TQM IN E-LEARNING: A SELF-ASSESSMENT MODEL AND QUESTIONNAIRE

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Abstract: Organizations are seeking new, integrated systems that enable rapid changes through early identification of opportunities and problems, tracking of progress against plans, flexible allocation of resources to achieve goals, and consistent operations. Total Quality Management (TQM) is an overall business strategy. It means that all activities of the company will be focused on satisfying all stakeholders of the company. TQM can be realised by using the EFQM model. The EFQM model is a tool that organizations may use as a framework for **self-evaluation** *that enables an organization to identify its strengths and areas for improvement and the extent to which its operations and results are in line with the characteristics of an excellent organization. We focus on a training organisation or to the learning department of an organization. So we are limiting the EFQM model to the training /learning activities. We can apply EFQM perfect on the level of an activity (business line) of a company. We selected the main criteria for which the learner can play the role of assessor. So only three main criteria left: the enabling resources, the enabling processes and the (learning) results for the learner. We limited the last one to "learning results" based on the Kirkpatrick model.*

1.INTRODUCTION: TQM and EFQM

Total Quality Management (TQM) is an overall business strategy. It means that all activities of the company will be focused on satisfying all stakeholders of the company.

TQM can be realised by using the EFQM model.

Measuring the quality level is the start of the process of quality improvement. We have in mind that as a company we want to know the thruth. But at the same time the company will use it in a positive way, it can not be the source of punishment or of hiding a bad situation. It means that the company culture has to change so that it can learn from its failures. It requires an internal open culture.

Studies resulted in a picture of a good qualitative organisation.

Based on developed quality models checklists have being developed and used in certification activities. The Malcolm Baldridge Award (USA) and the Deming Award (Japan) were born. The EFQM Excellence Model was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Award. It is now the most widely used organizational framework in Europe and it has become the basis for the majority of national and regional Quality Awards.

To support this quality certification process, a model consisting a set of quality criteria has been developed.

This model contains 9 boxes each corresponding with a main criterium. The model covers the whole company.

Measurement instruments have to be developed for each main criterium to measure the performance of the company in that domain. Those scores have to be weighted and summerised to become a total quality score of the company.

By applying this model the company can evaluate itself on point of maturity.

(the maturity can be seen as achieving one of the following phases: 1.focus on activities and product, 2.proces focus, 3.system focus, 4.supply chain orientation, 5.taking into account the economic and social environment)

The company can do a self evaluation by using a questionnaire. As a result the company can identify some necessary improvements to pursue. The ultimate goal is the improvement of the overall quality score.

The model can also be applied to support the formulation of the company goals and the strategy formulation of the company

Another application is the benchmarking role it can play.

2. The need for a model and the EFQM excellence model in TQM.

Regardless of sector, size, structure or maturity, to be successful, organizations need to establish an appropriate management framework. The EFQM Excellence Model is a practical tool to help organizations do this by measuring where they are on the path to Excellence, helping them understand the gaps and then stimulating solutions.

This model is a non-prescriptive framework which recognizes that there are many approaches to achieving sustainable excellence. It can be used as a self-evaluation tool for organizations, large and small, public and private sector.

2.1. Characteristics of excellence

The Model, which recognizes there are many approaches to achieving sustainable excellence in all aspects of performance, is based on the premise that:

Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy, that is delivered through People, Partnerships and Resources, and Processes.

The fundamental concepts or characteristics of excellence are:

• results orientation

• customer focus

• leadership and constancy of purpose

• management by processes and facts

• people development and involvement

• continuous learning, innovation and improvement

• partnership development

• public responsibility.

The EFQM model is based on those fundamental concepts or characteristics of excellence

The characteristics of excellence have links to different evaluation areas and also to each other. Partnership development, for example, requires identification of partnerships, prioritization and setting objectives for partnerships such that they generate added value for customers.

In addition, customer focus in vocational education and training requires identification of the needs of customers, such as students and the world of work, development of products and services based on these, and monitoring and analysis of customer results achieved. Results should be used as a basis to improve operations and set new objectives.

2.2. The EFQM excellence model

The EFQM Excellence Model is a non-prescriptive framework based on 9 criteria. Five of these are 'Enablers' and four are 'Results'. The 'Enabler' criteria cover what an organization does. The 'Results' criteria cover what an organization achieves. 'Results' are caused by 'Enablers' and 'Enablers' are improved using feedback from 'Results'.

The EFQM Model is presented in diagram form on figure 1. The arrows emphasize the dynamic nature of the Model. They show innovation and learning helping to improve enablers that in turn lead to improved results

2.3. Criteria and sub-criteria used in the model.

The Model's 9 boxes represent the criteria against which to assess an organization's progress towards Excellence. Each of the nine criteria has a definition, which explains the high level meaning of that criterion.

To develop the high level meaning further each criterion is supported by a number of criterion parts. Criterion parts pose a number of questions that should be considered in the course of an assessment.

1.Leadership

Leadership is even as important as products and processes are. Management can motivate and stimulate in the way to continuous improvement.

- How is management engaged in creating a culture of continuous improvement
- How is management supporting the improvement activities
- How is management evaluating and motivating the staff?

2.Policy and strategy

The EFQM is concerned not just with product and service quality but is concerning itself with organizational policy and strategy. Policy deployment to ensure that the strategy is formulated and is known to management is important.

- The use of relevant information supporting the formulation of the strategy.
- The formulation of the strategy
- The implementation of the strategy
- The communication about the strategy
- The evaluation and the improvement of the strategy

Figure 1. The EFQM Model

3.People

EFQM covers aspects of training and service quality, but is goes further requiring effective human resource development, teamwork, empowerment, rewards and career planning.

- the organization of personnel management
- deployment of expertise
- participation of staff in the organization

4.Partnership and resources

Suppliers are becoming partners with emphasis on mutual beneficial relationships. Development and use of knowledge is point for attention. On point of resources facilities need to be maintained for capability.

- The financial resources to realize continuous improvement.
- How effective is the delivery of information
- Relation with suppliers and the procurement function
- The role of technology and knowledge management

5.Processes

The focus of EFQM is on the key processes necessary to deliver the organization's strategy. Quality processes are important too.
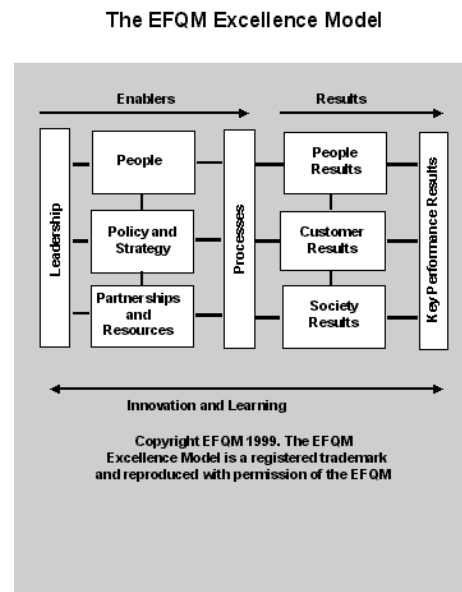
- identification of the processes

- control and management of processes
- evaluation and improvement
- incentives to innovation and to renovate the processes
- implementation of process re-engineering

6.Customer appreciation

The major box requires evaluation of customer satisfaction through surveys and interviews

- customer satisfaction
- Loyalty
- customer focus

7.Functioning of people in the organization

People are supposed to be surveyed with ideas such as team briefings and suggestion schemes to know their appreciation of the organization

- satisfaction survey
- functioning in the organization
- personnel administration

8.Position in the society

EFQM asks the company to establish its impact on wider society, for example involvement in community activities.

- role and link with society

9.Company results

EFQM requires measuring the results of the company in a BSC way

- financial measures
- operational measures

2.4. Use of the EFQM model

- The EFQM model is a tool that organizations may use for the following purposes, among others: as a framework for **self-evaluation** that enables an organization to identify its strengths and areas for improvement and the extent to which its operations and results are in line with the characteristics of an excellent organization;
- As a way to **Benchmark** with other organizations
- As a guide to identify areas for **Improvement**

2.5. Self-Assessment

EFQM believes that the process of self-assessment is a catalyst for driving business improvement. The EFQM definition of self-assessment is as follows:

Self-assessment is a comprehensive, systematic and regular review by an organization of its activities and results referenced against the EFQM Excellence Model. The self-assessment process allows the organization to discern clearly its strengths and areas in which improvements can be made and culminates in planned improvement actions that are then monitored for progress.

2.5.1. Benefits

Organizations have enjoyed various benefits as a result of undertaking self-assessment using the EFQM excellence model. Some of these included:

Providing a highly structured, fact-based technique to identifying and assessing your organization's strengths and areas for improvement and measuring its progress periodically Improving the development of your strategy and business plan.

Creating a common language and conceptual framework for the way you manage and improve your organization

Educating people in your organization on the Fundamental Concepts of Excellence and how they relate to their responsibilities

Integrating the various improvement initiatives into your normal operations

It is imperative when starting down the Self-Assessment path to be clear on what the desired outcomes are to reduce the risk of failure due to misplaced expectations.

2.5.2. How to do self-assessment?

There is no definitive answer to the question "which technique is the right one for my organization? There is no single "right" way to perform self-assessment.

We adopted the questionnaire approach.

This technique can be one of the least resources intensive and can be completed very quickly. It is an excellent method for gathering information on the perceptions of people within an organization. Some organizations use simple yes/no questionnaires, others use slightly more sophisticated versions that use a rating scale.

Self-assessment using standard questions designed to get the organization started thinking in terms of process improvement. Questionnaires can also be used to facilitate group discussions about improvement opportunities and to inform management workshops.

2.6. EFQM as a TQM model compared with the ISO model and and benefits

2.6.1. TQM and EFQM versus ISO 9001

TQM has a broader focus than ISO. ISO includes especially the control and the improvement of the processes of the company and in a minor way also the human resources, management and the employees. The other "enabling" factors are less focused.

About the "results" part of the EFQM model, only the customer Block is included in ISO.

Both models strive for the improvement of the quality.

2.6.2. Often TQM is implemented too fast and rather incomplete

Sometimes only a part of the TQM model has been implied. F.e. an isolated action to improve the customer orientation of the employees must be the ultimate prove of the quality of the organisation. Another organisation implements quality circles to improve the processes. These isolated actions will have often a very limited and short term effect.

2.6.3. A real long term advantage

The organisation has to plan goal directed for improvements of the processes taking into account the relation and requirements of the customer and the other stakeholders of the company.

It guarantees an evolution to improved quality and at the end competitive advantage will result from it.

The TQM organisation will also control this advantage to guarantee competitivity for a long term.

A study about the 120 certificated companies proves this long term advantage. Compared to comparable companies, the certificated ones increased the share price about 36% higher and the income about 17% within 3 years.

3. Quality in e-learning

We focus on a training organization or to the learning department of an organization. So we are limiting the EFQM model to the training /learning activities. We can apply EFQM perfect on the level of an activity (business line) of a company.

We selected the main criteria for which the learner can play the role of assessor. So only three main criteria left: the enabling resources, the enabling processes and the (learning) results for the learner. We limited the last one to "learning results" based on the Kirkpatrick model.

3.1. The EFQM model in the e-learning organization.

The general 9 boxes EFQM model can be translated to this e-learning organization as follows:

The enabler criteria:

1. *Leadership*: the promotion and support of a culture of innovation and continuous improvement.

2. *Policy and strategy*: career guidance for the staff and a training plan to support it.

3. People management: learning has to be promoted.

4. *Resources*: management of staff, buildings, materials, intellectual and information resources on an effective and efficient way, to contribute to learning, attainment and improvement in the organization.

5. *Processes*: to take care for improvement of learning and teaching processes.

The results criteria:

1. *Client satisfaction*: to meet the needs and expectations of the stakeholders

2. *People satisfaction*: to meet the needs and expectations of the learning organization /department, responsible for the learning process.

3. *Impact on society*: leadership in adoption of advanced and innovative learning concepts and e-learning solutions.

4. *Impact on the company's success*: the business impact of the training of the staff members.

3.2. Kirkpatrick e-Learning Evaluation Model

D. Kirkpatrick presented a four-level model of quality assessment that can be applied to traditional way of learning and also to e-learning.

1. Students' reaction: students are asked to evaluate the training after completing the program. First is asked how well they like the training. But other questions are about the relevance of and the fitting to the objectives, the quality of the included interactive exercises, the ease of navigation, …

2. Learning results: has the learner increased his knowledge of the topic? What about the achievement?

3. Impact of learning on the functioning in the workplace: Are any of the new knowledge and skills retained and transferred back on the job? Is the student's behavior changed as a result of new learning?

4. Impact of learning on the business results: the evaluation of the business impact of the training must be measured.

3.3. The SEVAQ Self-Assessment Model

SEVAQ stands for <u>Se</u>lf <u>E</u>valuation of <u>Q</u>uality in e-Learning

The main goal of the SEVAQ project is improving the quality of the vocational and educational courses that are offered through open-and distance learning, e-learning and blended learning.

A new multi-functional self-evaluation questionnaire has been developed in order to obtain valuable learners feedback. It is based on the EFQM-model (figure 2). The validation by the Target Reference Groups (TRGs) is ongoing now. These TRGs have been involved from the beginning of the project in order to reach the different actors from different sectors such as small and medium sized businesses, representatives of risk groups, training providers, schools, policy makers, …

3.3.1. Premises of the SEVAQ evaluation model

The SEVAQ assessment tool is based on the EFQM management (TQM) concept. All actors and stakeholders have to participate in the evaluation.

But in learning services in most cases evaluation will be limited to the learners' evaluation task and so the TQM model will be limited to a subset of criteria, namely those that can be measured by the learner. In that case, the evaluation itself is limited to a subset of the EFQM criteria domains. Some examples are the learning content, the learning process and the resources on point of infrastructure and organisation of the learning process activities.

3.3.2. Simplified e-learning EFQM model

We focus on the learning/training organization or more specific on the learning department of a company or an institute, that is organizing the learning activities and also the e-learning activities for the staff of all the other company departments.

To become excellent, the learning department has to balance and satisfy the needs of all relevant stakeholders. On the enabler side the stakeholders are the company management and the management of the learning department. On the results side the stakeholders are the company departments to which the learners belong, the individual learners, and the society and economic environment. The suppliers and the customers of the company are also involved in an indirect way because training will have an impact on the product quality.
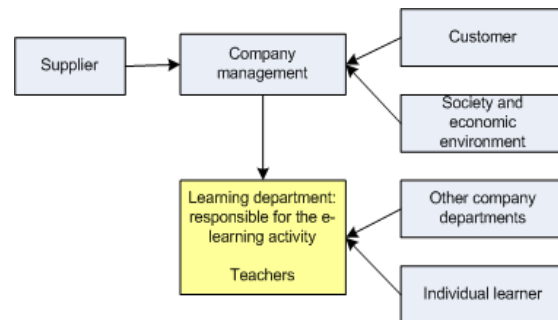

Figure 2: Stakeholder model for the e-learning activity

We developed a simplified e-learning EFQM model.

From the enabler site of the EFQM model, we dropped the management level. It is impossible that the learner, being an internal staffmember being trained or an external student can evaluate the management of the company.
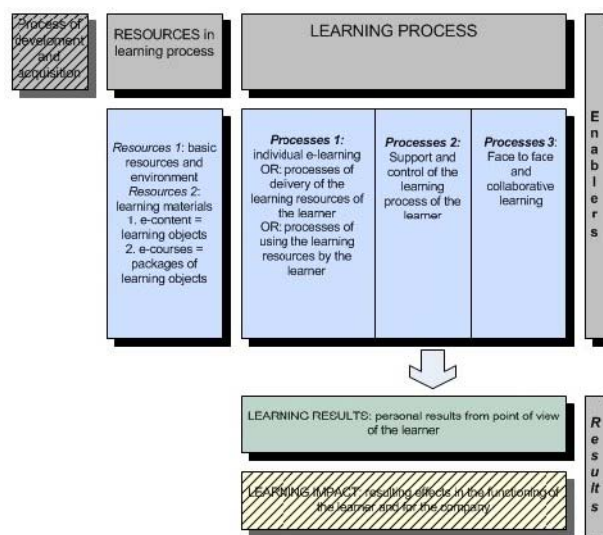

Figure 3: Quality criteria model, based on the EFQM excellence- and the Kirkpatrick's evaluation model.

We limited the model to the processes and resources. On the results site we limited the model to the learner. All other stakeholders could be asked to evaluate the results too. But in the frame of this project we limited our evaluation tool to learners' evaluation.

The limited EFQM model applied for the learning activity can be found in figure 3.

The two rows are presenting the enablers and the results. In the first column we see the process of development and acquisition of the resources to be used in the learning process. In the second column we see the resources themselves being the infrastructure needed for the organization of the learning process and the learning materials.

The third column is devoted to the learning process.

Our tool must be useful for the evaluation of the individual e-learning activity and for the classroom activities, both being part of the blended learning process we have in mind. Finally special attention goes to the support and to the control processes of the learner in the learning process.

We see that the Kirckpatrick model has been integrated in our model too in the following way:

	:"learner reaction"	covers the evaluation by the learner of the characteristics of all enablers, resources as well as processes
	:"learning results"	covers the effects on personal learning of the learner
	:"learning impact"	covers the effects of learning on the functioning of the learner in the job, and the results for the company

In this EFQM-Kirckpatrick model we have to remove also two criteria domains, where the learner can not be the evaluator.

The process of development and acquisition from one side and the learning impact from the other side can not be evaluated by the learner.

The three main criteria left are the enabling resources, the enabling processes and the (learning) results for the learner(Kirkpatrick)

3.3.4. The SEVAQ Self Assessment Questionnaire

Following our concept, we developed our questionnaire in a 3 level structure: 3 main criteria, each containing more criteria which consist of more subcriteria. Questions are linked with those subcriteria.

- The Main criteria: the enabling learning resources; the enabling learning processes; the learning results.
- Criteria
- Sub-criteria and questions

An example can be seen in Figure 4 and Figure 5

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List of criteria for evaluation of:
The enabling Learning Processes
   1.Services organization
     1.1. guidance of the candidate learner through the selection process
     1.2. Registration process and the contract negotiation process
     1.3. welcoming of the learner
     1.4. Services organisation and administration
   2.The e-learning activities of the learning process
…
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Figure 4: List of criteria

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2. The e-learning activities of the learning process
2.1 reading of and progressing in the e-course
2.1.1.it is possible to read through the course in a sequential way, as built in by the teacher
2.1.2. it is possible to read through the course in a flexible self chosen way
2.1.3. it is possible to access on the fly additional and deeper learning content
2.1.4. embedded usage of supporting facilities as calender, glossary,  …is possible
2.1.5. embedded usage of communication facilities as chat, e-mail, discussion, …is possible
2.1.6. the uploading of the pages is very performant
2.1.7. the learner has the opportunity of having a fast reading of the overview of the course
2.1.8. the flexibility of going back to previous pages is provided
2.1.9. the flexibility of skipping pages is provided
2.1.10. taking selftests or exercises in the course upon initiative of the learner is possible
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Figure 5: List of questions linked with sub-criteria 2.1

4. Conclusions

It is an opportunity for management to control the company (better) on its overall quality. Total Quality management (TQM) should be on the agenda of every company.

Total Quality Management (TQM) is an overall business strategy. It means that all activities of the company will be focused on satisfying all stakeholders of the company.

TQM can be realised by using the EFQM model.

We defined an EFQM model for a training organization or to the learning department of an organization. So we have limited the EFQM model to the training /learning activities.

We identified criteria to be measured. We developed a self evaluation questionnaire and a tool SEVAQ.

We selected the main criteria for which the learner can play the role of assessor. So only three main criteria left: the enabling resources, the enabling processes and the (learning) results for the learner. We limited the last one to "learning results" based on the Kirkpatrick model.

The three main criteria left are the enabling resources, the enabling processes and the (learning) results for the learner (Kirkpatrick)

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