



TAMPERE POLYTECHNIC
BUSINESS SCHOOL

FINAL THESIS

**CREATING INDICATORS FOR TAMGLASS LTD. OY FOR
MEASURING THE eLEARNING EFFECTS OF TAMGLASS
eLEARNING ENVIRONMENT AND FOR CALCULATING
eLEARNING ROI**



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International Business
December 2005
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TAMPERE 2005



TAMPERE POLYTECHNIC
INTERNATIONAL BUSINESS

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Degree Programme(s): International Business

Title: Creating indicators for Tamglass Ltd Oy for measuring the learning effects of Tamglass eLearning environment and for calculating eLearning ROI

Month and year: December 2005

Supervisor: Leena Mäkelä **Pages:** 63

ABSTRACT

Tamglass Ltd Oy designs, manufactures and markets safety glass machinery for the architectural, appliance and automotive glass industries. The company has more than 600 employees globally, which creates multiple training challenges. Training personnel is difficult and expensive.

Tamglass has launched an eLearning environment, which can be used globally via intranet. At his point, the top management wants to know how the eLearning environment affects on the personnel's performance. In other words, they want to know the rate of return on the investment. In order to show the eLearning return on investment, Tamglass needs to have a tool, which can be used to measure eLearning effects among employees. The objective of the final thesis was to create a list of indicators, which can be used in Tamglass for measuring eLearning environments learning effects and for calculating ROI.

The list of indicators was created based on the Tamglass personnel interviews and the background material from Tamglass eLearning environment. That is why the indicators are considerable suggestions and useful for the organization. ELearning is also linked with the total quality of the organization. By investing in eLearning, Tamglass should be able to decrease total quality costs and this way to improve customer satisfaction, profit and safety.

As a conclusion a list of indicators was created. The list will be a useful tool for Tamglass and help the organization to measure Tamglass eLearning environments effects on personnel. It will also be a tool for calculating eLearning ROI, which means the return rate of the investment. By calculating eLearning ROI, economical benefits gained by using eLearning can be presented to the top management.

Keywords: eLearning evaluation indicators quality ROI

PREFACE

This final thesis was made for Tamglass Maintenance Service. Because of the topic, the final thesis is very wide and interesting.

I would like to thank Tamglass personnel about the interest they showed towards my final thesis. I would especially like to thank Tapio Rauhala for giving me the opportunity to do my final thesis for the company. I would also like to thank Kimmo Kukkonen and Milla Koski from Tamglass Maintenance Service for their professional advice and encouragement during the final thesis.

I would like to thank the supervisor Leena Mäkelä for guidance during the final thesis process from the start till the end.

Tampere December 7th 2005

Henna-Riika Ruotsalainen

TABLE OF CONTENTS

PREFACE	3
1. INTRODUCTION	5
1.1. Background of the Final Thesis	5
1.2. Definition and objectives of Final Thesis	5
1.3. Final Thesis Structure	6
2. eLEARNING AS A QUALITY FACTOR	7
2.1. Definition of quality	7
2.2. Total Quality Management	8
2.3. Quality Costs	9
1. Traditional division of quality costs	9
2. Under quality costs	11
3. Lost opportunities	12
4. Gap to best practises	12
3.eLEARNING ADVANTAGES	13
3.1. eLearning vs. traditional learning methods	14
3.2. Evaluating eLearning effects	15
3.3. Formulating training's value	16
4. eLEARNING IN TAMGLASS	19
4.1. About Tamglass	19
4.2. After Sales by Tamglass Maintenance Service	20
4.3. Need for different learning method	21
4.4. TGL eLearning Environment	22
5. TAMGLASS eLEARNING INDICATORS	27
5.1. Approach and methods	27
5.2. Tamglass eLearning Indicators	29
5.2.1. Corporate point of view	30
5.2.2. Sales and marketing point of view	33
5.2.3. Installation and service point of view	35
5.2.4. Glass processing and production point of view	37
5.2.5. Quality point of view	38
5.2.6. Safety point of view	39
6. CONCLUSION	40
REFERENCES	42

1. INTRODUCTION

1.1. Background of the Final Thesis

The new knowledge society requires new equipment. IT-economy in its new role is unpredictable and the development is moving fast forward. The globalisation forces companies to expand their actions worldwide. Because of globalization, a company's employees are spread all around the world and training personnel can be difficult, time consuming and expensive. Since Tamglass is a large international company, training of personnel has always been complicated and costly.

Tamglass is a hi-tech company with high profile image. Tamglass Maintenance Service (TMS) has recently given bigger focus on Competence Development; after all, people are the most valuable asset in the organization. eLearning as a training method was chosen because it apparently suits the purposes of Tamglass. It offers multiple benefits and various savings for the company. eLearning as a training method is ideal for a unit like TMS, which employees are working globally in various different tasks.

Evaluating eLearning is complicated. Expectations are high but there are still several factors that affect an employee's learning results. Now that two eLearning modules are launched and in use, the top management naturally wants to know if the capital invested is coming back to Tamglass.

1.2. Definition and objectives of Final Thesis

The main objective of this Final Thesis was to create a list of indicators for Tamglass in order for them to measure the learning effects of Tamglass eLearning environment and in order to calculate Tamglass eLearning Return on Investment (ROI). If necessary, improvement proposals related to learning result improvement were to be provided.

Other objectives were internal marketing of Tamglass eLearning environment and feedback collection in order to create an increase of intranet based learning in the organization.

Final thesis started by having several meetings with Tamglass Portal Coordinator Kimmo Kukkonen and Competence Developer Milla Koski.

A draft definition for final thesis according to objectives set by Tamglass was created. The line between the calculation of ROI formulas and the actual measurement process was drawn. The task was to provide tools for Tamglass for measuring eLearning effects. This final thesis is mainly providing tools for figuring out the answers to following questions:

- How to show that Tamglass eLearning modules are critical to the organization's success?
- How to show that Tamglass eLearning modules have an impact on employees' performance?
- How to show that all the capital invested in the Tamglass eLearning project is coming back to Tamglass?

For the future of Tamglass eLearning environment, it is very important to find answer to those questions.

1.3. Final Thesis Structure

Personnel's role in organization's total quality is crucial. Personnel must know best the tasks and processes, all the things that can be eliminated. Personnel should know how much time every phase takes and where time can be saved, also how to speed up delivery times. If the personnel is well trained, they are more receivable about changes and they are motivated by changes.

Based on these observations, I decided to take quality based and personnel based approaches to my final thesis. Hi-tech companies are usually in quality matters investing in personnel education in order to prevent all other quality related costs. In order to make this happen, personnel needs to be undertaken to contribute to organizations goals. It is often difficult to demonstrate increased value of a company's total quality and human capital. But that does not mean that training investment must end up on the expense side of the balance sheet. By measuring carefully the results of training and tying training to the strategic metrics a company uses to measure its business success, a company can increase - and demonstrate the increase - in its return on training euros. In order to demonstrate the eLearning return on investment, there has to be a formula to calculate the return in euros. In this thesis I provide three formulas, which are needed in calculating eLearning benefits.

As a conclusion to my final thesis, I will provide a list of indicators in order to measure how Tamglass eLearning modules are affecting to personnel's actions on a daily basis and how to demonstrate the savings in euros.

2. eLEARNING AS A QUALITY FACTOR

Business evaluation has always been a continuous action. Balance sheets and financial statements have been used to tell operators, owners, investors and other parties about a company's result condition and success opportunities. These documents cannot tell the potential and performance of intelligent capital and immaterial capital. Quality is mainly defined only through quality systems and human resources as a crucial quality factor is too often ignored.

In this chapter I will show that investments in eLearning could have significant effect on the total quality of organizations' processes and customer satisfaction. Increased customer satisfaction will lead to customer commitment, which will be seen as increased sales. Increased process quality will lead to increased safety since the personnel knows how to make things right. When the personnel is working in a safe working environment, it will be seen as personnel satisfaction.

2.1. Definition of quality

The basic assumption is that the level of quality and conditions to produce quality in Finnish industrial companies is high. Finnishness has been considered as a guaranty of quality. Because of globalization, industrial operations' focus is transferring towards actions, where the development value of a product is high and price competition is more reasonable than among bulk products. Success factors are not everlasting, which creates several challenges for developing quality also in the Finnish economic life.

According to a draft international standard for quality vocabulary, quality is *“ability of a set of inherent characteristics of a product system or process to fulfill requirements of customers and other interested parties.”* (AS/NZS ISO 9000 2000)

Based on this definition, we can believe that quality of a product can be defined as satisfied customers' expectations and needs as well as by products' fitness for use. A customer usually considers the quality of goods and services based on three factors (Sandholm 1997, 17):

- Characteristics, which satisfy customer needs
- Characteristics, which are unexpected but positive for the customer
- The occurrence of failures and faults.

If a good or service meets customer expectations, the customer considers it to be of good quality. Positive characteristics, which customer did not expect, complimentary services, can increase the quality of a good or product even more. Failures and faults in a good or product will lead to dissatisfaction of a customer and lead to extra costs for a company. It is really expensive to repair or even redo things at no charge, which is why needed procedures must be done as quickly as possible.

2.2. Total Quality Management

Usually quality is linked to product quality. It seems to be conceived as a factor of goods and services, it is conceived to be a physical factor linked with for example raw material.

These days quality factors are discovered to be a part of a larger entity. Quality is a crucial factor in every organization and it should be made clear for all employees. If quality factors are ignored, it can cause serious financial damage and losses for the company.

“Total Quality Management (TQM) starts with the premise that all operation within an organization contribute to final customer satisfaction. Responsibility for quality lies with each individual, in ensuring that the role and tasks they have been allocated within the organization are performed to the standards defined.” (Hammond 1994, 224)

Personnel's role in TQM is crucial. Personnel must know best the tasks and processes, all the things that can be eliminated. Personnel should know how much time every phase takes and where time can be saved, also how to speed up delivery times. If the personnel is well trained, they are more receptive about changes and they are motivated by changes.

2.3. Quality Costs

To develop, produce and market goods or services costs money. If a company is going to gain any profit, it has to take some of the following costs into consideration. I will mainly concentrate on traditional quality costs because it supports my research results of eLearning as a quality factor. It also shows that a company can gain remarkable savings by investing in training.

Quality costs can be defined in four groups as follows: (Moisio & Sipilä 2000).

1. Traditional division of quality costs
2. Under quality costs, which are hidden in process as general costs
3. Lost opportunities
4. Gap to best practises

1. Traditional division of quality costs

During my research I found several definitions and classifications for traditional quality costs. In each classification model some essential factor was missing. In order to take all quality cost aspects into consideration and to create a clear and wide classification model, I used information from different sources and combined it as follows. (Sandholm 2000; Qualitas Fennica Oy 2000; Moisio al. 2000; Hammond 1994)

Quality costs are traditionally divided in two groups:

Quality costs:

Quality costs are costs related to prevention of bad quality and to attain a given quality level.

a) PREVENTION COSTS

- Costs from procedures that are used to make sure that things are done right
- Prevention costs include training, guidance, job control, quality system, pre-maintenance, tidiness and order etc.

b) APPRAISAL COSTS

- Costs arising from monitoring that things have been done right
- Appraisal costs include checking, testing, measurements, quality control, analysis and sorting etc.

Poor quality costs:

Poor quality costs are costs that would not exist if products and processes were done perfectly.

c) INTERNAL FAILURE COSTS

- Costs that occur before the product/service is handed out to a customer, and when things haven't been done right at the first time round.
- Internal failure costs include waste, junk, redoing, reparation, rechecking and testing, defect lookup, decreased process output etc.

d) EXTERNAL FAILURE COSTS

- Costs from failures, which are noticed after the product/service is handed out to a customer
- External failure costs include complaints, customer refunds, guaranty costs, retractions etc.

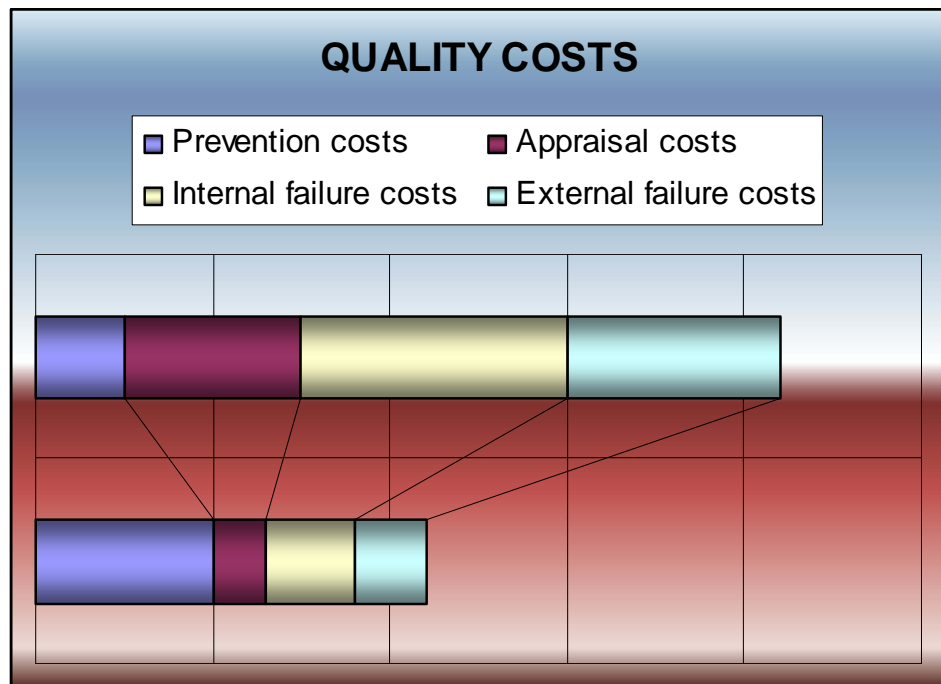
Different industries and companies invest in different costs. Following examples are only general guidelines. For instance some hi-tech companies may also be considered as low-end production companies. It is up to every company's strategy how the quality costs divide in that particular company.

Low-end production companies mainly invest in external failure costs. These companies do not see any point in investing in prevention costs, appraisal costs and internal failure costs. This practice is based on the Six Sigma Principle, which allows only 3.4 defects per million opportunities for each product or service transaction. These defects are so cheap to replace or repair that those companies are willing to take the risk and to pay for it.

Hi-tech companies are usually investing in prevention costs to prevent appraisal, internal and external costs. By training personnel properly things can be made right in all parts of process.

The military industry mainly invests in appraisal costs. Prevention would be a waste of resources since the monitoring process has to be done to ensure the quality of products. And there is surely no room for mistakes that would occur as internal or external failure costs.

As we can see from the picture (Picture 1), upper bar shows how quality investments usually divide in a company. By investing more in prevention costs, a decrease in other quality costs can be seen. As a conclusion, if Tamglass would invest and concentrate on prevention costs, in this case in form of eLearning, appraisal costs and internal and external costs would decrease dramatically.

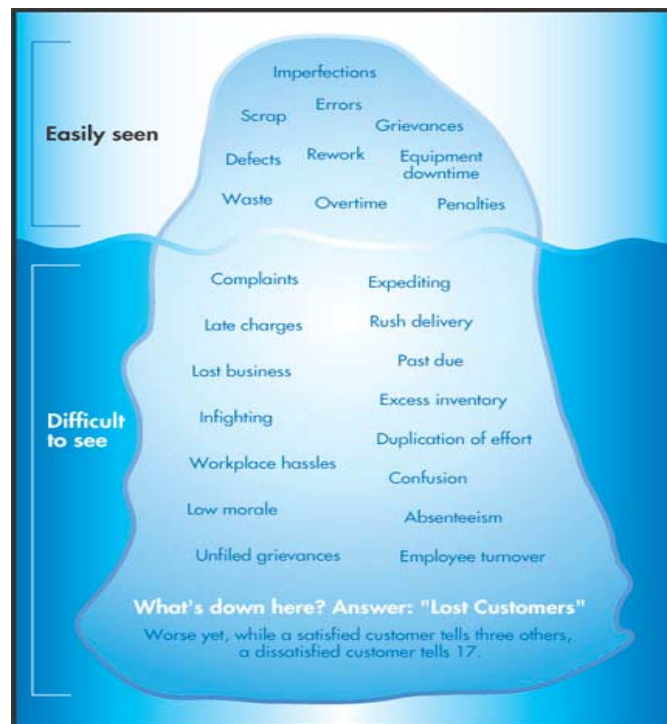


Picture 1. This is what quality costs are all about (Qualitas Fennica Oy 2000)

2. Under quality costs, which are hidden in process as general costs

Generally, quality costs are considered as one of the most important tools in modern quality management and strategic planning. Quality investments can be valued as decreased expenses and increased profit. Quality investments can be budgeted departmentwise or they can be used to as decision-making tool. A common problem in quality cost follow-up is that only some parts of real quality costs are revealed. Follow-up is mainly defined too narrowly; it usually refers to the quality defects caused directly by the production department of a company. Quality costs, which are not reported, are considered as “normal actions” instead of quality costs. These are not normal activities; they are called under quality costs.

Under quality costs include operative development potential, which includes waiting times, stocking, transfers, inspection etc. These costs are generally considered as general costs instead of quality costs. In reality, these are factors that affect the total quality of a process. If these factors are not considered and observed, they will cause under quality and costs caused by under quality. Following picture (Picture 2) was introduced by S.S. Sojin in 1998 and it describes a quality iceberg. Quality costs that are easily seen are the costs that are usually linked with quality. The ones that are under the surface are under quality costs, which in most cases are not considered as quality costs but normal costs and thereby totally ignored. Those costs that are hiding underneath the surface should be taken into consideration; otherwise they will be the reason why the ship is eventually going to sink.



Picture2. Quality Ice Berg (Qualitas Fennica Oy 2000)

3. Lost opportunities

Lost opportunities are caused by lack of proper management and guidance. If the working atmosphere is bad it may cause problems underneath the surface (Picture 2), which may lead to lost opportunities. Alternative working habit can also cause lost opportunities if they are not properly implemented which means that the personnel might have no idea about what they are supposed to do.

4. Gap to best practises

If competence factors in an organization are recognized and can be defined as monetary assets, best practices can be turned into valuable monetary ideas and innovations and used this way in the development of an organization's own operations. Best practices can be located by applying knowledge management approach, which means the challenge of collecting and distributing tacit knowledge that is hidden inside the organization.

3.eLEARNING ADVANTAGES

The new knowledge society requires new equipment. IT-economy in its new role is unpredictable and the development is moving fast forward. The globalisation forces companies to expand their actions worldwide. Because of globalization, companies employees are spread all around the world and training personnel can be difficult, time consuming and expensive.

As we move towards knowledge society, companies with excellent education and training systems are well placed to take advantage of the revolution of learning. By mobilising and coordinating companies' efforts, eLearning is playing an important role in helping companies to realize their potential to become world leaders.

This chapter deals with eLearning in an organization; how can eLearning be utilized and implemented? Why should ROI be taken into consideration and how can it be calculated? Comparison between eLearning and traditional learning methods is made, and suggestions about what kind of advantages eLearning can offer for an organization are given. The concept of eLearning ROI, which is used to show how much return (profit and cost savings) investing in eLearning may result, is also introduced.

eLearning is revolutionizing the training world. It offers unlimited possibilities for organizational training. These days it is almost essential for a company to operate globally. This means that personnel might be fairly dispersed. The idea of virtual organization is getting more and more familiar in business world. Arranging training by traditional training means for personnel that is widely spread all around the world has many obstacles. Firstly, it is very difficult to organize the training session. Trying to gather personnel from all around the world in the same place at the same time is at least challenging. Secondly, it costs a great deal of money. Travel expenses might become huge not to mention the expenses followed by hotel, living and other expenses related to travelling at work. These things alone create lost productivity.

eLearning offers multiple advantages to today's training challenges. With help of eLearning, companies can design and implement a training program specifically for themselves. By monitoring learning effects they can target the training in the areas where they are especially needed.

3.1. eLearning vs. traditional learning methods

Many organizations have recognized that in order to maintain their competitive advantage, they need to find other training solutions than traditional training to ease and boost their employees' learning process. Demand for knowledge and competence is in constant change in R&D, production, marketing, sales and among retailers and customer training. Especially specialist organizations and hi-tech companies constantly have to learn more, pass their knowledge forward to others and to estimate future needs and development direction. Competitive advantage and action ability require faster and more flexible methods of learning and training. (Alamäki & Luukkonen 2002)

Training people is not IT-tricks or pedagogical receipts and methods; it is a functional entity and a sum of many success factors. If properly packed, information can be delivered faster, more illustrative, more versatile and just in the right time and the learning becomes more effective. eLearning creates new possibilities for this situation. The most essential thing is that a learner does not have to travel to the training; training comes to a learner when the learning process is most effective. That is when a learner has a need for information. Learning is functional and usually bound to a certain situation and operation environment. (Alamäki al. 2002)

Traditional training is mainly tied up with time and place and it consists of classroom training, which includes several separate events (just in case). eLearning as a competence development tool is a continuing process, which is, at its best, integrated with work circumstances (just in time). eLearning shouldn't be seen as a replacement for traditional training. Instead we should think about how to take the best advantage from the combination of those two methods.

According to general beliefs, learning is a social event, and that is how in my opinion it will remain. New knowledge is usually created in social interaction or it requires combining already existing knowledge. But we need to bear in mind that in order to do so, some kind of basic knowledge is required and learned things still need to be understood and remembered. Finding the right combination of training methods is a problem that is more linked to an organization's action culture than a technological development challenge. Technological solutions will be available as soon as objectives, needs methods and attitudes towards training development are in order. (Alamäki al. 2002)

3.2. Evaluating eLearning effects

How to show that Tamglass eLearning modules are critical to the organization's success? How to show that Tamglass eLearning modules have impact on employees' performance? How to show that all the capital invested in the Tamglass eLearning project is coming back to Tamglass? For the future development of Tamglass eLearning environment, it is crucial to find answer to those questions. The top management naturally wants to know if the capital invested is coming back to the company.

In an article called "How to evaluate the impact of corporate training", Jesus M. Belle emphasises the importance of proper training evaluation. He states that every training program should be developed through four stages: training needs analysis, program design, program implementation and program evaluation. According to Mr. Belle, too often too few resources are dedicated to training analysis and program evaluation. Some companies do carry out a training evaluation but in most cases it is incomplete. Mr. Belle suggests Donald Kirkpatrick's 4 level model (Picture 3) should be used in practise as a training evaluation standard.

Donald Kirkpatrick, who is considered to be the main expert in training evaluation, introduced the 4 levels in training evaluation (Belle 2003).

LEVEL 1

Level 1 is called Reaction, which is usually conducted as a "happy sheet" after a training session. Reaction mainly measures the trainer, material and assignment etc.

LEVEL 2

Level 2 is called Learning and it is normally carried out as interviews and questionnaires. Level 2 aims to measure how much an employee has gained knowledge and skill as a result of training.

LEVEL 3

Level 3 is called Job Behaviour. In this level, measurement concentrates on how much an employee is using learned skills at work.

LEVEL 4

Level 4 is all about Business Results. At this stage, we want to prove that training has had a significant impact on specific aspects of business.

LEVEL 5

In addition to Kirkpatrick's 4 levels of evaluating training, Jack Phillips created level 5. Level 5 is a monetary version of level 4; it is a profitability ratio from the investment in training (Belle 2003).

LEVEL 1	REACTION	Measures participant satisfaction with the program
LEVEL 2	LEARNING	Measures increase in knowledge and skills
LEVEL 3	BEHAVIOUR	Measures the level of usage of the skills on specific job behaviours
LEVEL 4	BUSINESS RESULTS	Measures the impact of training on particular business areas
PHILLIPS LEVEL 5	ROI	Measures the monetary benefit from the training program

Picture 3. Kirkpatrick's four level training evaluation model (Belle 2003).

I explored several articles and books and tried to find a formula to calculate eLearning ROI. The result was that there's not any common definition for it. Its formula varies depending on circumstances and the motivations behind the eLearning use.

3.3. Formulating training's value

After my research of eLearning ROI definition, I decided to benchmark John Setaro's article *Many Happy Returns: Calculating E-Learning ROI* (2001). Setaro's opinions and calculation formulas seemed to be the best starting point to create guidelines for Tamglass management on how to use the indicators and measurement results. His calculations are also based on Jack Phillips' fifth level, which was added to Kirkpatrick's 4 level training evaluation model (Belle 2003). By using the following formulas, Tamglass should be able to recognize and address the monetary benefits that eLearning as a training method offers to the company.

The Phillips' fifth level is all about defining the return on Tamglass monetary investment in Tamglass eLearning environment. Thus a mathematical formula is needed to determine the answer. Mr. Setaro uses the following three formulas in his article. Formulas are developed by evaluation experts and are common formulas for measuring eLearning ROI. Each formula reflects a different concept of a company's return on training investment.

PROJECT NET SAVINGS (PNS):

$$\text{TACTP} - \text{TACNP} = \text{PNS}$$

If we separate the total administrative costs of the new training program (TACNP) from that of the former training program (TACTP), as result, we get the projected net savings (PNS) for training administration. It surely is important to figure out the cost savings, but eLearning ROI includes more than that.

COST PER STUDENT (CPS):

$$\text{TCT} / \text{number of students} = \text{CPS}$$

If we divide total cost of training (TCT) by the number of students, we get the cost per student (CPS) of the training. This information is useful, but it is not a way to figure out the true return on investment. Both formulas above, which are usually stated as measures of return on investment, do not measure what monetary value is gained from eLearning investment.

eLEARNING RETURN ON INVESTMENT (ROI):

$$\text{TB in €x 100} / \text{TTC} = \text{ROI \%}$$

If we multiply the total benefits (TB) of training in euros by 100 and divide that by the total training program cost (TTC) we get the true percentage of ROI in a new eLearning program. This formula is the most accurate of the three formulas dealt with in this chapter.

In order to calculate the total training costs (TTC), also following things should be taken into consideration:

- Office supplies (including costs of paper etc.)
- Internal marketing
- Rentals or purchases of needed equipment
- Facility usage
- Postage costs
- Missing working hours

In order to calculate the total benefits (TB), we need to evaluate tangible results of training to find monetary value to following factors:

- Increased productivity (units produced, items sold, forms processed, tasks completed)
- Improved quality (less scrap, less waste, less rework of product, fewer defects)
- Reduced turnover
- Reduction in lost-time injuries
- Reduction in workers' compensation insurance claims
- Increase in customer satisfaction as reflected in an increase in repeat sales.

These benefits are often called "hard benefits" because they can be converted easily to a monetary value.

Other training benefits such as improved communication, enhanced corporate image, improved conflict resolution, increased sensitivity to human diversity, improved employee morale and increased employee loyalty are less tangible, more difficult to convert to euro figures, and called "soft benefits."

Soft benefits are anyhow important. Although they cannot be directly measured, they can be inferred or indirectly measured by associated outcomes. One way to approximate the value of soft benefits is to ask experts within an organization to give a monetary figure for these intangibles.

The mission during the final thesis was also to appoint these soft benefits to the top management. Strategic Management usually has a habit of concentrating on financial figures when it comes to business results and performance. Soft benefits are also of great importance in organization's total quality and they should not be thereby ignored.

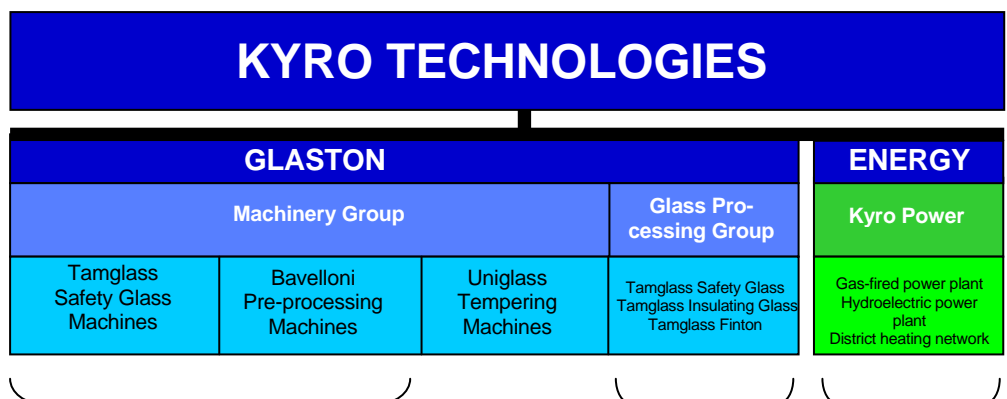
It is often difficult to demonstrate increased value of a company's human capital. But that does not mean that training investment must end up on the expense side of the balance sheet. By measuring carefully the results of training and tying training to the strategic metrics a company uses to measure its business success, a company can increase - and demonstrate the increase - in its return on training euros.

4. eLEARNING IN TAMGLASS

In this chapter I take a look at the background of the Tamglass eLearning project; why did Tamglass and TMS unit need a different kind of training method, why did TMS choose eLearning as a training method and how was the new training method implemented? I will also go through Tamglass eLearning environments structure step by step and look at the future scenes of Tamglass' eLearning.

4.1. About Tamglass

Tamglass designs, manufactures and markets safety glass machinery for the architectural, appliance and automotive glass industries. Tamglass Group has customer service offices and manufacturing, together with a network of sales agencies, in all main market areas. The company has delivered over 1,800 safety glass production lines to over 70 countries during its over 30 years of operation. Measured in terms of net sales and number of machines delivered, the company is the world's leading manufacturer of safety glass machinery. Tamglass is a part of Kyro Groups glass and stone technology business (Picture 4). It is part of Kyro's safety glass technology branch, which have a turn over of 203 million euros. Export and abroad actions cover over 95% of the turnover. Tamglass employs globally about 600 employees.



Picture 4. Tamglass is part of Glaston technologies in Kyro Corporation (Tamglass Oy)

Tamglass delivers capacity and support to its customers and helps them to succeed in glass processing. Tamglass also takes care of the function of capacity after machinery is delivered. Customers are ready to pay for

Tamglass capability to set up and maintain glass-processing capacity for customers needs. R&D actions are concentrated on basic research of safety glass process, developing new machinery and maintenance of existing products. Tamglass competitive edge is based on competence of glass tempering, bending and laminating.

4.2. After Sales by Tamglass Maintenance Service

Tamglass believes that their customers should be allowed to concentrate on the glass business and leave the more demanding maintenance to the experts. This way customers can minimize their maintenance personnel costs as well as total maintenance costs. At the same time they can maximize operational reliability and benefit from the flow of know-how that will improve customer's production capacity - the know-how from the original manufacturer. The purpose of maintenance services is to keep things running or even improve them. Instead of being reactive for unexpected breakdowns, TMS purpose is to prevent them by being proactive and to improve customers' machinery reliability.

Tamglass Maintenance Service (=TMS) unit is one of Tamglass Strategic Business Areas. TMS offers a variety of services, which ensure reliable and fast production recovery. The company provides 24-hour support, possibility to direct on-line connection or fast spare part delivery. In addition to maintenance, TMS also includes installation unit, which is responsible for machine assembly, start-up and customer training at site.

TMS provides services for all Tamglass machinery users. It works through Customer service units, which are located globally in major safety glass machinery market areas and are the main customer interface. Each Customer service unit has a Service Manager who is in response of service offering to customers, resource allocation and both financial and operational performance in its area. Customer service units are supported by the TMS Center located in Finland and the manufacturing units in different continents. These operations are called Support Services. Each Customer service unit is budgetary responsible for its profitability and has to be concerned of the customer satisfaction in its territory. Globally the Customer service units are organized to three regions (EMA which stands for <Europe, Middle East and Africa, Asia-Pacific and Americas). Each region has a Regional Service Manager (RSM) in charge. TMS offers to its customers a variety of different services, which are developed to fulfill different needs of the customer.

4.3. Need for different learning method

Since Tamglass is a large international company, training of personnel has always been complicated and expensive. In addition to that, Tamglass TMS unit experienced that their personnel especially needed more training and information in order to succeed in the global fields. TMS unit initiated the need for eLearning, which was launched successfully and will benefit the whole organization in the future.

Before eLearning project, process training was not part of all Tamglass personnel's general orientation. Ready-made comprehensive training package about processes did not exist; information had to be gathered from different sources every time it was needed. There were contradictions in the level of knowledge among the personnel. "The general level of knowledge" of employees, who were not working daily with processes, was relatively low, when key personnel was properly trained, their level of knowledge was high. There were also contradictions in work-related information, many different terms and words were used for the same things. Out of date information was also used widely in the organization.

TMS employees are geographically dispersed since they travel a lot. Arranging traditional training occasions was, and still is, difficult and expensive. Educational material was badly scattered. Until this learning development project, educational material used in training had been mixed and it had included partly out of date information about product development, marketing and maintenance. "In addition to own duties"-training is used a lot. This means that arranging training sessions was difficult. In addition to this, clear structure for training sessions did not exist.

Tamglass encourages its personnel to lifelong learning and it offers to its employees a wide range of training and courses in different fields of their business. There was a need to arrange training by less expensive methods traditional classroom training.

Tamglass is a hi-tech company with high profile image. Tamglass TMS unit has recently given bigger focus on Competence Development; after all, people are the most valuable asset in the organization. eLearning as a training method was chosen because it apparently suits the purposes of Tamglass. It offers multiple benefits and various savings for the company. eLearning as a training method is ideal for a unit like TMS, which employees are working globally in various different tasks.

eLearning enables consistent and high-quality process training for Tamglass employees all around the world. Personnel from each Tamglass unit can be trained in their own station unit, either collectively or

individually. Substantial cost savings are gained this way by using eLearning. High quality customer training packages are constantly available in every unit. Educational material is constantly available via global intranet and it provides an opportunity for constant learning experiences and also an Interactive Performance Support System (IPSS). eLearning also promotes Tamglass image as a market leader and high technology company.

4.4. TGL eLearning Environment

The very first Tamglass eLearning module about Flat Tempering was launched in November 2004. This pilot project was a result of a long period of careful planning and large-scale preliminary research already in 2003. Once the pilot project is planned and created properly, it is much easier to create following modules; environment and basic structure will remain the same only the topic and content needs to be changed. After the pilot project was successfully launched, it was time to move forward; Laminating-module was established in September 2005 and Bending and Tempering-module will be ready to use in spring 2006. WS Bending module is planned to be established later in 2006.

Tampere University's Hyper Media Laboratory has being planned to conduct a research about TMS personnel's personal competence and development needs in 2006. Conclusion of this research will be showing the way also for Tamglass eLearning; how will the eLearning environment and the modules develop and how and to whom should those modules be aimed?

Tamglass eLearning pilot project Flat Tempering

Firstly, the aim was to research the suitability of eLearning for the educational purposes of Tamglass. When the decision about eLearning was made, suitable eLearning environment was designed. Intranet based eLearning environment and flat tempering module were created. Module can be used for training and orientation of all employees, especially for them working with flat tempering lines delivered by Tamglass. Flat tempering module is for all Tamglass employees. It can be used in Tamglass customer training sessions and also during installation and maintenance via intranet. It will also have an impact on total quality inside Tamglass, which makes it beneficial for every single employee.

The aim of the project was to create experiences and know-how about hypermedia and other new techniques in training inside the organization. This kind of knowledge enables effective use of intranet based training and it also creates direct savings when creating new projects and updating existing ones.

A specialist group, formed by Tamglass and supplier representatives, created a layout and structure, where all required information related to eLearning module was taken into consideration. All existing text, picture and video material was delivered to the supplier, who edited and organized the material into pedagogically suitable form. According to the wishes of Tamglass, the supplier built a user interface, simulations and all other technical solutions required. Finished contents were audited by Tamglass specialist group. Finally, required corrections and modifications were made by Tamglass.

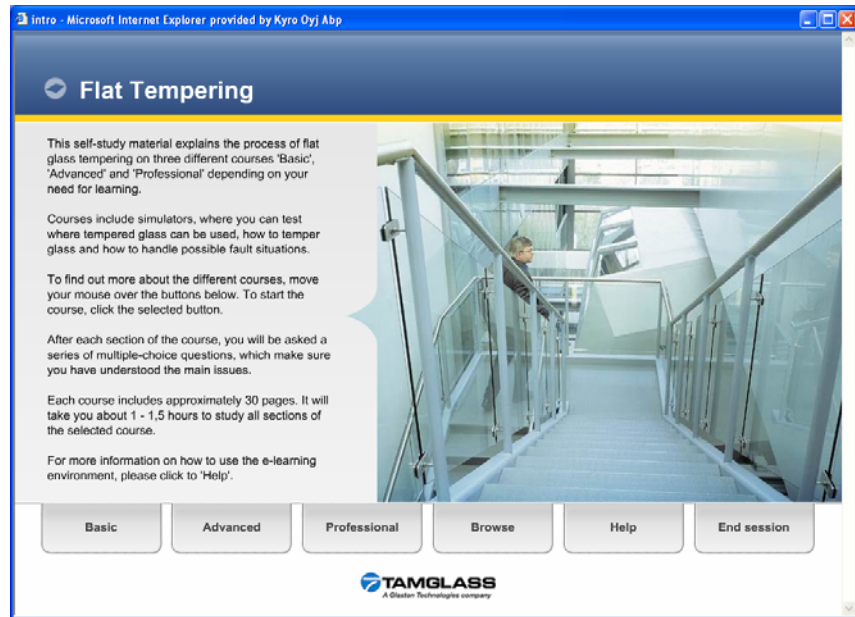
Structure and Content of eLearning environment

The eLearning environment consists of three different learning paths:

- BASIC
- ADVANCED
- PROFESSIONAL

A learner can choose a path that is equivalent to his/her learning needs. Each course consists of different sections. After having completed a section, the learner has to answer a quiz to make sure that learning has taken place. The system will comment on every question answered. In addition to the learning paths, the system includes a browse interface, which enables the use of the system in a working environment as an interactive support system. In order to achieve good learning results, it is recommendable to go through all courses in the right order.

Navigation and the use of different elements in eLearning environment can be reviewed in Help-section. Terms used in eLearning environment are explained in Glossary-section. Library-section in eLearning environment is designed to include several advanced level articles, which are linked to the particular topic, but it is not activated yet.



Picture 4. Main page of TAMGLASS eLearning module Flat Tempering.

Learning path BASIC

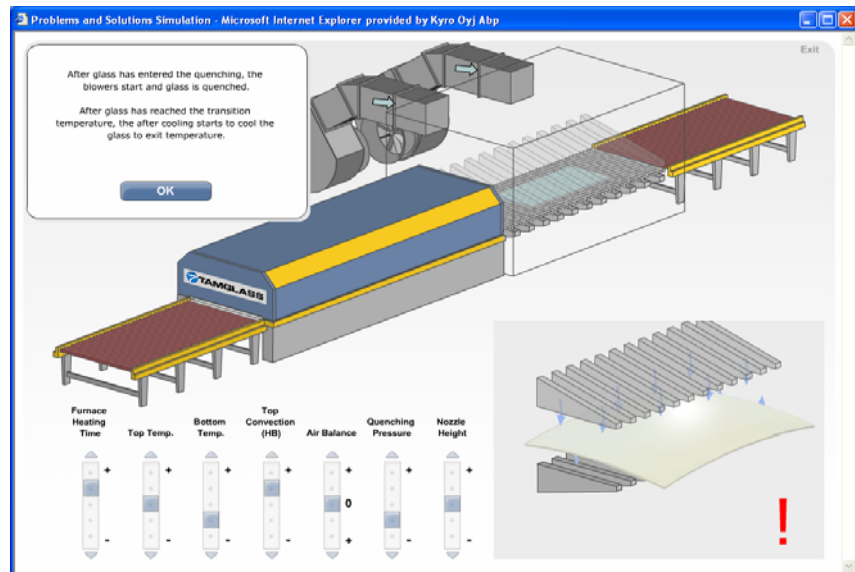
The BASIC course offers general knowledge about glass processing and the process in question. It includes utilization targets and process presentation simulations. The BASIC course is for orientation material of basic functions for all new and old Tamglass employees. It gives a good overall picture of Tamglass processes and offers basic information for all employees.



Picture 5. Learning path BASIC, user interface.

Learning path ADVANCED

The ADVANCED course includes more detailed knowledge of a process, related to safety and problematic areas. The course also includes a problem-solving simulator. The ADVANCED course is mainly for employees working daily with customers and machinery to ease problem solving in matters related to customers and own routines.



Picture 6. Learning path ADVANCED, problem-solving simulator.

Learning path PROFESSIONAL

The PROFESSIONAL course includes specific information about process variables, machine settings and what kind of effect those things have on the final product. It is mainly for operators, maintenance and installation personnel, to ease their tasks related to settings and to enable high quality glass processing and production economically and effectively.

Free user interface BROWSE

BROWSE is a free user interface, which enables access to all pages in the eLearning environment. BROWSE can be utilized as an interactive support material in the field by for example in sales, maintenance or by operators.



Picture 7. FREE USER INTERFACE.

5. TAMGLASS eLEARNING INDICATORS

In the previous chapter I looked at the background of Tamglass eLearning project; reasons that drove Tamglass to use eLearning and the start up of the pilot project. I also described the Tamglass eLearning environment, how it is designed and what the future sights are. This chapter discusses the progress and the results of my final thesis. I will deal with the objectives and the approach I chose and how I did proceed with my final thesis.

Evaluating eLearning is anything but easy. Expectations are high but there are still so many things that affect an employee's learning results. What I could do, was to look for trend-setting features among the personnel, and based on those. My objective was to create indicators that are suggestive and which can be used to find general impacts of Tamglass eLearning modules among the personnel. The result is the list of indicators, which will be used as a tool in Tamglass in the future in order to measure how Tamglass eLearning modules as a training method is affecting employees' performance.

5.1. Approach and methods

I started to work on my final thesis by having several meetings with Tamglass Portal Coordinator Kimmo Kukkonen and Competence Developer Milla Koski. Mr. Kukkonen is responsible for Tamglass eLearning project in the capacity of a project manager. He has been involved since the very beginning of the Tamglass eLearning project as far as the technical side and content of the modules are concerned. Ms. Koski has brought a pedagogical point of view to the eLearning project as well as the awareness of the importance of training evaluation of Tamglass eLearning project. Since Ms. Koski is the TMS Competence Developer, her main area is to develop TMS personnel's competence, which also includes Tamglass eLearning as a training method.

We started to build the framework for my final thesis by listing factors that might have been the result of eLearning and how eLearning could hypothetically affect Tamglass personnel in different departments and units (Attachment 1). Our objective was to list factors and benefits that might arise from using the Tamglass eLearning modules. Since we had gathered a great deal of factors, we started to draw careful conclusions; which factors are really relevant and measurable and which factors are affecting and leading to measurable results (Attachment 2).

I still needed more specific information from the field to confirm my conclusions, and I if possible, to find more information in order to draw more conclusions and find more indicators. I decided that the best way to gather that kind of information, which would be of most use for my work, was to perform a theme interview.

In co-operation with Mr. Kukkonen, I drew a list of key people, who were available for an interview and who would have the most information of the particular unit they were responsible for. This way I could collect as much information as possible. According to this information, I was to draw a list of indicators, which would be realistic and objective and, of course, measurable in real life. I interviewed employees from the following units in Tamglass:

- Sales (Attachment 3)
- Marketing (Attachment 4)
- TMS Installations (Attachment 5)
- TMS Service (Attachment 6)
- Safety Glass Production (Attachment 7)
- Engineering (Attachment 8)
- TMS Administration
- Human Recourses

The interviews were carried out in Tamglass premises. All the people I interviewed hold a managerial position, which gives them a wide overall picture of a particular unit and employees working under their supervision. In order to gather a wide range of information, I prepared a questionnaire beforehand, which I followed during the interviews (Attachment 10). In addition, every interviewee received the objectives of the final thesis and Conclusion list 2 (Attachment 2) beforehand via email, so they were also prepared for the interview and we could use the time reserved for the interview more effectively. Then the interviewee told about the areas he/she was responsible for and gave me a general picture of employees in that particular unit. We went through the Conclusion list 2 (attachment 2) and interviewees either accepted it as it was, disagreed with some points or suggested more conclusions in addition to the list. During interviews, I also gathered valuable information about training needs and habits and future improvement proposals. Indicators are based on interviews with Tamglass employees (attachments 3-8). All the interviews succeeded excellently.

5.2. Tamglass eLearning Indicators

A numbers of authors have dealt with indicators in the literature under distinct focuses and explanations. These terms are confusingly used as synonyms although they have a different meaning. In this context I use the word indicator as follows (Raivola 2000):

- It is a defined variable
- It is used to evaluate the performance level of a company
- It is linked to organizational effectiveness
- It is meant to help measuring, observation and planning operations
- It is useful and relevant
- It offers explanation for metrics and measurement results
- It is objective and neutral
- It can be repeated and compared

The framework of Tamglass eLearning indicators focuses on the following six categories:

1. **CORPORATE POINT OF VIEW**
2. **SALES & MARKETING POINT OF VIEW**
3. **INSTALLATION AND MAINTENANCE POINT OF VIEW**
4. **GLASS PROCESSING AND PRODUCTION POINT OF VIEW**
5. **QUALITY POINT OF VIEW**
6. **SAFETY POINT OF VIEW**

These different categories were selected in order to get a wide and comprehensive overall picture about the units and processes of Tamglass. It would also be useful to every unit to have a clear structure and categories. Different units can this way find and use more easily the indicators, which are relevant to them. According to my observations and interviews, proposals for indicators were verified under every category.

Each indicator is based on measurements and observations made from Tamglass eLearning project background material, interviews, literature and articles related to the topic. Tamglass will select the indicators that they are going to be used from the list. Indicators are very likely to be modified as they are used and established reliable in the future. Indicators are provided as a short list in attachment 11.

5.2.1. Corporate point of view

Kyro Technologies follows an organic growth strategy, which aims for maintaining and developing a strong competitive position and good earning capacity. The activities of Tamglass involve developing, designing, manufacturing and marketing safety glass production lines and providing after sales services for the architectural, automotive, appliance and furniture industries. The company's mission is to develop a safe and visual environment for everybody. All following factors follow the company's and Kyro Group's strategy, mission and aim for increased customer commitment, increased profit, increased process quality and decreased number and severity of accidents. The indicators are applicable in every Tamglass unit; they are based on all the interviews and observations made during the research.

Cost avoidance indicators:

According to the interviews, these are indicators that are most commonly used as reasons for eLearning. These indicators are directly associated with eLearning and can be dramatically decreased by using eLearning. It can be demonstrated that eLearning is the only factor that decreases the factors listed below. Following eLearning related direct savings can be measured based on cost avoidance.



Travel costs

Includes expenses arising from travelling by flight, bus and train.



Per Diem allowance

When an employee is in training outside his/her workplace, it costs a certain amount of money daily. It is even more expensive if an employee travels abroad.



Lodging costs

Expenses related to accommodation, for instance hotel or another form of accommodation.



Meals during the trip

An employee is entitled to several meals a day, usually in restaurant, which means that the cost can be pretty high.

Facility costs

Room rentals, equipment rentals and other costs related to training facilities.

Course development costs

You always need a person to do the course development work. This indicator means the hours of design work, which is used for developing and updating course material and structure.

Material costs

Training by traditional ways means lots of distributed material like books, handouts, pens, paper clips etc. All these material related costs should be taken into consideration. By using eLearning none of the costs mentioned above are not necessary and should be included to direct savings.

Instructor salary and benefits (if internal)

If the instructor is company's employee, it will mean that every training occasion including preparation, material update, instruction, and follow up will be off from some other tasks. This indicator will be all about eLearning shortening instructor's time used to training occasion and everything they include.

Instructor fees (if contracted)

Contracted instructors and consultants are very expensive. In addition, they only appear to employees rarely, which mean that the learning process is limited and incomplete. Savings can be easily measured by calculating consultant and contracted instructor fees. When eLearning is used as a training method, consultants and contracted instructors will not be needed, at least not that often.

Learner cost indicators

eLearning means tremendous savings in cost and time. The Tamglass eLearning environment is not tied to time and place. It offers individualized instructions on three different levels. By using Tamglass eLearning modules, the training time decreases and it provides savings in wages and also savings in opportunity costs. As a result, it affects personnel in the form of faster understanding, faster selling, faster utilization and service. Effects can be seen and measured as decreased learner costs. These indicators are also related to the eLearning ROI, since it can be shown that the measurements are results of eLearning. The

following indicators are a group of indicators, which I like to call learner costs.

Decreased time away from work

This indicator measures the lost working hours used for training. When the personnel can do the learning independently, at the time and place that is suitable for them and without requiring travelling, the learning process becomes faster and more cost-effective. Savings can be seen directly in decreased working hours used for training. If an employee has to travel abroad for training, it automatically means at least 3 days away from work.

Decreased time used for training and orientation

Measures the period of time that is used to train a new employee. This period can be shortened by using eLearning. Since, in the case of Tamglass, we are talking about employees, who mainly learn their tasks by doing, eLearning gives the whole personnel basic knowledge of different Tamglass processes and helps them in this way to adopt and understand their specific tasks. This way we can observe the decrease in the training period of a new employee as well as the decreased time needed for a new employee to reach the level, which gives him/her the capability to work independently. We still need to bear in mind, that every employee is an individual and each individual has his or her own way to learn. This means that in some cases blended learning, which includes both eLearning and traditional classroom learning, might be the best solution and bring the best learning results.

Decreased costs of using substitutes/replacement work force

Measures the decrease in hours when because of personnel training, substitutes or replacement work is used. When personnel can do most of the training and learning without leaving their work place, and when they can schedule and arrange learning sessions compatible to their work pace, substitutes and replacement work force won't be needed that often.

Decreased time and costs of creating/establishing new training material

The ongoing development of training material is a key benefit of eLearning, it keeps the content of modules constantly alive. Contents can be adjusted and changed easily. It also gathers the process information and knowledge inside the organization into one place. Content can be easily modified for translation and it is a useful source of information and material for customer training.

According to interviews, before eLearning modules were launched, it took three days for TMS personnel to prepare customer training material. These days it only takes from four to five hours by using eLearning modules and information provided by them. Savings can be easily calculated in working hours used to prepare training material.

5.2.2. Sales and marketing point of view

Following indicators are based on interviews with sales and marketing directors. Marketing unit has been really actively along in the Tamglass eLearning project, they have provided a great part of information used in training material. Sales unit had a great need of eLearning. Salesmen are geographically dispersed and training takes place rarely. For sales and marketing units, Tamglass eLearning environment mostly provides standards for working habits and concepts in order to sell right products. It will be seen as increased process understanding and ability to solve problems. This will lead to increased customer satisfaction and customer commitment.



Decreased length of sales cycle

By sales cycle I mean the period of time from the first contact with a customer to the time the contract is signed. When a sales person gains more knowledge about the product and the whole glass processing process, it will speed up the sales process. Still, we need to bear in mind that many factors are affecting the sales cycle. But if properly implemented and informed, eLearning modules will offer sales personnel training that will help them to perform better through the product and the process understanding. Increased understanding in those areas can be seen as increased troubleshooting skills and additional sales skills.

If a sales person is capable to solve problems without Product Manager travelling to the location it will speed up the entire sales and negotiation process and this way decrease the length of the whole sales cycle. It will also have a positive impact on customer satisfaction if the sales personnel have wide range of knowledge about the machinery.



Increased Hit Ratio

Hit Ratio means the amount of offers made in a period of time by a sales person versus contracts made according to offers in a period of time. In this case we need to be very careful with the indicator; it might cause a

change of behaviour among the sales personnel. Sales personnel might experience measurement of hit ratio too personally which might lead to less offers made and accordingly more contracts signed. Indicator and the purpose of measuring it should be gone through with sales personnel in order to make them understand that measurement is more about measuring learning effects than about observing their performance. Another way to handle this situation is not to tell sales personnel that the hit ratio is being observed. These figures are already being observed and measured and they are easily available. By letting the personnel know that those figures are observed, a shift in the figures might happen.



Increased customer commitment and customer satisfaction

The success of every company depends on its customers and how satisfied they are. This indicator is not directly related with eLearning, many things can affect on that. But since eLearning aims to increase quality of all operations in the company, in the end, results can be seen as increased customer satisfaction. When sales personnel gain more knowledge, they will be able to think more in a more customer orientated way and solve problems by themselves. If the sales personnel is professional and has more knowledge than is expected from them, it will support the image of Tamglass as a world leader hi-tech company. Increased customer commitment can also be seen as increased sales volume.



Increased number of repeat orders

Customer retention is a very important factor for every business. In most cases, it is many times more expensive to get one new customer than keep one old customer. Also, if a customer experiences unpleasant things, they will spread the word to many others. If customers are happy, they will tell to only few others. That is why a happy customer is committed and of great importance to every company.

A customer can be very committed to the company but the problem is how to show it. Sometimes a customer does not have a need for Tamglass products or the company cannot afford to buy Tamglass products at the moment. Still this company can be a very committed customer. Repeated orders are the best way to show this figure.



Decreased need of Sales Support

When sales personnel have more knowledge about the whole process and they have proper information on hand, they can solve some general problems and answer customers' questions right away. This means that every time a sales person gets a tricky question, he does not have to give a call to maintenance person who calls Finland where the problem is

solved. This can be seen as a reduction in calls to Sales Supports and it will increase the company's image as a professional hi-tech company among customers. We can consider these decrease need of sales support to be a result of a well-planned, informative Intranet based eLearning environment.

When the sales personnel abroad have 24/7 access to training material and individualized instructions available, they can increase their process understanding. Usually when a sales person meets with some problem during negotiation with a customer, Product Manager has to travel from Finland into that particular country to solve the problem. Tamglass eLearning environment will pace up operations such as selling, instruction utilization and service. It will also give sales personnel ability to do some kind of trouble shooting by them selves. This would mean that the product manager won't be needed that often and there would be a decrease in Product Manager related costs.



Decreased travelling costs of Product Manager

If a Product Manager will not be needed abroad that often, it will be seen as decreased Product Manager's travelling costs.



Decreased time away from work of Product Manager

If a Product Manager does not have to travel that often to solve sales personnel's problems, he/she can use those working hours to something else and it can be seen as decreased Product Managers time away from work.



Decreased Per Diem, lodging and meal costs of Product Manager

If a product Manager's travelling days decrease, it will also mean a decrease in per diem, lodging and meal costs.

5.2.3. Installation and service point of view

Since Tamglass has a strong brand and high-level products, it creates high customer expectations. This means that high level of knowledge among employees in every unit is required. Tamglass eLearning environment offers a tool for installation and service personnel all over the world. It will help them to gain more knowledge of different processes and this way to expand their understanding and trouble shooting skills. Tamglass installation & service personnel travel a lot and they face different

situations daily, product installed its unique environment. Their job is to make sure that the machinery start up will be successful and that the machinery continues to work properly. Installation and service unit takes care of the machinery about 25 years after the start up, that long period requires wide knowledge of the machinery. Following indicators are to measure eLearning effects in installation & service unit.

Reduction in unnecessary maintenance calls

Tamglass eLearning modules offer wide range of information to the personnel. It will improve personnel's skills to use software and systems. Increased level of knowledge can also be seen as reduction in calls to help desk, which leads to reduction of unnecessary maintenance calls.

Decreased installation time

When the installation personnel have better process understanding and they have a tool, which enables access to professional level information 24/7, they are more likely to perform machinery installation more quickly. There will also a decrease in time and amount of workforce used in useless work and mistakes.

Decreased time of entering as income

Since Tamglass started to use IFRS this year, entering of income requires customer's approval (before entering of income could be done when the machinery left Tamglass site). The situation requires more from installation personnel; the job has to be done as quickly as possible. Tamglass eLearning modules provided interactive support system for installation personal, which will speed up the installation process and entering as income. It will also ease the training at customer's site.

Time used to repair a machine that is out of use

(Indicators established by after sales unit)

From customer's point of view, it always takes too long time to repair a machine that is out of use. When personnel gain more knowledge of different process phases, they will be able to think more objectively in order to locate the defects, and they will be able to recognize the faults more quickly. After Sales unit is preparing a list of indicators considering the time used to solve the problem or to repair a machine that is out of use.

Right at first time

If the personnel has a good level of process knowledge and they have good trouble shooting skills, problems are more likely to be solved at the first attempt. Those figures are provided by TMS and can be observed in order to measure eLearning effect on problem solving.

Bonus system

After sales unit has made an initial of a bonus system. This system would be used to observe the level of the knowledge among the personnel. Bonus would be paid according to employees' level of knowledge and according to how active has an employee been in order to increase ones knowledge and skills. This system would be a great way to observe eLearning effects.

Decreased time to meets the required training level

This indicator is strongly linked with bonus system. eLearning offers wide range of information to a new employee and this way decreases the time an employee meets the level of knowledge that employer requires. This means that since an employee gains the knowledge via eLearning environment faster than by other means, an employee will be ready faster to work on his/her own. It is also important to monitor all employees level of knowledge by performing competence mapping on regular basis, this way the gaps in the level of knowledge and things that are difficult can be brought up and the personnel will have training about right things.

5.2.4. Glass processing and production point of view

Information that Tamglass eLearning modules can offer to glass processing and production personnel is mainly general level information. It might help personnel to understand the processes more and that way improve their own actions. Tamglass eLearning environment offers standards for working habits and concepts which will lead to better working atmosphere and which would lift the spirit up among the personnel. Those kind of things are difficult to measure and also result of many factors, that is why they are not suitable for indicators.

Tamglass glass processing and production units have many similarities when it comes to personnel and personnel training. Both units also have own ways of doing things that are experienced to be good and suitable for them. Still there are some factors that could be improved by using

Tamglass eLearning environment as a training or support tool among the personnel. Hypothetically speaking, I came to a conclusion that those factors could be for instance as follows:

- Improved delivery times
- Increased product output
- Decreased inventory costs

I came to this conclusion according to my prior knowledge of the fact that increased knowledge leads to better total quality, which leads to improvements in all organizations sectors. If Tamglass glass processing and production units would explore the possibilities of eLearning and it would be tailored for those units and properly implemented, I am sure that some indicators would arise from the experiment.

5.2.5. Quality point of view

I strongly believe that quality comes from a process where all the steps are done first time in a right way. During my interviews, only few saw the benefit of eLearning in quality matters as strongly as I do. As I stated before in my final thesis, quality is usually conceived to be a physical factor linked with product or service. I guess that is the general state of opinion in the field in Tamglass too. Still, despite of the quite narrow quality perspective, I was able to find some indicators under this category.

Reduction in the number of defects

When everything is done by rules and regulations, defects shouldn't arise. If the personnel gain better skills, in this case by using Tamglass eLearning modules, it will have an effect in the number of defect.

Increased process quality in TMS

As I have stated before, knowledge increases the process quality and under quality would not be met that often. This indicator will be measured as a decrease of reporting to TMS. If under quality occurs more rarely, it does not have to be reported that often. TMS unit is observing quality and they have quality indicators in use.

Decreased waste

If everything is done right at first time, without defects and re-doing, less waste is going to be produced.

5.2.6. Safety point of view

One accident is too much. Luckily severe accidents are not a problem in Tamglass, most of the accidents take place on employees' free time. Safety matters should not be ignored even if they are not a problem. Some people are working under strict supervision in Tamglass factories, when others are travelling around the world in various circumstances. Tamglass eLearning modules offer benefits especially for the personnel who needs to travel a lot and who cannot be supervised constantly.



Reduction of severe accidents

If the personnel have a good knowledge of processes and they have learned the safety section from the Tamglass eLearning module, they are not likely to do anything thoughtless, which they know would cause accidents. If you know what you are doing, you will not do anything to hurt yourself.

6. CONCLUSION

In order to learn as much as possible, I tried to remain a critical and personal point of view along the final thesis process. That kind of approach also helped me to remember why things were made as they were and what could have been done differently. I have become familiar with Tamglass eLearning environment and the content of the modules and learned much about the challenge of evaluation eLearning effects. By getting familiar with Tamglass as a organization and by learning about Tamglass processes I made sure that the final thesis will be done objectively and still from the company's point of view. I also gathered information from employees in different positions the organization in order to get a wide perspective and framework for the thesis. Considering the research and the information I gathered during the thesis process, the results of the final thesis are considerable and suggestive and useful for Tamglass.

Many organizations have recognized that in order to maintain their competitive advantage, they need to find other training solutions than traditional training to ease and boost their employees' learning process. In order to improve personnel's performance during the years, Tamglass has invested money, time and energy in different training methods. As an entity, the creation of the eLearning environment has been professional and deliberate. The design and the content are the result of a carefully planned actions, everything have been done based on a wide research. Tamglass eLearning environment is taking its first steps and the learning effects can already be seen among the personnel. The modules have been launched successfully and the personnel is been trained to use it. The potential is huge and the direction of development is right at the moment. In order to success in the future, Tamglass eLearning environment still has to meet many challenges. The work that has to be done is mainly designing different modules for different needs; every unit has their own responsibilities and tasks, which would need individual instructions.

Business evaluation has always been a continuous action. Balance sheets and financial statements have been used to tell operators, owners, investors and other parties about a company's result condition and success opportunities. These documents cannot tell the potential and performance of human capital and immaterial capital. By using the list of indicators provided in this final thesis, in addition to financial figures and hard benefits, some soft benefits that are crucial for company's success can be presented to the top management.

Quality is mainly defined only through quality systems and human resources as a crucial quality factor is too often ignored. eLearning can

have significant effect on the total quality of organizations' processes and customer satisfaction. Investments in eLearning will be seen as decreased appraisal costs and poor quality costs, which will lead to an increased quality in products. When a customer is satisfied it will lead to customer commitment, which will be seen as increased sales. Increased process quality will lead to increased safety since the personnel knows how to make things right. When the personnel is working in a safe working environment, it will be seen as personnel satisfaction. These entire conclusions can be accomplished by training personnel and providing them a tool, which can be used on a daily basis as a support tool. Increased process knowledge among the personnel will help them to understand why things are done like they are, which will make the mission of the company clear for every single employee.

The main objective of the final thesis was to create a list of indicators, which can be used in Tamglass for measuring eLearning environments learning effects and for calculating ROI. As the conclusion I provide a list of indicators which is created for Tamglass in order to perform those measurements and calculations. Total quality is also strongly linked with eLearning. Tamglass will select the indicators that are going to be used from the list. Indicators are very likely to be modified on the way as they are used and established as reliable in the future.

Tamglass eLearning environment should have favourable effects on the total quality in the organization. I strongly believe that by showing eLearning effect and the quality factors to the top management will convince them about the potential and the benefits of eLearning and will lead to their approval for the future development of the Tamglass eLearning environment.

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Sales and marketing point of view

- ❖ Change in sales/sales volume
- ❖ Customer retention
- ❖ Increased customer satisfaction
- ❖ Decreases learner costs
- ❖ Free from time and place to use
- ❖ Individualized instructions (three levels)
- ❖ Modified for translation and change of content
- ❖ Length of sales cycle
- ❖ Ability to sell right products-> process understanding
- ❖ Profitability on each sale
- ❖ Standards for working habits and concepts
- ❖ Customer commitment
- ❖ Faster understanding, selling, utilization and service
- ❖ Increased ability to solve problems

Technical point of view

- ❖ Reduction in calls to the help desk
- ❖ Reduced time to complete reports, forms, or tasks
- ❖ Improved use of software and systems
- ❖ Reduction in length of project cycle
- ❖ Decreased learner costs
- ❖ Increased ability to solve problems
- ❖ Decreased installation/start up time
- ❖ Increased process quality
- ❖ Reduction of accidents and time lost injuries
- ❖ Decreased maintenance costs and time
- ❖ Meets the needs of a geographically disperse employees
- ❖ Learning available all the time (free from time and place)
- ❖ Offers more individualized instructions (three levels)
- ❖ On going training
- ❖ Standards for working habits and concepts
- ❖ Professional information for a beginner-> faster orientation
- ❖ Decreased unnecessary communication
- ❖ Ability to diagnose and repair product faults
- ❖ Increased ability to solve problems
- ❖ Increase of the amount of new ideas, best practises, information

Quality point of view

- ❖ Reduction in number of defects
- ❖ Reduction in time used in troubleshooting
- ❖ Increased process quality
- ❖ Meets the needs of a geographically disperse employees
- ❖ Easily modified for translation and change of content
- ❖ Offers more individualized instructions (three levels)
- ❖ Standards for working habits and concepts
- ❖ Increased amount of new ideas, best practises, information
- ❖ On going training

Safety point of view

- ❖ Reduction in number or severity of accidents.
- ❖ Avoidance of penalties and extra work caused by carelessness and indifference
- ❖ Increased process quality
- ❖ Easily modified for translation and change of content for different cultures and languages
- ❖ Standards for working habits and concepts
- ❖ Increased ability to solve problems
- ❖ Offers more individualized instructions (three levels)
- ❖ Professional information for a beginner-> faster orientation

1. Corporate point of view

All following factors are aiming for increased customer commitment, profit, process quality and decreased number and severity of accidents.

2. Sales and marketing point of view

- ❖ Free from time and place to use, Individualized instructions (three levels)
 - > Faster understanding, selling, utilization and service > Decreased learner costs
- ❖ Standards for working habits and concepts > Ability to sell right products-> process understanding > Length of sales cycle > Profitability on each sale (balance)
- ❖ Increased ability to solve problems > Customer commitment
- ❖ Increased customer satisfaction > Customer commitment > Change in sales/sales volume
- ❖ Standards for working habits and concepts > Decreased unnecessary communication
- ❖ Ability to diagnose and repair product faults > Increased ability to solve problems

3. Installation & service point of view

- ❖ On going development of training material > Modified for translation and change of content > Decreased course development costs
- ❖ Improved use of software and systems > Reduced time to complete reports, forms, or tasks > Reduction in calls to the help desk
- ❖ Decreased installation/start up/service time > Reduction in length of project cycle; Decreased maintenance costs and time
- ❖ Meets the needs of a geographically disperse employees, Professional information for a beginner > Faster orientation; Increased amount of new ideas, best practises, information
- ❖ Learning available all the time (free from time and place), Offers more individualized instructions (three levels) > Decreased learner costs
- ❖ Standards for working habits and concepts > Decreased unnecessary communication
- ❖ Ability to diagnose and repair product faults > Increased ability to solve problems

4. Quality point of view

- ❖ On going development of training material > Meets the needs of a geographically disperse employees > Reduction in number of defects; Reduction in time used in troubleshooting > Increased production volume
- ❖ Easily modified for translation and change of content > Offers more individualized instructions (three levels) > Standards for working habits and concepts > Increased ability to solve problems > Decreased waste

5. Safety point of view

- ❖ Easily modified for translation and change of content for different cultures and languages > Standards for working habits and concepts > Avoidance of penalties and extra work caused by carelessness and indifference > Increased process quality
- ❖ Offers more individualized instructions (three levels) > Professional information for a beginner-> Faster orientation > Reduction in number or severity of accidents.

Interview with Area Director, North Asia

September 19th 2005

Glaston Technologies

Indicators found based on interview

- ❖ Free from time and place to use, Individualized instructions (three levels)
> Faster understanding, selling, utilization and service > Decreased learner costs
- ❖ Standards for working habits and concepts > Ability to sell right products-> process understanding > Length of sales cycle > Profitability on each sale (balance)
- ❖ Increased ability to solve problems > Customer commitment
- ❖ Increased customer satisfaction > Customer commitment > Change in sales/sales volume
- ❖ Individualized instructions> Increased ability to solve problems> decreased length of sales cycle (from first contact to signing contract)
- ❖ Process understanding> Increased ability to solve problems> Sales personnel able to do troubleshooting> Decreased total time used to troubleshooting
- ❖ Free from time and place to use > Individualized instructions> Process understanding> Faster understanding, selling, utilization and service> Decreased contacts and need of Product Manager> Decreased travelling costs of Product Manager

Background and facts

Glaston Technologies Area Director is operating in North Asia area. Asia sales team includes 5-6 Tamglass salesmen, all in managerial position with their own sales areas. Sales team also includes 3-4 salesmen behalf of Bavelloni and 10-15 independent agents. All salesmen report directly and regularly to Area Director.

Training of sales personnel is very minimal. Orientation is arranged for all new employees. Sales personnel have sales meeting twice a year. Product knowledge of personnel varies a lot; it depends on the employees' background, how long they have been working for Tamglass and on their own interests. All salesmen have TGL technical sales manual on CD. This CD is used as a sales manual including sales material. No training about for example sales technique is arranged. The level of knowledge inside sales organization is not observed or tested.

North Asia Area Director has heard about Flat tempering-module but he doesn't know it that well. In his opinion, the sales personnel have no clue about it. He also thinks that there are few problems when it comes to sales

personnel using it. He thinks that telecommunications in the “periphery”, where his personnel usually operates in, is not favourable for that kind of training. There are always some problems with connecting computer to Internet and trying to make that huge application to work properly with telecommunications available. Firewall settings used by Tamglass are also a problem related to use of eLearning modules, personnel don't know how to use them. North Asia Area Director thinks that Tamglass eLearning modules are designed for people who physically work in Tamglass site and are using Tamglass' own server. That is true since the eLearning modules are accessible only in Tamglass Intranet.

Sales department could use some more information and training in order to perform more effective.

Suggestions and ideas

eLearning modules should definitely be included in orientation training. This way new personnel would learn to use on regular basis from the day one. All the resources should be taken in use more effectively by using eLearning modules. Meaning that, when personnel have more knowledge about products, Product Manager wouldn't be needed that often. This would be seen as decreased travelling costs and it wouldn't consume time from Product Managers other tasks and responsibilities. This would also be one factor related with decreased sales cycle. By using information and instructions in eLearning modules, sales personnel would be able to perform troubleshooting by themselves. This would have an effect in sales cycle also since troubleshooting would be done where the troubles exist instead of doing from Finland. If eLearning modules could be installed to every sales person's computer or it would come out as a CD, it would help sales personnel a lot. Possibility to use eLearning in other training of sales personnel, for example sales technique, would be welcome.

According to North Asia Area Director, there's a huge gap between TMS and sales department. Instead of walking their own paths, they should unite their knowledge, improve mutual communication and co-operate more. At this point, their mission and strategy do not meet. North Asia Area Director was not aware of TGL IUS application. He was very interested in it and he thinks sales personnel should definitely have access to it to communicate with other units and get more updated information about processes.

Sales personnel could use more information about operation costs and how to estimate it with client. Training material should have easy access and it should include information about Tamglass products benefits and arguments as well as information about competitors' products. It should

be used as argument bank in sales situation. North Asia Area Director thinks that in order to increase personnel's motivation and interest towards eLearning modules, some kind of reward system should be created. He also thinks that if eLearning is successfully implemented in sales organization, results should be seen in 2-3 months. The results should be able to find and interpret by using indicators listed above. Though one should bear in mind that everything effects on everything and improved results and level of knowledge is affected by personal and environmental features.

Business Area Director/ Marketing

September 21st 2005

Tamglass Ltd. Oy

Indicators found based on interview

- ❖ Free from time and place to use, Individualized instructions (three levels)
> Faster understanding, selling, utilization and service > Decreased learner costs
- ❖ Standards for working habits and concepts > Ability to sell right products-> process understanding > Length of sales cycle > Profitability on each sale (balance)
- ❖ Increased ability to solve problems > Customer commitment
- ❖ Increased customer satisfaction > Customer commitment > Change in sales/sales volume
- ❖ Individualized instructions> Increased ability to solve problems> Decreased length of sales cycle (from first contact to signing contract)
- ❖ Process understanding> Increased ability to solve problems> Sales personnel able to do troubleshooting> Decreased total time used to troubleshooting
- ❖ Free from time and place to use > Individualized instructions> Process understanding> Faster understanding, selling, utilization and service> Decreased contacts and need of Product Manager> Decreased travelling costs of Product Manager

Background and facts

Employees in Tamglass marketing department are mainly product managers who are required to have a certain level of knowledge of processes and products. Employees are not using eLearning modules on daily basis in their work but they are all familiar with it. In Business Area Director's opinion, the level of information in eLearning modules isn't high enough for his personnel.

His personnel has actually co-operated with TMS when eLearning modules have been designed and when information for eLearning modules have been collected.

Personnel in marketing department have lots of visual and informational material in use, for example sales & marketing manual, which includes specified and detailed information product wise. Best knowledge of products would probably be in the field of flat tempering, since it's

Tamglass' volume product. Despite of its huge volume, employees are required to have professional level of knowledge of other products too.

Best know how have mainly been gained through long practical experience of employees. Specific training considering products is not arranged since there is no use for it.

Time used for troubleshooting may sometimes be too long. Since there's no proper database to search for troubles handled before, it may take weeks to figure out what's wrong with machine. Personnel is also too keen to give a call to maintenance when ever problems occur.

Suggestions and ideas

Business Area Director agrees with the indicators found prior to his interview. eLearning modules should definitely be included to orientation. This would decrease new personnel's time to reach the professional level of knowledge. In order to use Tamglass eLearning environment, current personnel would need more specific information, all information found in eLearning modules is basic information for marketing personnel. Business Area Director thinks that eLearning modules are helpful for people working in the field, outside Tamglass plant. Communication between people can be poor and people physically working in the plant get more information via coffee table conversations, grapevine etc.

eLearning modules would come in question in marketing department mainly to refresh ones memory. Since flat tempering machines are volume products, the knowledge of those machines is strong. Considering this, we may come to conclusion that all following modules including information of more rarely sold machinery would come in handy also in this particular unit.

Time used for troubleshooting could be one indicator when measuring effect of eLearning. Maintenance calls could also be used as indicators. Another problem considering troubleshooting and maintenance calls is tacit knowledge and how to transform and distribute it. When a problem is solved, there is no platform where it could be saved and made available for everyone. This takes us to conclusion that sales & marketing material, eLearning material and technical material should be all linked together and updated on regular basis in order to utilize and rotate tacit knowledge in organizational level instead of unit or SBA level. Business Area Director is aware of TGL IUS and he hopes that maybe that would be the answer to his problem; it certainly has the potential for it.

Interview with Installation Manager

22nd November 2005

Tamglass Ltd. Oy/ TMS

Indicators found based on interview

- ❖ On going development of training material > Modified for translation and change of content > Easily modified to customer training material > Decreased course development costs
- ❖ Strong brand, most expensive products in market > high customer expectations> high level of knowledge required > Customer satisfaction
- ❖ Faster orientation > Learning available all the time (free from time and place), Offers more individualized instructions (three levels) > Decreased learner costs, decreased double working hours, decreased guaranty costs
- ❖ Offers more individualized instructions > Professional information for a beginner> decrease in time/amount of men used in useless work and mistakes> Decreased installation time
- ❖ Response time for emergency calls (indicators established by after sales)
- ❖ Time used to repair a machine that is out of use (indicators established by after sales)
- ❖ Decreased quality costs (already in use)
- ❖ Tamglass eLearning + TGL IUS = Decreased time of entering as income of machinery
- ❖ Professional information for a beginner> Offers more individualized instructions> Measure the time period during which an employee meets the training level employer requires (competence mapping, bonus system)

Background and facts

Installation Manager is working in Tampere plant. He has 12 employees (installation controllers) working globally from Finland. His main responsibility is to arrange and supervise the installation of machinery. This year it includes the installation of 90 machines worldwide. He is also responsible for monitoring timetables, organizing resources, monitoring installations and approval of machinery. This year Tamglass started to use IFRS (international financial reporting standards) which means that the overall sales cycle has expanded. Entering as income of machinery nowadays requires buyer's approval, which this means that the installation work should be done as quickly as possible.

Since the amount of machinery sold annually is so big, Installation Manager needs to co-operate with subsidiary companies in order to expand the amount installation personnel to the required level.

Suggestions and ideas

eLearning should definitely be included in orientation training. Training material that eLearning modules offer is general information; installation personnel would need more specific information in order to use eLearning modules on regular basis. Since Installation Manager has to use “leased” installation staff from subsidiary companies, eLearning modules could be used to refresh those employees’ memory from time to time.

Installation personnel could use a module of their own which would help Installation Manager to organizing installation activities. He also thinks that his personnel could need some language training, which also could be arranged by using eLearning concept.

Elearning is useful in orientation. New personnel can be trained more quickly and this way they can work in the field independently more quickly. This means decrease in double working hours during orientation period.

Biggest difficulties can be found from making the period of time that customer takes to approve machinery (difficulties caused by transformation to IFRS). ELearning modules in co-operation with IUS could help personnel to make the approval process shorter.

Indicators based on interview

- ❖ On going development of training material > Modified for translation and change of content > Easily modified to customer training material > Decreased course development costs
- ❖ Strong brand, most expensive products in market > high customer expectations> high level of knowledge required > Customer satisfaction
- ❖ Faster orientation > Learning available all the time (free from time and place), Offers more individualized instructions (three levels) > Decreased learner costs, decreased double working hours, decreased guaranty costs
- ❖ Improved use of software and systems > Reduced time to complete reports, forms, or tasks > Reduction in calls to the help desk/support
- ❖ Offers more individualized instructions > Professional information for a beginner> decrease in time/amount of men used in useless work and mistakes> Decreased installation time
- ❖ Time used to repair a machine that is out of use (indicators established by after sales)
- ❖ Decreased quality costs (already in use)
- ❖ Professional information for a beginner> Offers more individualized instructions> Measure the time period during which an employee meets the training level employer requires (competence mapping, bonus system)

Background and facts

Regional Service & Sales Manager is operating in European area. He's working in TMS in After Sales unit in Tampere plant. After Sales unit consists of 30 employees who are operating around Europe. All the employees have a technical education and background. After sales unit is responsible for all the actions that are related to Tamglass glass processing machines after those have been sold and installed (for example maintenance, spare parts, deliveries etc). Considering the time after sales unit is responsible for a product/ machine (about 20 years), they have met with problems related to maintaining the level of know how for that long period of time. Considering the problem with the long maintenance time and the fact that turnover rate of employees is pretty high, after sales unit is hoping that eLearning could bring some ease in their situation.

In TMS, employees' competence is measured on yearly basis. Competence mapping is performed and target level is set departmentwise. Mapping is usually done by personal discussions with each employee.

Regional Service & Sales Manager is familiar with Flat tempering module. According to him, Flat Tempering module is of high quality in general level. Meaning, that all Tamglass employees are offered to get a good over all knowledge of basics of Flat Tempering, standards, practises and market requirements. A globally operating corporation, as Tamglass is, should have globally recognized practises. Regional Service & Sales Manager estimates that all of his employees are aware of Flat tempering module, whether they all use it, that he couldn't say. Though he knows that there are people who use it regularly in customer training sessions. It used to take three days to collect material for these occasions, since there wasn't any ready made and updated material available. Since the Flat Tempering module was established, it only takes half a day to collect customer-training material. The benefits of eLearning can already be seen. According to Regional Service & Sales Manager, installation time is not relevant factor or indicator, it's kind of time that customer pays for anyway.

Telecommunications is a problem in some European countries, for example in England. eLearning modules can be hard to use because of lack of proper Internet connection, which obviously leads to problems when huge applications are considered. In Regional Service & Sales Managers opinion, things generally related with telecommunications are poorly taken care of in Tamglass.

Suggestions and ideas

Regional Service & Sales Manager thinks that eLearning modules should definitely be included in orientation. It would be important that all employees would learn how to use it in daily bases. Since consistent training material has not practically existed before eLearning modules were established, it should be exploited in all possible ways to strengthen Tamglass know how, strategy and mission.

Regional Service & Sales Manager hopes that Tamglass would start to use personal bonus system when it comes to knowledge of employees. This would increase personnel's interest towards training and personal development. These kinds of actions would require follow-up of training results and utilization of eLearning modules.

Since eLearning modules, for example Flat tempering module, handles process in question in general level, Regional Service & Sales Manager thinks that more advanced modules of each process would be required. He thinks there's not enough specific information for his employees. This

could be solved by for example creating a new module for maintenance/installation/service employees. He is also interested in utilizing TGL IUS more in co-operation with eLearning, consistent development is always welcome.

In Regional Service & Sales Manager's opinion, the safety section should include some countrywise safety instructions. Otherwise, safety part in Flat tempering module is very useful. He also thinks that safety related issues, such as accidents are not problems in TMS. Sick days/leaves are usually results of some activities outside working environment.

Since TGL brand is so strong and the prices for products are highest in the market, customers are requiring high quality performance and knowledge from TGL employees. Since the turnover rate of employees is high, it's a challenge to maintain personnel's level of expertise on required level. Changes in level of expertise can be decreased by using eLearning. This can be seen and measured directly by customer satisfaction. Most important features of eLearning that support TGL image are fast and professional service and availability of information online.

Since the turnover rate of employees is high, new employees are frequently hired. The periods that have been used to train new employees, have been way too long. It can be assumed that by using eLearning as training method, period of time during which an employee meets the training level employer requires shortens. Also the amount of double working hours (days that customer will not pay, two employees doing same job at once etc.) decrease. Effects can also be seen as decrease in quality expenses.

Since telecommunications is poor in some TGL locations, Regional Service & Sales Manager would see it useful in some cases to arrange eLearning material for employees in form of CD. It would ease some employees work when Internet connection is poor or it's completely lacking.

TGL After sales unit has been working on setting indicators for response time for emergency calls and for time used to repair a machine that is out of use. These indicators will be useful also when evaluating eLearning-based personnel training. Indicators for measuring quality expenses also already exist and can be used as an eLearning indicator.

Plant Manager/ Safety glass production

30th November 2005

Tamglass Ltd. Oy

Indicators found based on interview

- ❖ On going development of training material > Modified for translation and change of content > Easily modified to customer training material > Decreased course development costs
- ❖ Faster orientation > Learning available all the time (free from time and place), Offers more individualized instructions (three levels) > Decreased learner costs, decreased double working hours
- ❖ Decreased quality costs (already in use)
- ❖ Professional information for a beginner> Offers more individualized instructions> Process understanding> Increased safety & Increased process quality

Background and facts

Tamglass Plant Manager works in Tampere plant, and is responsible of safety glass production. He has about 100 employees working in production and support actions and are located in Tampere. Employees are mainly trained in Tampella Työoppilaitos in Tampere. All employees start in pre-treatment and are later given an opportunity to proceed in their career as operators.

Plant Manager is sure that his employees are not using TGL eLearning modules. He has not seen it himself either. Considering the situation, the whole conversation was based on hypothetical assumptions and visions. First of all, English language that is used in Tamglass eLearning modules, is a problem. Half of the employees don't have user ID for Intranet, these employees probably also feel uncomfortable to use computer. Elder employees do not have basic skills for using computer, and according to Plant Manager, they are not going to learn those skills just for training purposes. There's also limited overall access to Internet. Considering all those facts, Plant Manager still thinks that it wouldn't be an impossible thought that his personnel would someday be trained by using Tamglass eLearning environment. According to Plant Manager, safety is not an issue in Safety Glass Production since employees are working under supervised and standardized conditions.

Suggestions and ideas

eLearning could be included in orientation training. Training material that eLearning modules offer is general information, Safety Glass Production personnel would need more specific information in order to use eLearning modules on regular basis. He's personnel could use a module of their own which would include information about for example pre treatment, raw material, cutting etc. Some material that is made by Tamglass co-operators could also be useful in form of eLearning module.

Elearning is useful tool in orientation. New personnel can be trained more quickly and this way they can work in the field independently more quickly. Process understanding is very important. This means decrease in double working hours during orientation period. Still, Plant Manager thinks that the effect of eLearning modules wouldn't be that remarkable. In Safety Glass Production, it is better to learn by doing which means making ones own mistakes and learn from them.

As a conclusion, Plant Manager did not see Tamglass eLearning environment as its current form useful in training Safety Glass Production Personnel. If more specific modules would be created for them only, it might have an effect in personnel's performance. Instead of eLearning, Plant Manager is more interested in TGL IUS system and tacit knowledge. There are certain areas in his personnel's knowledge and skills that are not documented at all, it can only be found from personnel's memory. If some kind of solution could be created in order to successfully store tacit knowledge among his employees, he would be more than happy to be introduced with it.

Plant Manager/ Machinery Assembly

30th November 2005

Tamglass Ltd. Oy

Indicators found based on interview

- ❖ On going development of training material > Modified for translation and change of content > Easily modified to customer training material > Decreased course development costs
- ❖ Faster orientation > Learning available all the time (free from time and place), Offers more individualized instructions (three levels) > Decreased learner costs, decreased double working hours
- ❖ Decreased quality costs (already in use)
- ❖ Professional information for a beginner> Offers more individualized instructions> Process understanding> Increased safety & Increased process quality

Background and facts

Tamglass Plant Manager works in Tampere plant, and is responsible of machinery assembly. Personnel include about 50 employees working in assembly unit, procurement and office positions and are located in Tampere. The turn over of employees is very small, that is the main reason why training occasion are not arranged almost at all. Average age among employees is 50 years.

Plant Director is not that familiar with Tamglass eLearning modules, he knows what those generally include. None of his employees are using those at the time. Plant director thinks that Tamglass eLearning modules are not that useful for his personnel with their current topics, in order to use eLearning, they would need a module of their own with more specific information.

Process understanding is not that useful in assembly unit. Products are mainly tailor-made for the customers; the development in that area is constant. Personnel is using system called Presto, which includes information about products and delivery. There is also a Presto related project going on which is based on best practises, TGL IUS and year's model approach. Tamglass product development unit leads this project. Quality factors are taken into consideration by using quality inspection reports. There is need for working instructions, which are limited at the moment, but which can be found from product drawings.

Suggestions and ideas

Plant Director thought the effects of Tamglass eLearning modules from the whole organizations point of view as follows:

- Decreased sales cycle
- No effect on customer project (assembly unit operations)
- Decreased installation time (from 4 weeks to 2 weeks)
- Possibly decreased start up time
- Decreased customer training time
- Decreased entering on income of machinery
- Increased job satisfaction in assembly unit
- Improved controlled material flow (project management)
- Increased process understanding
- Improved delivery chain management-> decreased delivery time
- Increased troubleshooting skills -> Increased customer satisfaction

INTERVIEW GUIDELINES

Overview of unit/responsibilities
Amount of employees
Geographical disperse of employees.

How is the personnel trained?
How is competence updated/maintained?
How is competence measured/observed?
Who is measuring/observing competence and its development?














What kind of result this unit makes?
How is that result measured?
How often is result measured?
Could this unit do better result?
What should be done for this unit to achieve better result?
What kind of matters would have to change?
How could those matters be located?
What kind of actions should be taken to improve these matters.

Percentage of personnel that use eLearning?
Features of employees who use it?
Personnel's access to web?
Is it possible that the whole personnel would use it in regular pace?
What would that kind of situation take?
How would it affect to this unit's operations in practise?
How would it be arranged in this unit?







Has the personnel learned from eLearning modules?
How can that learning be seen?
Could that learning be measured?
What are the weakest links/ that could need some improvement?



eLEARNING INDICATORS

CORPORATE POINT OF VIEW








-  TRAVEL COSTS
-  PER DIEM ALLOWANCE
-  LODGING COSTS
-  MEALS DURING THE TRIP
-  FACILITY COSTS
-  COURSE DEVELOPMENT COSTS
-  MATERIAL COSTS
-  INSTRUCTOR SALARY AND BENEFITS (IF INTERNAL)
-  INSTRUCTOR FEES (IF CONTRACTED)
-  DECREASED TIME AWAY FROM WORK
-  DECREASED TIME USED FOR TRAINING AND ORIENTATION
-  DECREASED COSTS OF USING REPLACEMENT WORK FORCE
-  DECREASED TIME AND COSTS OF CREATING/ESTABLISHING NEW TRAINING MATERIAL

SALES AND MARKETING POINT OF VIEW




-  DECREASED LENGTH OF SALES CYCLE
-  HIT RATIO
-  CUSTOMER COMMITMENT -> CUSTOMER SATISFACTION SURVEY
-  REPEAT ORDERS
-  DECREASED NEED OF SALES SUPPORT
-  DECREASED TRAVELLING COSTS OF PRODUCT MANAGER

-  DECREASED TIME AWAY FROM WORK OF PRODUCT MANGER
-  DECREASED PER DIEM, LODGING AND MEAL COSTS OF PRODUCT MANAGER

INSTALLATION AND SERVICE POINT OF VIEW

-  REDUCTION IN UNNECESSARY MAINTENANCE CALLS
-  DECREASED INSTALLATION TIME
-  DECREASED TIME OF ENTERING AS INCOME
-  TIME USED TO REPAIR A MACHINE THAT IS OUT OF USE
-  RIGHT AT FIRST TIME
-  BONUS SYSTEM
-  DECREASE IN TIME DURING WHICH AN EMPLOYEE MEETS THE REQUIRED TRAINING LEVEL

QUALITY POINT OF VIEW

-  REDUCTION IN NUMBER OF DEFECTS
-  INCREASED PROCESS QUALITY IN TMS
-  DECREASED WASTE

SAFETY POINT OF VIEW

-  REDUCTION OF SEVERE ACCIDENTS