that crop up during the design and development process and coordinate the work that arises as a result of these problems. This means that in order to effectively exploit the abilities of design groups, or of in-house teams that include designers, designers themselves also need a high level of administrative and organizational ability.

Training in design departments, however, tends to focus on the technical side, and the organizational and administrative side is frequently neglected. Among other problems, the result of this is that designers often attend meetings without being able to explain clearly and concisely what they are doing or are
unable to assess what their superiors need to know and therefore fail to give them the required information. When the people under them lack administrative skills, design department managers are kept busy sorting things out with the other departments concerned and this lowers the efficiency of the design department.

Administrative problems such as these may be due partly to the company's failure to standardize its administrative procedures or train its people thoroughly in those procedures but standardization and training alone are not enough to eliminate the problems. The ability to deal with administrative issues depends largely on designers' understanding of administration and management and their ability to make good judgements in these areas and there are limits to what can be achieved through classroom training or on-the-job training by managers. Since it is difficult to find general instructional materials that fit a particular company's way of doing things, people have to develop their own training methods that take account of their company's culture and organizational structure.

One possible method of doing this is to compile examples of the kinds of administrative problems that often occur and use these to train people in group-discussion style. Since working methods are continually being improved and changed, it is not uncommon for unpredictable situations to arise which are unpredictable by procedural standards and similar documents. It is a good idea to compile examples of flawed working methods, similar to the collections for examples of design defects compiled for technical training and use these as training materials.