

LAPPEENRANTA UNIVERSITY OF TECHNOLOGY

Faculty of Technology Management
Department of Industrial Management

MASTER'S THESIS

**EVALUATING END-USER TRAINING EFFECTIVENESS IN ERP SYSTEM
IMPLEMENTATION**

Examiner: Professor Jorma Papinniemi

Instructor: Christian Bach (Diplom in Business Informatics)

Uponor Business Solutions Oy

Elina Suhonen

ABSTRACT

Author: Elina Suhonen

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Today's business world demands more and more internal and external integration and transparency among companies at all fields. Integrated ERP (enterprise resource planning) systems offer a possibility to improve business practices and procedures by providing a unified view on the business including all functions and departments. Due to the obvious benefits, the popularity of integrated ERP systems keeps growing.

The implementation of ERP systems has however proven risky. The implementation projects tend to be long, extensive, and costly – and often they end up in a failure. Due to the significant task and role changes ERP implementation brings to almost everybody in the company, training has been identified as one of the most critical success factors of an ERP implementation. To ensure that the training is conducted in the most effective and successful manner, the training outcomes should be evaluated. So far, training evaluation has however gained only limited attention at most companies investing in different training programs.

Uponor corporation has initiated a large ERP implementation and process harmonization program in 2004. Thousands of end-users have been trained during this project so far, and the work still continues until the project is completed in 2010. In this thesis, the evaluation of end-user training in Uponor's ERP program is brought further from the current state of performing the basic participant satisfaction survey in the end of each class. The results show that in order to reach reliable training effectiveness evaluation results, not only the reaction towards training but also transfer of skills and attitudes and the final results of the training program should be evaluated.

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Nykyinen liiketoimintaympäristö vaatii yrityksiltä yhä enemmän niin sisäistä kuin ulkoistakin läpinäkyvyyttä ja integrointia. Nykyaikaiset toiminnanohjausjärjestelmät (ERP-järjestelmät) mahdollistavat liiketoimintakäytäntöjen ja työtapojen kehittämisen tarjoamalla yhtenäisen näkymän kaikkiin yrityksen yksiköihin ja toimintoihin. ERP-järjestelmien suosio jatkaakin kasvuaan kaikilla liiketoiminta-alueilla.

ERP-järjestelmien käyttöönotto on osoittautunut haasteelliseksi. Käyttöönottohankkeet ovat usein pitkiä, kalliita ja laajoja – ja valitettavan usein tulos epäonnistuu. Koska ERP-käyttöönottojen myötä lähes jokaisen työntekijän tehtäviin ja rooliin tulee muutoksia, koulutus on tunnistettu yhdeksi käyttöönoton kriittisimmistä menestystekijöistä. Koulutuksen arviointi on keino varmistaa, että toteutus on mahdollisimman tehokas ja onnistunut. Harvassa yrityksessä kuitenkaan panostetaan merkittävästi koulutuksen arviointiin.

Uponor käynnisti laajan ERP-hankkeen vuonna 2004. Hankkeen aikana on koulutettu tuhansia loppukäyttäjiä ja työ jatkuu edelleen: käyttöönotto on tarkoitus saada päätökseen vuoden 2010 aikana. Tässä opinnäytteessä Uponorin ERP-hankkeen loppukäyttäjäkoulutuksen arviointia kehitetään: nykytasolla arvio perustuu kurssien päätteessä tehtävään tyytyväisyyskyselyyn. Työn tulokset osoittavat, että luotettavan arvion saavuttamiseksi on osallistujien tyytyväisyyden lisäksi arvioitava myös opitun siirtymistä käytäntöön sekä koulutusohjelman lopullisia tuloksia.

Preface

It's taken me a fair amount of years to get to this point. And yet, in the end, it seems that time was just what I needed. This thesis has been written at Lappeenranta University of Technology with the ever flexible support of my professor Jorma Papinniemi, who believed that no matter how long it takes, eventually I will do it.

In addition to the support provided by the university, I thank Uponor for providing me with an interesting topic for my thesis. Especially I thank the U2 program for offering the best times ever - and just about the worst times ever... And for becoming the change enthusiast that I am today, I thank Charlotte Guillou, Karl Søndergaard, Carsten Engelsfelt, and Christian Bach. And finally, for making my thesis possible still from outside the company – Satu, Antti, Andy, Christian, Juha, Ville, and Karen, I owe you one.

Helsinki, 29.11.2009

Elina Suhonen

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1 INTRODUCTION

1.1 Background

Today's business world is a capricious field. Employees are regularly expected to learn new skills and attitudes: changes in the job role and daily tasks take place more as a rule than an exception. Due to the changing environment, employees need training to cope, and to be able to succeed in their tasks also after the changes take place. One of the very demanding and also very common changes in today's companies is transforming the way to do business by harmonizing the business processes and implementing a common enterprise resource planning (ERP) system to support the company wide integration. Typically these programs take years to complete, involve more or less everybody in the company, and create a heavy change on the employees' everyday life. Thus the training required for the end-users on the new processes and the supporting system is also very extensive – and expensive.

Evaluating end-user training effectiveness is an area where many companies can, and should, improve. Training is costly as such and especially in ERP implementations companies easily spend a million euro budget on delivering end-users the knowledge and skills they are going to need in the future. While investing heavily on delivering the training, very little effort is made to systemically evaluate the outcome of the training programs. According to the review of the research literature made by Mahapatra & Lai (2005) in the early 2000's, several studies have been made on how to develop better training programs, but little on evaluating training – especially in an organizational setting. In the same time the business leaders want to see value for their investments – in training as well as in any other field.

Uponor Business Solutions Oy owns and runs a vast ERP implementation and process harmonization program that involves thousands of end-users in need of extensive training. The ERP program, named U2, has previously been my employer for more than 3 years. During the years I first worked as the training coordinator, and later as the change management team lead, and it has become clear to me that the company management can't really be sure whether or not the hundreds of thousands of euro spent on end-user training is money well spent. Writing this master's thesis will hopefully support them in finding that out.

1.2 Research objectives and scope

The research question to be answered by this thesis is “how to evaluate end-user training effectiveness in an ERP system implementation?” The aim to address this question can be viewed from three different points: a practical aim, personal aim of the author, and an academic aim. The practical aim is to help Uponor Business Solutions Oy to find out whether the effort currently made to evaluate the effectiveness of the end-user training in the U2 ERP implementation program is enough, or would the program benefit from further evaluation. In addition to the practical results, the personal aim of the author is to further improve and build on her current knowledge on evaluating the end-user training effectiveness by learning about new theories and trying them in practice. The academic aim, finally, is to combine theories into one working process that, in the best case, will also be generalisable to other ERP implementation contexts than end-user training in Uponor's U2 program.

To divide the main research question into smaller entities, the following supporting research questions have been defined:

1. What is end-user training in ERP implementation?
2. Why should one evaluate end-user training?
3. How can end-user training be evaluated?
4. What makes ERP implementations special regarding end-user training evaluation?
5. What aspects outside the training itself might affect the results of the evaluation?
6. How and why could end-user training evaluation be improved in the U2 program?

This thesis discusses evaluating the effectiveness of instructor-led end-user training in an ERP implementation program. Instructor-led training refers to training conducted in a classroom with an instructor lecturing on a topic. In addition to the presentation and discussion, also hands-on practice can be a part of instructor-led training. It is assumed that the training is conducted in the native language of the training participants and that the training participants receive printed copies of the training material for further practicing on their own.

The topic of this thesis has been limited to cover only the evaluation of instructor-led end-user training; not eLearning, self study, individual practicing, or any other form of end-user training. The thesis only covers the end-user training performed during an ERP implementation; no other kinds of business or organizational change programs requiring end-user training are considered.

1.3 Research method and structure of the thesis

Chapter 2 focuses on explaining ERP implementations and end-user training as part of the ERP implementation based on literature review and action research performed at Uponor during the U2 program. Having read the chapter 2, the reader understands the framework in which the end-user training evaluation is performed in this thesis. The chapter 3 digs deeper into the literature to review the definitions and approaches to the concept of training evaluation. The most established and popular training evaluation methodologies are then reviewed. In the chapter 3.6 factors that might affect the outcome of a training evaluation are considered, as well as the special characteristics of end-user training evaluation in ERP implementations.

In chapter 4 the research method changes from literature review to action research, survey-questionnaires, and semi-structured interviews. The empirical research is performed at two Uponor sites that have recently participated in the U2 program and end-user training. The sites have been chosen based on a suitable time having elapsed since the U2 end-user training took place at each of these Uponor sites. The level 3 evaluation was performed on site in Lutterworth, UK. A pre-defined anonymous sample of end-users received a survey-questionnaire to fill in. The level 4 evaluation was performed remotely (via phone and e-mail) at Nastola (Uponor Suomi Oy) site in Finland. This level of evaluation was performed by survey questionnaires supported by semi-structured interviews. Semi-structured interviews fall between strictly structured interviews and themed interviews (Hirsjärvi & Hurme, 2001; Woods n.d.). Semi-structured interviews allow for two-way communication, although most of the questions, at least the themes, have been defined and phrased beforehand. All interviewees get to answer the same questions in the same order, but there is room for extra questions on details. The results of a semi structured interview are qualitative, not quantitative, in manner.

1.4 Introduction of the company

Uponor is a leading international supplier of plumbing and heating systems for the residential and commercial building markets. In Europe, Uponor is also a prominent regional supplier of municipal infrastructure pipe systems. The Group's key applications are sold in over a hundred countries. Uponor operates throughout Europe as well as in USA and Canada. The company currently employs more than 4000 people. (<http://www.uponor.com/en/About%20Uponor.aspx>)

Over the years, Uponor carried out many acquisitions leading to independently managed units / businesses, and the company has been performing reasonably well. However, in 2001, Uponor decided on a new strategy: it would aim at reducing the number of different brands within the company and selling non-profitable parts of the business. With a new CEO Jan Lång starting in 2003, the strategy was sharpened even more: the aim now became “One Unified Uponor” – One company with less complexity, more internal transparency, integrated processes, economies of scale, as well as networking across countries and units.

One of the key initiatives leading to this long-term target of one Unified Uponor is the U2 project: U2 creates common ways of how Uponor does business, shares knowledge, and deploys offerings and technologies. The U2 project was launched already in 2004 with preparations, and the project is expected to be completed during 2010. At the busiest period of the program in 2005 and 2006, some 140 people worked for U2. This figure includes also up to 40 Deloitte Inc. consultants who supported the U2 implementation at all fronts. Currently the program still employs some 60 Uponorians (some of them part-time) and a few Deloitte consultants. Since January 2009 the program is running under the name “Fox” instead of U2. In this thesis the program is, for clarity, still called U2.

To reach its targets, the U2 project is built on four key objectives:

- Best-practice processes, policies and procedures from different parts of Uponor will be identified and harmonized. We will be able to harness the strength, speed, size and know-how of the entire Group.
- One enabling ERP (Enterprise Resource Planning) system, Oracle eBS, is implemented.
- Consistent and harmonized master data to be used all over Uponor will be created.
- Only with the help of skilled and motivated people we can make this change possible. Without the commitment of Uponorians the objectives mentioned above aren't within our reach.

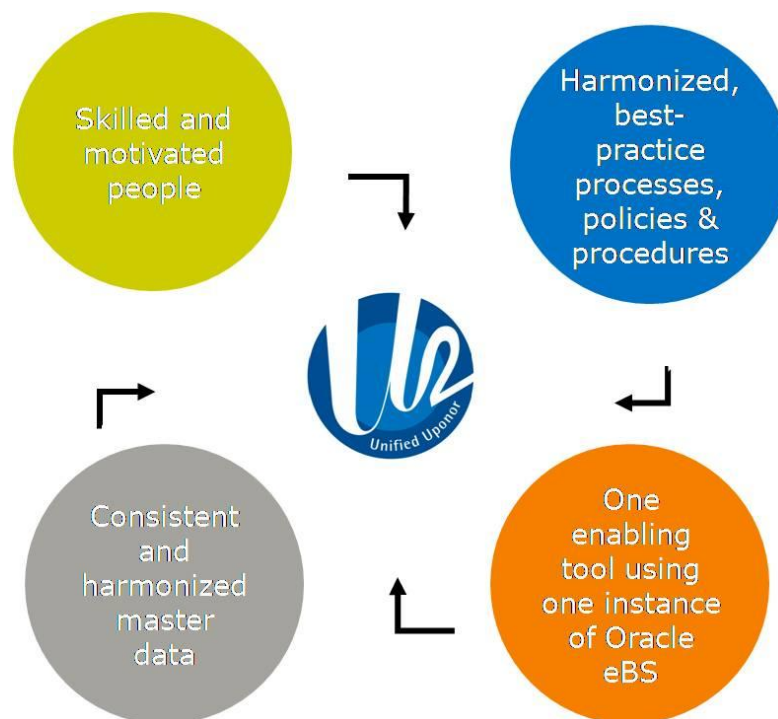


Figure 1. U2 Integrates people, processes, data, and tools. (Project presentation material, © Uponor, 2006)

The scope of the U2 program includes almost all functions within Uponor and thus has an effect on almost every employee's daily tasks. The Oracle eBS modules for customer and demand management, supply management, sales & operations planning, and finance as well as offering management and master data management processes are implemented at all rollout sites. The manufacturing modules are implemented at all production rollout sites. Only human resources is completely out of scope. See Table 1 for a complete list of Oracle eBS modules implemented at Uponor sites.

Table 1. Oracle eBS modules implemented at Uponor.

Finance Modules	Description
GL	General Ledger
FA	Fixed Assets
AR	Accounts Receivables
AP	Accounts Payables
Costing	Product Costing
CM	Cash Management
Customer and Demand Management Modules	Description
OM	Order Management
Pricing	Pricing
Service	Service
Supply Management Modules	Description
PO	Purchasing
WMS	Warehousing
INV	Inventory
SHIP	Shipping
BOM	Bill Of Material
WIP	Work in Process
Sales & Operations Planning Modules	Description
GOP	Global Order Promising
ASCP	Advanced Supply Chain Planning
DP	Demand Planning

As an integral part of the U2 project, a strategy for training the U2 solution end-users was created in 2005. Until now some 2000 end-users have been trained across Uponor sites in Europe – starting with pilots in Germany in 2006, and followed by rollouts in Iberia, Nordics, UK, Italy, and currently in Russia (see figure 2 for an overview of the U2 journey until the end of 2008).

U2 Journey



- Go-Lives in 2006:
 - Norderstedt, 3 July 2006
 - Hassfurt/Zella-Mehlis and Ochtrup (excluding the Hewing OEM business), 10 December, 2006.

- Go-Lives in 2007:
 - Kungsör: 2 July, 2007
 - HS Business in Sweden, Norway and Denmark (Virso, Vestby and Glostrup): 5 November, 2007

- Go-Lives in 2008
 - Iberia: 3 January, 2008
 - HS Finland & HQ: 5 May, 2008
 - HS UK and Ireland: 1 December, 2008

Figure 2. The U2 journey until the end of 2008. © Uponor

Although the end-user training seems, based on the direct participant feedback, to have been reasonably successfully conducted at all rollout sites so far, the post go-live experiences do not completely support this assumption: manual workarounds are created and the new processes seem, at least to some extent, complicated and inconvenient to some of the end-users. At least some of the post go-live sites still show signs of change resistance. This thesis is written with the aim to find out whether the first reaction to our end-user training might be over optimistic – and

whether further evaluation proves to be worth the effort. The additional value is expected to be created by providing new information on the effectiveness and success of the training program. Improving the means to evaluate the effectiveness of the end-user training our trained end-user training instructors deliver might, at best, have a significant impact on the success of the future rollouts of the U2 program.

2 ERP IMPLEMENTATIONS AND END-USER TRAINING

Among other training programs initiated and executed in organizations, ERP end-user training has some characteristics that make it special. In this chapter the concept of ERP systems and the end-user training related to implementations of these systems are discussed. The discussion is based on literature review as well as action research performed by the author at Uponor Business Solutions Oy during the years 2005-2008.

2.1 Overview on enterprise resource planning (ERP) systems

In today's business world many companies have to rethink their ways of working. Markets are getting global and customers have higher and higher expectations on service, on time deliveries, quality of products and offerings. In order to reach better stock visibility, streamlined finances, higher quality customer service, more automated invoicing, better demand and supply planning capabilities and much else, many companies currently resort to so called enterprise resource planning systems, "ERP"s. As such, ERP is not a very new concept to organisations. The functions performed by ERP systems are the same basic business functions that organisations have performed for decades already. The modern computer based ERP systems, however, that take advantage of the recent developments in computers, networks, and the internet, have only been emerging during the last couple of decades. (Dowlatshahi, 2005)

The ERP systems are a result of the evolution from the MRP (material requirements planning) systems used by manufacturing companies already in the 1970's (Umble,

Haft & Umble, 2003). Manufacturing companies were also the pioneers in using small, departmental ERP systems in the past. The first ERPs were, however not highly integrated: interfaces between different systems, and incompatibility between different systems used in different parts of the company have been a significant reason for many manufacturing companies to implement a new, integrated ERP system to be used in all units in the same way. In addition to the manufacturing industry, today the ERP systems are common in a wide variety of industries and organizations. It is not limited to a certain type of products or businesses, but is rather spreading to new industries such as service industry, where the companies have also seen progress in their efficiency and decision-making coming along with the use of ERP systems (Dowlatshahi, 2005).

The ERP systems of today can practically perform all the major business functions of an organization. The systems may cover all elements of the value chain, starting from raw material purchases, leading to manufacturing, warehousing, invoicing, accounting, and human resource management (Peslak, Subramanian & Clayton, 2007). Simultaneously with the growing integration abilities, ERP technology has evolved in the direction of becoming more user-friendly and easier to operate. Implementing an integrated ERP system remains, however, a significant change to the end-users. In many cases not only the system changes: harmonizing processes and ways of working within the company often comes along with the ERP implementation. This makes change management, and especially end-user training, a vital part of any ERP implementation, as will be discussed in the next chapters.

2.2 ERP implementation and critical success factors

Implementing an ERP system is typically an extensive, long, and costly project. Although companies spend millions not only on the ERP software package itself but also on the implementation process, quite some evidence exists (Martin, 1998; Gartner, 2006) telling that the implementation is usually no joyride. Most companies experience difficulties with ERP implementations, and typically it happens during the implementation project itself. It is however no surprise, that despite the challenges, companies continue to invest in ERP systems: a successful ERP project can generate savings in operating costs, produce more accurate demand forecasts, speed production cycles, and enhance customer service (Umble et al., 2003). Savings will be significant in the long run – and even more importantly, the company can stay competitive in the market where most competitors probably already have integrated their business processes with the help of an ERP system.

2.2.1 Critical factors for a successful implementation

One good starting point to a successful ERP implementation is to recognize, that ERP implementation is not just about installing the tool. According to Cliffe (1999), most companies still tend to treat ERP implementation as a large-scale IT project. The risks with this view are multiple, one of the most significant being that when focusing on the tool, the changes in processes and ways of working are neglected in change management and end-user training. Rather than an IT project, the ERP implementation should be seen as a strategic business transformation, where the starting point is a clear understanding and vision of the goals, expectations, and deliverables of the implementation (Umble et al., 2003). In addition to the vision and goals, before any ERP implementation can start, it must be evident that the program will get full support and commitment from the top management. All ERP implementations should have an executive management planning committee that

understands ERP and commits to the implementation of it, fully supports the costs, demands payback, and acts as project champions (Umble et al., 2003).

With the previously mentioned success factors in place, the implementation has a good starting point. What also needs to be kept in mind from the very beginning, is data accuracy. Due to the integrated nature of today's ERP systems, all wrong data that is entered in the system will have a domino effect and affect the whole organization. Further, you can only get out what you have put in: accurate reporting will only be possible if accurate data has been entered in the system. The importance of data accuracy needs later to be emphasized to the users, but in the beginning of the implementation, it has to be clear for the project team. All in all, a strong project team with an even stronger project manager are vital for a successful completion of the implementation. Careful tracking of project progress, development of both a work plan and a resource plan, and a clear definition of objectives are good examples of first line tasks that the project manager has to handle. (Umble et al., 2003)

As the right vision and strict and skilful project forces are in place, and the management visibly supports the initiative, it is time to concentrate on the end-users of the system. User-related critical success factors are, without any question, organizational change management and extensive training. The existing organizational structure and processes are usually not compatible with the structure, tools, and types of information provided by the ERP systems. Thus, when implementing an ERP system, companies reengineer their business processes and realign organizational control. The resulting changes affect organizational structures, policies, processes, and employees significantly. Utilizing proper change management techniques will prepare the company to embrace the opportunities provided by the new ERP system. One of the most concrete of these change management techniques is education and training. User buy-in and understanding is essential for an ERP implementation, and therefore training is one of the most widely

recognized success factors. If the employees will not understand how the system works and why they should change their ways of working, they will invent their own processes using the parts of the system they are able to manipulate. To crystallize the value of end-user training, it has been suggested that reserving 10-15% of the total ERP implementation budget for training will give an organization an 80% chance of implementation success. (Umble et al., 2003)

2.2.2 Phases of ERP implementation

Ehie & Madsen (2005) have gathered together a five-stage model to describe the main phases of an ERP implementation process (see figure 3). This model has been formed by bringing together the most useful aspects from literature review and interviews the researchers conducted with experienced ERP consultants. The main logic in this model is that the implementation is divided into five major parts, each representing a distinct milestone in the ERP implementation process. At the end of each of the stages, the management should perform a review to make sure that everyone agrees on the outcomes before proceeding to the next stage. The five phases are preceded by a critical review of the company's strategic enterprise architecture, and throughout the implementation, the stages are surrounded by change management and business development activities. (Ehie & Madsen, 2005)

The five phases can be described shortly as follows (Ehie & Madsen, 2005):

1. In the first phase, project preparation, the project team and steering committee are formed. In addition, the vision and goals are defined and crystallized, and a comprehensive planning process including resources, timelines, and milestones is created. Budget targets are established.

2. In the second phase, the business blueprint, the existing business processes of the company provide a background for system selection. As the system selection is done, education and training on system functionality and configuration will give the project team the skills they need for mapping the new process design.
3. The third phase, realization, focuses on developing the technical foundation. Simultaneously, testing the design of each process in a conference room pilot.
4. The fourth phase, final preparation, includes testing the entire process design integration from beginning to end, with different exception situations and with full data. Simultaneously, end-user training prepares the user for the go-live.
5. The fifth phase, go-live and support, finally brings the system live to the users. The phase emphasizes process flow optimization and continuous improvement of the whole solution.

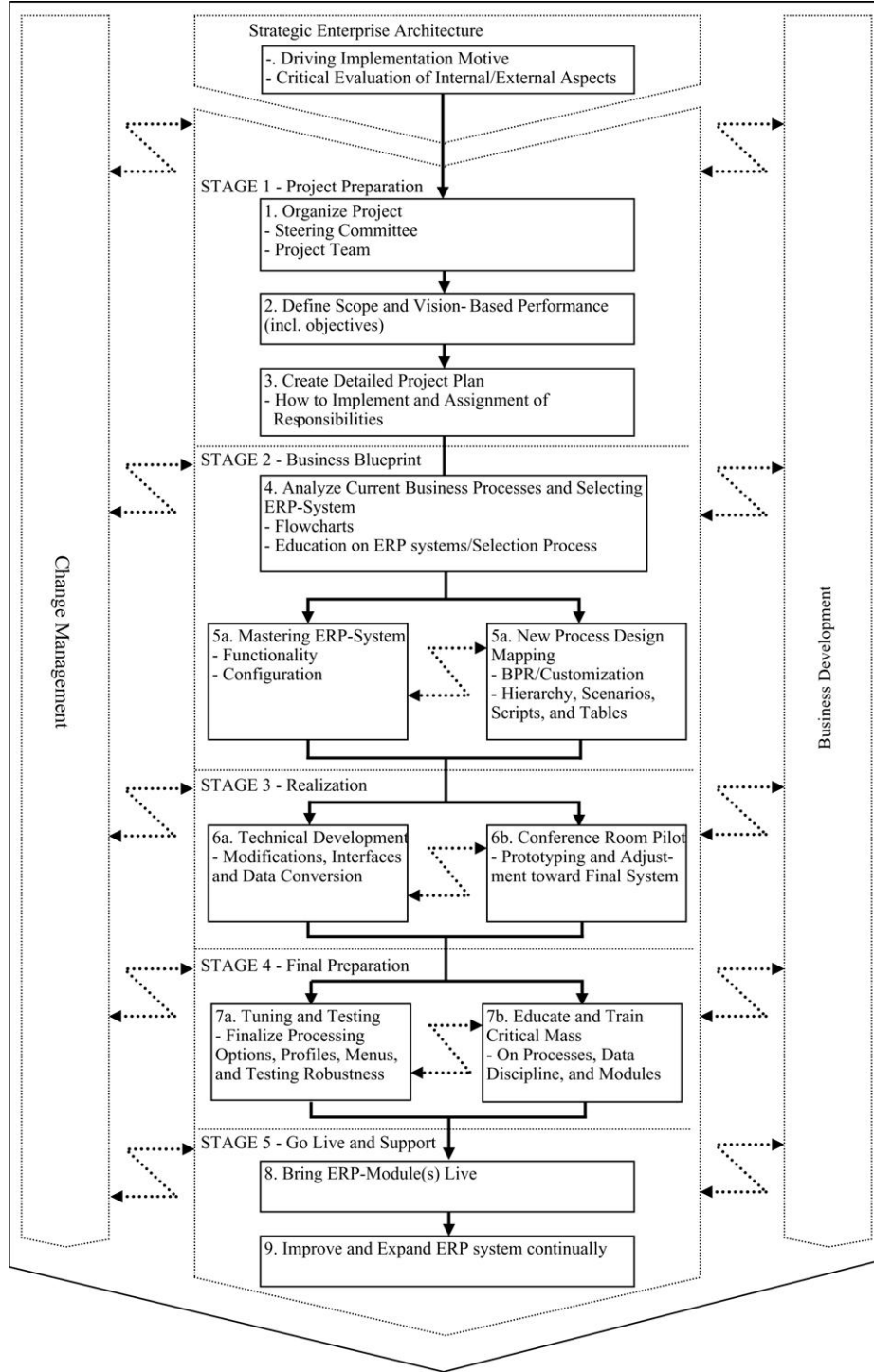


Figure 3. A five-stage ERP implementation process. (Ehie & Madsen, 2005)

2.3 End-user training in ERP implementation

ERP systems, as any other new technologies, require users to be trained in order to manage their daily work with the new system. Considering that together with the new system being implemented, many processes and ways of working may also change, it is easy to understand that the success of end-user training is crucial for the success of the whole system implementation. No system or technology is worth anything without the users actually creating value with using and utilizing it in the expected way.

It is widely known that many ERP implementations are, in the end, considered failures: according to Coulson (2002) O’Leary (2000) states that in year 1996 an estimated 55 billion dollars of ERP implementation and training costs were spent worldwide – and still the ERP implementations continued to fail with an alarming frequency. Since the investments on training are very large, it seems that the problem is not so much in the amount of training offered to end-users, but rather in the suitability and quality of it – this view is also supported in literature (Sein, Bostrom & Olfman, 1999; Wheatley 2000). Wheatley (2000) specifically suggests that training is indeed the factor that separates the successful implementations from the unsuccessful ones.

2.3.1 End-user training strategy

The value of a training strategy is that it can enable the training coordinators, trainers, and other stakeholders to determine how to deliver training appropriately and effectively (Sein et al., 1999). The critical question a training strategy must address is: given a tool, or a process, on which a specific user type needs to be trained, what training approaches and methods should be used to attain the appropriate level of knowledge? To match the appropriate method with the

appropriate user with the appropriate tool or process, the training strategy framework by Sein et al. (1999) is based on a classification of trainees, specific training approaches, and the level of knowledge required to be able to use the tools in question. As you can see in figure 4 where the strategy framework is illustrated, the framework has a strong emphasis on IT tools rather than processes or any other topic to learn. Broadening the IT tool view to include processes and ways of working, the framework serves well also in the case of ERP end-user training.

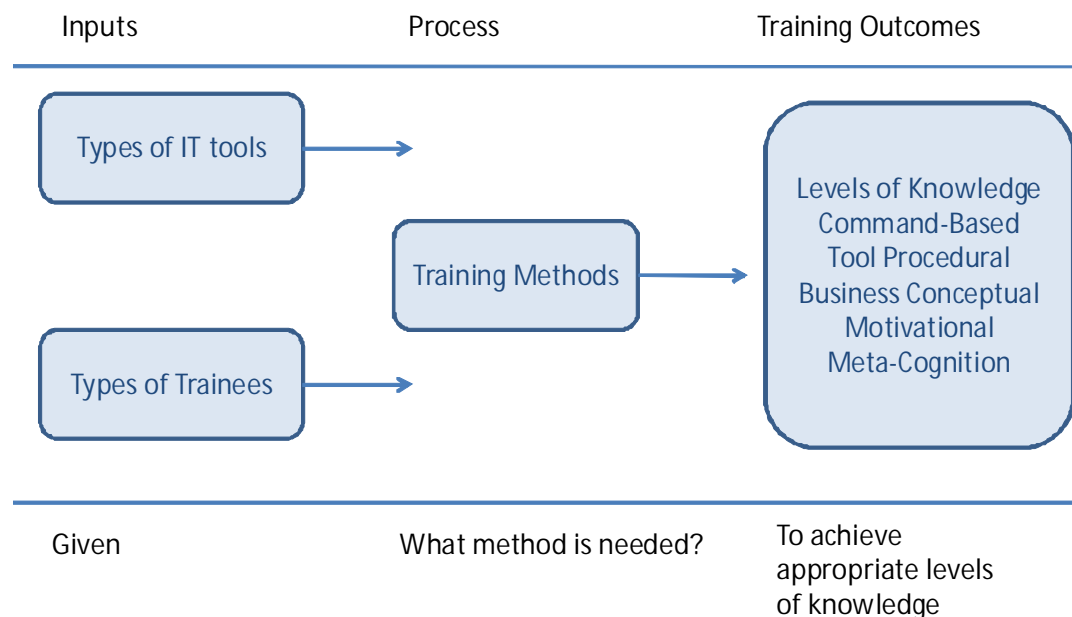


Figure 4. Training strategy framework (modified). (Sein, Bostrom & Olfman, 1999)

During 1999-2002 Sein, Bostrom & Olfman (2006) performed a case study aimed at improving their view on the training strategy framework. The study resulted in a new training strategy framework, which consists of four dimensions (Sein et al., 2006):

- Training outcomes: the knowledge level and skills about a specific IT tool that a trainee can achieve by the end of a training course.

- Training method and delivery mode: how the training material is delivered to the trainees and who delivers it. Training methods range from instructor-led to self-based, and the delivery mode from traditional (fixed timing, fixed place) to on-line training.
- User: classifying users based on a variety of factors such as job roles and learning style.
- Learning content: learning objects that combine to form the training materials.

2.3.2 End-user training strategy in Uponor's U2 program

The strategy for end-user training in Uponor's U2 program was created in 2005 in co-operation with Deloitte Inc. consultants and the Uponor training co-ordinator (the author of this thesis). The whole strategy is based on a guiding principle: "Right people should receive the right training at the right time". The following adult learning principles are also considered throughout the strategy:

Prepare Me

- Prepare me for what is new or changing
- Prepare me with job expectations

Tell Me

- Tell me what I am supposed to produce
- Tell me what I must be able to do

Show Me

- Show me how it works

- Show me how an expert does this job

Let Me

- Let me practice in safety
- Let me learn from mistakes

Help Me

- Help me when I'm stuck

In developing the end-user training strategy for U2, the following key questions were considered:

- What do the participants need training on?
- Who needs training?
- How shall we deliver the training?
- When shall we deliver the training?
- Where shall we deliver the training?

These key questions utilized in forming the U2 training strategy correspond well to the dimensions described by Sein et al. (2006): Training outcomes & learning content correspond to a certain extent to “what do the participants need training on?”. Training method and delivery mode is basically the same as the three questions together: “when, where, and how shall we deliver the training?” User is covered in “who needs training?” Thus the Sein et al. (2006) training strategy more or less formed the theoretical background for the end-user training strategy in U2.

To address the question of what do the end-user need to be trained on, an U2 end-user training curriculum was created. The work started by investigating the Uponor Business Process Architecture (UBPA). Starting from the process entities in the architecture, the modules in end-user training were named: only the areas like human resources that are not in scope of the U2 program, were left out. Individual courses were designed in cooperation with the Business Process Owners and U2 application specialists. Over the years the preliminary end-user training curriculum has also been actively rethought and developed to match the current situation. The approach to training is to train users from the process perspective, not the system perspective.

To answer the second question, who needs training, a training audience & needs analysis for U2 end-user training has been performed in two stages. In the first stage in the beginning of the year 2005, the Uponor units that were planned to participate in the U2 program were contacted by the U2 training coordinators. The units were asked to give an estimate on the amount of people to be trained, based on three different end-user profiles to choose from. The profiles were based on the involvement each end-user was expected to have with the new processes and the new ERP system, Oracle eBS. The detailed 2nd phase analysis has afterwards been conducted in the beginning of each rollout and it has covered only the rollout currently ongoing. The detailed audience analysis is conducted together with so called role mapping; mapping the employees of the rollout unit(s) with the to-be roles in the situation after go-live when roles and responsibilities are divided between employees according to the security and segregation of duties rules of the new integrated system. Based on the change in the person's role and tasks, the training need of a specific end-user was determined.

Based on the nature of Uponor business (traditional manufacturing) and the experiences our Deloitte consultants had gained in similar ERP implementations, the decision was made to deliver U2 end-user training mainly by instructor-led

classroom training. Some employees at rollout sites are not very familiar with working with computers, and thus any forms of eLearning or other computer-based self study did not seem appealing. Many employees do also not speak English, and instructor-led classroom training can easily be conducted in the participants' native language when right resources are chosen to train the employees.

In addition to delivering the training in the participants' language, also the training materials have been translated to the respective languages and material printouts have been delivered to all training participants for all courses they attend. The training materials were chosen to be written by Uponor employees. The commercially available end-user training materials provided by ERP vendors have benefits – but downsides as well. On one side it requires very little from the target organization; basically only money and time. But typically, the materials are aimed at a “general” audience. They focus on the interface and procedures to complete transactions. It is though also available in formats where the focus is on tasks required to complete a business process (e.g. procurement). The downside of this kind of ready-made external training material is that it usually ignores the type of training participants you have and the specific needs, and special processes, your organization might have that are not common to all organizations implementing ERP. (Coulson, 2002)

When considering the right resources to deliver the end-user training in U2 program, the aim was to make the training as convenient for the employees as possible. We wanted to create a feeling of changing the ways of working as a common Uponor effort and thus decided on the approach where Uponor employees would train their colleagues. This would hopefully reduce the fear to the unknown and make it easier to the participants to trust the instructor and to ask questions freely during training. Further, experience shows that external instructor resources seldom are able to answer the business specific questions from the participants (Stedman, 1998). It

would also require a large amount of skilled professionals from the consultant company to be able to train in all languages needed. Thus this alternative easily ends up very costly. It is also evident, that when the training is delivered by the company's own resources, the instructors build on their existing knowledge and usually become very skilled with the application and new ways of working in the end. This knowledge can be very valuable in organizing end-user support as well as in further developing the ERP solution. To prepare the Uponor resources for training others, an instructor training program was developed and taken into use from the first pilot onwards. Due to the scope of this thesis, the instructor training program is not discussed in more detail.

Based on the adult learning principles and experience gathered from other similar implementations by our Deloitte consultants, it was easy to decide on the question "when": it was decided to train the end-users as close to go-live as possible. This way the training participants would not have to wait for a long time to start using their new skills after training, and would not have time to forget too much of what they have learnt. When considering the timing of end-user training it is also realistic to bear in mind that often the system and process design may take more time than anticipated – and creation of training material can't happen before there is sufficient data available on the new system and processes. During the pilot and later rollouts the timing of U2 end-user training has become stable: the length of the training period slightly depends on the amount of employees to be trained, but in most cases 7-8 weeks are needed. The last week prior to go-live is kept empty of training due to various cut-over activities taking place on site and involving most of the employees.

Finally, the most important aspects to consider when deciding on the end-user training location in U2 program were cost efficiency, minimizing the time spent traveling from one location to another, as well as the fact that the daily business needs to continue at a rollout site despite the U2 end-user training. Training the end-

users on site in their home unit was practically the only solution where daily business of the unit would not suffer heavily. In this solution only some of the instructors need to travel and we can utilize the meeting rooms / classrooms that already exist at the rollout site: both aspects help to minimize costs attached to the training execution.

3 EVALUATING END-USER TRAINING

Although companies generally do not seem to pay much attention to it, research literature on evaluating training effectiveness does exist. In this chapter I study the different viewpoints on the concept of evaluation, benefits of evaluating end-user training, and methodologies to evaluate end-user training and compare the different options to perform the evaluation in practice.

3.1 The concept of evaluation

As a research topic, evaluation is a rather young discipline. It is only since 1930s that a number of alternative approaches to evaluation have been formed. However, activities done under the rubric “evaluation” are not quite as new. The growth of evaluation actually resulted from efforts to assess effectiveness in the following fields (McCoy & Hargle, 2001):

1. Educational programs to combat literacy problems
2. Public health campaigns that aimed to reduce deaths from infectious diseases
3. Occupational training programs

In the beginning of the study “Evaluating evaluation: the implications of assessing quality” McCoy & Hargle (2001) review definitions of evaluation and evaluation approaches. As it comes to the word evaluation itself, I like the definition by Weiss (1972, according to McCoy & Hargle): evaluation is “an elastic word that stretches to cover judgments of many kinds”. Weiss also defined that the purpose of

evaluation research is “to measure the effects of a program against the goals it set out to accomplish as a means of contributing to subsequent decision making about the program and improving future programming”. Practically this definition means that one needs to utilize research methodologies to measure the program outcome against the established success criteria. (McCoy & Hargle, 2001)

Moving away from comparing results with goals, Scriven (1967, according to McCoy & Hargle) offers a broader conceptualization describing evaluation as “the study of the merit, worth, or significance of various entities”. In his opinion, goals / objectives are of minimal importance. He rather sees evaluation as making value judgments on whether the program was of use to its stakeholders. Practically this means that Scriven emphasizes needs over objectives – not surprisingly, his evaluation approach is known as “goal-free evaluation”.

One more view on evaluation is worth mentioning here: Campbell (1969, according to McCoy & Hargle) has a scientific approach, which emphasizes the collection of scientific data. He conceptualized evaluation as fitting in to a scientific social research paradigm, where the world is seen as a laboratory for social experimentation. This approach has, however, been criticized on that it requires holding the program constant rather than allowing information to be fed back into it to enable continual development. (McCoy & Hargle, 2001)

3.2 Benefits of evaluating training programs

To evaluate something is to determine its value (Nickols, 2005). Training programs cost money, and if you want to prove that this money is well spent, you should be able to determine the value of your training program. Basically, “a training program’s payoff comes from the business measures that drive it” (Phillips & Phillips, 2002). Lingham, Richley & Rezania state in their case study (2006) that in order to leverage the learning experience, and to ensure efficient use of the resources, evaluating training is necessary for all organizations. In addition to getting the full benefit out of the training program, evaluating training serves also a cause that has to do with the very existence of training programs in organizations: especially when times get tough and money needs to be saved at different fronts, training is one of the “unnecessary” things where companies often want to cut costs. Unless you can prove that the training really produces value, it is likely that in the future a similar program will not be run. And proving the value of training is only possible by showing how the outcome of training has e.g. brought the customer satisfaction up, or made the amount of mistakes significantly smaller in entering orders. And this kind of proof of the value of training is only available by evaluating the outcome of the program.

3.3 Pre-requirements to training evaluation: training needs and objectives

Before a training program can be evaluated, the training needs to be planned and to take place. Training programs are generally planned based on a need to train a certain group of people. In this thesis the training need derives from a process harmonization and ERP system implementation program. The high-level need to train people is clear: a group of employees needs to learn something new in order to

continue working successfully after the implementation of the new ERP system supported solution. However, if you want to be able to evaluate the effectiveness of the training program, identifying the need alone is not enough. To be able to evaluate whether or not the training program has been effective and successful, the objectives of the training must be clearly set: is it enough that half of the employees participate in training, or should it be required from all? What level of skills is required to successfully perform the job also in the future?

The objectives, in addition to clearing what the real aim for with this training program is, also help to design the training evaluation scheme: training evaluators benefit from the direction provided by the training objectives. They will have a clear route to follow when deciding which data to collect to determine whether the training program has been successful. Well defined objectives will help different stakeholders to gain direction and focus on different time frames. (Phillips & Phillips, 2002)

To set objectives for a training program in a structured manner, Kirkpatrick & Kirpatrick (2006) suggest that objectives should be set for the following three aspects of the program (to be handled in this very order):

1. What results are we trying to accomplish? Results can be stated in terms of production, quality, turnover, absenteeism, morale, sales, profits, and return on investment (ROI)
2. What behaviors are needed to accomplish these desired results?
3. What knowledge, skills, and attitudes are necessary to achieve the desired behaviors?

Phillips & Phillips (2002) give useful examples on what the concrete results mentioned in Kirkpatrick & Kirkpatrick's (2006) aspect 1 might be. For example, if the training program has to do with improving customer satisfaction, the desired outcome might be that at least 50% of the training participants use all taught

customer interaction skills with every customer – or that the taught 5-step process of handling customer complaints is used in at least 95% of the complaint cases. Further, if a pre-test has been performed prior to training, you might aim at the post-test giving a score 30% higher. One of the aimed results that might be especially useful in the case of ERP end-user training, is the aim to get a job relevance rating of 4/5 from the training participants.

The second aspect of setting objectives is about the behavior changes that are needed to reach the results listed in aspect one. It is important to notice that not all training programs require the participants to learn new skills – rather it might be that change of attitude is the key. Finally, according to Kirkpatrick & Kirkpatrick (2006), the training curriculum should be based on accomplishing the aspect number 3. Setting objectives in this structured manner will ensure best possible attention to the topic.

3.3.1 Training objectives in an ERP implementation

Setting objectives for an ERP end-user training program, there are two sides to consider:

1. The practical use of an ERP system requires a certain amount of computer literacy. You need to be able to understand the user interface of the system and to navigate within the screens you need for your work. You need to be able to follow the processes relevant to you within the system and use the system to your best benefit.
2. The ERP implementation is not just a system implementation. As an end-user and a training participant, you must be able to change your attitude and your way of working according to the new and/or changed processes that are supported by the ERP system. You must understand why the change is taking place, and be willing to give your contribution towards achieving a common

goal. You must understand how your actions and your daily tasks are linked to a bigger entity.

Especially the number 2, “ERP implementation is not just a system implementation”, is very important to keep in mind throughout the program as well as throughout end-user training. As Wheatley (2000) concludes: “There's a tendency for companies to fall into the trap of putting employees through training programs that are too software-specific: an easy mistake to make, but one that ignores the fact that ERP systems are designed to operate by (literally) codifying a set of business processes.”

The list of aspects to consider that Kirkpatrick & Kirkpatrick (2006) presented in their book, as described in the previous chapter, can very well be utilized in ERP training programs.

3.4 Kirkpatrick’s four levels of training evaluation

Donald L. Kirkpatrick is a former national president of the American Society for Training and Development and was elected to the HRD hall of fame in 1997. His research and literature on evaluating training is quoted in many other researchers’ work and thus it’s a good starting point for my own literature review as well. Kirkpatrick first published a series of four articles on evaluating training programs in 1959. These articles first described the four levels of evaluation that have since formed the framework of training evaluation for many practitioners. The four levels represent a sequence of ways to evaluate different kinds of training programs. Each level is significant and has an impact on the next level. In the following chapters I shortly describe what each level is about. (Kirkpatrick & Kirkpatrick, 2006)

3.4.1 Level 1: Reaction

Evaluating reaction simply measures the participants' first reactions to a training course. It is directly comparable to customer satisfaction: how happy was the participant with the experience he / she received? How satisfied is he / she with the product; the training course?

Measuring reaction is important for several reasons. It gives the training organizer valuable feedback that helps to evaluate the program and also to develop the training programs in the future. It is also a sign to the training participants that their opinion matters: they have the possibility to tell the instructors whether or not they have been effective in teaching the topic at hand. Reaction evaluation also provides the training organizer with some quantitative data to show to their managers and those paying for the training program and wanting to see results. (Kirkpatrick & Kirkpatrick, 2006)

Reaction sheets are easy to use and do not require extra time and resources: the instructor hands them out in the end of the training course and asks the participants to fill the sheets in before they leave the room. Afterwards either the training instructor or a training assistant draws the results together and creates an analysis.

Kirkpatrick & Kirkpatrick (2006) have given a list of guidelines for successful evaluation of reaction:

1. Determine what you want to find out.
2. Design a form that will quantify results.
3. Encourage written comments and suggestions.
4. Get 100 percent immediate response.
5. Get honest responses.
6. Develop acceptable standards.
7. Measure reactions against standards and take appropriate action.

8. Communicate reactions as appropriate.

Measuring reaction is, as we have learned, only the first step in evaluating training programs (although in a vast majority of organizations it is also the only step). Even though it does not tell us anything about skills learned or learning transferred onto the job, it is an important step: the decisions of the top management might very well be based on what they have heard about a training program. It is crucial to have tangible data that shows that the reactions are positive. (Kirkpatrick & Kirkpatrick, 2006)

3.4.2 Level 2: Learning

When talking about evaluating learning, it is important to understand what different kinds of learning might happen on a training course. There are actually three things an instructor can teach: knowledge, skills, and attitudes. Learning is a prerequisite to any change occurring in the participant's behaviour. Thus it is important to measure if learning really has taken place. It also works backwards: if we would evaluate changes in one's behaviour and find out that no change has happened, we would be likely to assume that no learning has taken place either. This, however, might very well not be the case. (Kirkpatrick & Kirkpatrick, 2006)

Guidelines for evaluating learning have also been described in Kirkpatrick & Kirkpatrick's (2006) book on evaluating training programs:

1. Use a control group if practical.
2. Evaluate knowledge, skills, and / or attitudes both before and after the training.
3. Use a paper-and-pencil test to measure knowledge and attitudes.
4. Use a performance test to measure skills.

5. Get a 100 percent response.
6. Use the results of the evaluation to take appropriate action.

If the knowledge taught in the training course is new, as it is in the case of an ERP implementation, there is no sense in doing a pre-test to evaluate knowledge level prior to training.

All in all, when training is associated to a vast process harmonization and ERP implementation program such as Uponor's U2, evaluating learning requires a heavy amount of resources. Creating tests for all relevant training courses on the curriculum takes time and requires expertise not only on the subject itself but also on how to find out whether the most important topics of this subject have sunk in. Considering the amount of time participants spend in the training itself, spending even more time doing post-course knowledge & skills tests can be difficult to justify. After the tests have been completed, time and resources is again required to check and score the results.

3.4.3 Level 3: Behavior

Already in the eighties it was estimated that while American industries annually spent up to \$100 billion on training and development, only some 10% of these expenditures actually resulted in transfer to the job (Georgenson, 1982). Kirkpatrick's (Kirkpatrick & Kirkpatrick, 2006) level 3 is all about this transfer: it tries to evaluate, how much of the learned skills, attitudes, and knowledge actually become changes in the behaviour at the work place.

Compared to the first 2 evaluation levels, the level 3 is more complex in nature. Firstly it's because the training participants can't change their behaviour before they have a possibility to do so (Kirkpatrick & Kirkpatrick, 2006). In the case of an ERP

implementation, the training participant must wait until go-live before he / she can start to use the new system according to the new ways of working that the instructor taught in the training course. Then it needs to be estimated how long a time should actually be allowed to the employees before the evaluation makes sense: they will not be able to show their full knowledge, skills, and attitudes transfer result on the first day after go-live: it takes time to get used to the new situation.

It is also possible that the participant has learned what he / she was supposed to learn on an the skills and knowledge side, but the attitude remains unchanged: if he / she does not want to change, or the employee's own superior does not support the change, the change in behaviour might never occur although the learning has taken place. In order to actually reach changes in behaviour at the work place, the environment must support the change and the employee him/herself must be willing as well as able to change.

The guidelines for evaluating level 3 are (Kirkpatrick & Kirkpatrick, 2006):

1. Use a control group if practical.
2. Allow time for behaviour change to take place.
3. Evaluate both before and after the program if practical.
4. Survey and / or interview one or more of the following: trainees, their immediate supervisor, their subordinates, and others who often observe their behaviour.
5. Get 100 percent response or a sampling.
6. Repeat the evaluation at appropriate times.
7. Consider cost versus benefits.

In an ERP implementation it is all about behaviour changes. In order for the organization to continue running its business in a smooth and efficient way, the trained employees have to change their behaviour at the work place according to

what has been taught in the training courses. It is not possible to continue in the old way of working.

3.4.4 Level 4: Results

The final level in Kirkpatrick's model is evaluating results. This is on one hand the most important level of the four and on the other hand the most difficult. The level 4 aims to find out what final results occurred because of attendance and participation in a training program. In order to evaluate on this level, you need to know the objectives of the training: the outcome can be compared only against a clear aim of why the training has been executed in the first place. ERP end-user training is one of the training programs where level 4 evaluation should be possible. It has a clear aim of employees being able to do their daily jobs also after the solution go-live, and this should be determinable. In training programs that aim at better job satisfaction or other qualitative results, it might be wiser to stick to level 3, measuring changes in behaviour. (Kirkpatrick & Kirkpatrick, 2006)

The following guidelines have been set to help implementing the level 4 evaluation (Kirkpatrick & Kirkpatrick, 2006):

1. Use a control group if practical
2. Allow time for results to be achieved
3. Measure both before and after the training program if practical
4. Repeat the measurement at appropriate times
5. Consider cost versus benefits
6. Be satisfied with evidence if proof is not possible

3.4.5 Extension: Level 5 – Return on Investment

As Kirkpatrick's model is some 40 years old, it would be strange to expect that nobody ever wanted to improve or even change it. One of the most well-known extensions of the Kirkpatrick model is the "fifth level" created by Jack J. Phillips (Phillips & Phillips, 2009). The fifth level is about comparing benefits to the costs of the training program; in other words, calculating the return on investment (ROI) of the training program. Phillips & Phillips (2009) see ROI as "the ultimate measure of program success, where the impact measures are converted to monetary benefits and compared with the costs". ROI is usually expressed as a percentage or benefit-cost ratio.

The idea of calculating ROI for a training program is tempting: money talks, and especially the senior management often seems to listen to money talking better than any other mean of proving the necessity of investing in learning and development. Phillips & Phillips (2009) do not, however, recommend calculating ROI for each and every training program. They set a target that each and every training program should be evaluated on level 1, reaction. Learning, in their opinion, should be evaluated in 60% of the training programs. When evaluating level 3, many factors outside training are already affecting the results of the evaluation, and thus this level requires more skills and attention from the evaluator. Thus Phillips & Phillips (2009) recommend using this level of evaluation in 30% of the training programs. The programs where comprehensive evaluation on levels 4 and 5 should be executed are the programs that are strategically focused, expensive, high profile, and of special management's interest. This is due to the ROI calculation being expensive and time and resource constraining to perform.

What about the suitability of evaluation level 5, ROI calculation, to ERP end-user training? ERP training is very costly, and a part of a strategically highly important program. The top management of the company is most definitely interested in the

outcome of the program. Nevertheless I do not think that ROI calculation is a necessary or even value creating method of evaluation in ERP end-user training: in my opinion, the ROI calculation serves best when evaluating a “stand alone” training program: the success of ERP training is directly linked to the success of the whole ERP program, that the management is rather interested in calculating the ROI of the whole program rather than parts of it.

3.5 Stakeholder-based approach to training evaluation

As we have learned from practical experience, studies, and industry reports, although the tools and theories are available to perform quality training evaluations, through evaluations very seldom take place and we only stick with the reaction (level one) evaluation: the smile sheets. Fred W. Nickols (2005) argues, that the reason for very vague training evaluations is due to current approaches being primarily of interest to the trainers but not to the many constituencies served by training, trainers, and the training function. Nickols (2005) sees the current approaches to evaluating training largely irrelevant to these other constituencies. To solve the issue of irrelevance, Nickols (2005) offers a completely different approach: the stakeholder-based approach. This approach requires trainers to incorporate stakeholder requirements into the design, development, and delivery of training. As stakeholder requirements are heard, it also increases their interest in the outcomes and, specifically, in evaluating the outcomes.

The stakeholder-based evaluation approach is rooted in two theoretical points: stakeholder theory (Donaldson & Preston, 1995), and the contributions-inducements view of organizational membership (Barnard, 1947; March & Simon, 1958; according to Nickols, 2005). A stakeholder in itself is defined as “a person or group with an interest in seeing an endeavour succeed, and without whose support the endeavour would fail” (Nickols, 2005). Typically, training stakeholders include e.g.

training participants, instructors, the managers of participants, training developers, and funding managers.

The stakeholder theory is built on the assumption, that all organizations serve and depend on many different constituencies (e.g. employees, customers, investors) that should all be recognized and addressed. One of the important tasks of the management is then to balance the needs and interests of these stakeholders. Barnard, in his theory (1947), uses the term *members* when referring to the “groups without which the organization could not operate”. Further, the organization depends on the contributions made by these members, and there seems to be a dynamic balance between these contributors and the inducements necessary to obtain them. (Nickols, 2005)

The process of evaluating training in a stakeholder-based way includes several steps, where the most significant ones are the following (Nickols, 2005):

1. Convince management of the merits of the stakeholder approach
2. Identify training department’s key stakeholder groups
3. Identify the contributions and inducements for each group
4. Devise simple measures of stakeholder satisfaction with their inducements
5. Devise simple measures of the value to the training organization of the contributions needed from the various stakeholders
6. Incorporate both sets of measures into a Stakeholder Contributions-Inducements Scorecard
7. Communicate results to the stakeholders, discuss & update

Nickols (2005) admits, that this approach to evaluating training is time-consuming and involves a lot of difficult and delicate work. He sees, however, that the advantage of bringing everyone’s focus on the value to be provided by training,

outweighs the challenges. From the perspective of end-user training in an ERP implementation, I find this approach complex and difficult to implement.

3.6 Factors influencing the outcome of training evaluation

When evaluating training, one has to keep in mind that the result of a training evaluation is never just a result of a training evaluation. The result will be influenced by factors outside the training itself: most notable factors that might affect the evaluation outcome specifically in ERP implementation end-user training include social desirability, post go-live key user support, participant skill level and background, as well as culture and language.

The challenge with other affecting factors being present is to isolate the results that are directly related to training. The classical approach to find the difference is to compare a group that has not received training with a group that has, and let the difference in the performance of these two groups represent the training impact. This method will, however, not work in the setting of ERP end-user training: in the end, there will be no groups that have not received training to compare with. The good news is, however, that there are other ways to determine the connection between training and desired effect taking place in the organization. Such techniques include training participant's as well as his / her manager's estimation of impact (percentage), forecasting methods, and trend line analysis. All in all, to show the real value of a training program, the evaluator have to accept the challenge of tackling this issue. (Phillips & Phillips, 2002)

3.6.1 Social desirability

When a training participant responds to a reaction sheet in the end of a training course, quite regularly the participant is not giving the straightforward opinion he / she has formed about the course. The response to a reaction sheet is affected by aspects of social desirability: “our reactions to situations are frequently influenced by a desire to be seen by others in a good light”, explains Jenny A. Darby in her study that has to do with factors that influence responses on open-ended evaluations of training courses (Darby, 2006).

One might think that when reaction sheets are filled in anonymously, the respondents do not think about looking good in the eyes of others. This view is even supported in many studies: there is a long history of researchers claiming that questionnaires are not subject to pressures to respond in a socially desirable manner. According to Darby (2006), Sudman and Bradburn (1982) even claim that individuals will be honest if the responses are anonymous and confidential, and that thus any considerations of social desirability and self-preservation can be eliminated. (Darby, 2006)

One of the drivers for this thesis, however, is the fact that the responses given in the reaction evaluations do not always seem to represent the real situation on site after go-live. Constantly the reaction sheets give a more positive impression than what seems real. Monson, Tanke & Lund (1980) support this view as they have found out that people generally do not like to be negative about others, even if it is not face-to-face. In Uponor’s case the training instructors are typically colleagues of the training participants.

Respecting Monson et al.’s (1980) research finding, it easily leads to the participants giving over positive responses when asked about the skills and abilities of the instructor. One interesting finding by Wall (1973) according to Darby (2006) is, that

those training participants who are the most reluctant to say anything negative about people (the instructor, training organiser, etc.) are more likely than others to respond negatively about inanimate things such as the working environment.

3.6.2 Post go-live key user support

Typically in an ERP implementation the support after go-live is handled through a group of key users: these people have received an extensive amount of training, and might have been directly involved in the implementation project. In the case of Uponsor's U2 program, the key users often acted as instructors in end-user training as well. The first level of evaluation, reaction, which takes place in the training room right after the class has finished, will not be influenced by the key user support. The later levels, however, will inevitably be affected by the support offered after go-live. It will be difficult not only for the training participant but also for his / her manager to distinguish which skills and behaviour changes are due to the classroom training and which to the support offered by the key users on the job after go-live. Literature does not offer ways to exclude the effect of key user support from the training evaluation results on levels above 1. Thus it is noted that this factor should be kept in mind but not handled in a systematic way.

3.6.3 Participant skill level and background

Implementing an ERP system usually involves the (almost) complete group of employees in the company. Some ERP end-users will be skilled, university graduated, white collar employees who have been using different software solutions in their daily work life for the last 10 years or even more. Some end-users, on the other hand, will be factory workers who might have no formal education at all, and

who might not be using computers or other IT tools at all prior to the ERP system implementation.

The simplest requirement for anybody attending ERP end-user training is computer literacy. According to Winter, Chudoba & Gutek (1997), computer literacy is described by Rochester & Rochester (1991) as “being knowledgeable about the computer and how it works in our daily lives. It also means being able to operate and use a computer, at least to perform basic tasks”. Since the simple requirement of training participants being computer literate usually is the only requirement, the IT skill level of the participants remains very different. Some participants may fear the use of computers so much that this fear colour their view on the whole training program: they feel that everything goes too fast, they do not have enough time to practice, and that the expectations towards the training participants are too high.

The differences in background and skill level are not only about computer literacy. Training in an ERP implementation has to be based on a process view rather than the system itself. For some training participants, the process view and inter-process dependencies are familiar concepts and easy to understand. For some others, the whole thing might seem over-sophisticated, academic, and difficult to understand. In this sense the different end-user groups are seldom taken into consideration when planning the training, and thus these differences might affect the results of the training evaluation – as well as results of the training itself.

3.6.4 Culture and language

Multinational ERP implementation such as Uponor U2 programme introduces another dimension of complexity – national differences – into the already complex field of ERP implementation. There are many different things to consider when analysing the effect of different countries and cultures involved. Legal requirements

may cause need for system customizations and time zone differences other challenges, but in this thesis the focus is on aspects related to evaluating training effectiveness. In their study on multinational ERP implementations, Sheu, Bongsung, and Chen-Lung (2004), found that training related difficulties might derive from language, communication, and cultural issues. In many ERP implementations the implementation project only produces training material in English language, and the local resources need to come up with a local training from quite a difficult perspective. In Uponor's case the implementation project provided master versions of training material in English language but also took care of translation to the local language. The system itself, however, is configured to offer the user interface only in English language (which was a deliberate decision made by Uponor prior to the implementation). Since U2 end-user training has taken place in United Kingdom as well as non-English speaking countries, there might be a difference in perception towards the training and the ease of use of the system. These differences might show in the results of the training evaluation.

4 EVALUATING END-USER TRAINING IN UPONOR'S U2 PROGRAM

Throughout the U2 program the end-user training has been evaluated and the evaluating has been perceived as an important task that really has already led to action to improve the training courses and curriculum. The fact is, however, that by evaluating simply the reaction towards the training offered, we will not get to the bottom line of how the training provided to the end-users really helps them to perform in the desired manner after solution go-live. Would it, for example, be possible to improve the training so that less key-user resources would be needed after go-live to support the end-users? This chapter reviews, tests, and discusses possibilities to improve the process of evaluating end-user training effectiveness in Uponor's U2 program.

4.1 Objectives of the U2 end-user training

Based on the Gartner assessment (2006) that was performed for the U2 program in 2006, the focus on change management (including training) was all in all exceptionally good. However, one of the weaker topics was setting objectives to end-user training. Gartner assessment proposed that one of the following would be set as an end-user training objective: "A change target could be defined as 90 percent-plus of end users passed a competency test. Another would be: less than 5 percent needed to be trained again in the first six months after going live." None of these targets were, however, never really set in use.

4.2 Currently used end-user training evaluation methods

In the American Society of Training and Development 2004 State of the industry report, 74% of the organizations that participated in the survey responded, that they use reaction measures to evaluate training programs. Respectively, only 31%, 14%, and 8% reported that they use learning, behavioural, and results measures. (Sugrue & Kim, 2004) In the light of this industry report, it is not surprising that also in the U2 program it was chosen to use reaction sheets to evaluate training effectiveness. All in all the U2 end-user training strategy concerns mainly the planning and delivery of the training and much less the evaluation of it.

The reaction sheet for U2 end-user training was created by the author and her supporting Deloitte consultant. The questions were planned with the aim of providing a best possible impression of how the training would benefit the participants back on their daily jobs. As it is a reaction sheet, however, the responses on whether or not the training will benefit the participants on the job can't be anything else than good guesses at best.

According to Kirkpatrick & Kirkpatrick (2006), "the ideal form provides the maximum amount of information and requires the minimum amount of time". It is important that the form can be quantified and used to establish standards for future evaluations. In addition to the quantitative data, there should be room for additional comments that will, in best case, provide reasons for the reactions of the participant. In the light of this advice, the reaction sheet created for U2 end-user training seems appropriate (see figure 5): it only takes 4 to 5 minutes to complete, it offers room for open comments, but it is also understandable and provides quantitative information in case the participant only ticks the boxes and does not write any thoughts of their own. The scale from 1 to 4 was chosen so that the easy choice of "right in the

middle” (usually 3 on a scale from 1 to 5) does not exist. In the beginning of the U2 project the questionnaires were filled in by hand and input manually for analysis; in the course of time the solution evolved and now a web-based anonymous survey questionnaire is used.

Kirkpatrick & Kirkpatrick (2006) emphasize the importance of getting a 100% response; in U2 training the figure has generally been reasonably close to a 100% result (some 90-95% of participants have filled the questionnaires in). The instructors have always been asked to require participants to fill the questionnaire in before they leave the training room and this has worked to a relatively good extent. Kirkpatrick & Kirpatrick (2006) have an even better idea, though: they advise to make filling the questionnaire in a part of the training class. The instructor simply asks the participants to fill the questionnaire in before he closes the class with an end statement.



U2 end-user training feedback form

Course:

Date: Instructor:

Please respond by ticking the alternative that closest represents your opinion! Thank you for your feedback!

1. Do you understand the process (combination of work tasks) that was the main topic on this course?	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p>Not at all Completely</p>	1	2	3	4
1	2	3	4		
2. Are you able to work according to what you learned on this course with help of additional practicing?	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p>Not at all Certainly</p> <p>What such information do you miss that you don't expect to receive on other courses either? _____</p> <p>_____</p>	1	2	3	4
1	2	3	4		
3. Were exception cases discussed during the course?	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p>Not at all Completely adequately</p>	1	2	3	4
1	2	3	4		
4. Does the training material support your learning?	<p>Poorly</p> <table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p style="text-align: right;">Very well</p>	1	2	3	4
1	2	3	4		
5. Was time divided well between theory and practicing during the course?	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p>Poorly Very well</p> <p>If you think time was poorly divided, which part was inadequate? _____</p>	1	2	3	4
1	2	3	4		
6. Are you content with the knowledge level and the overall presentation skills of the instructor?	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p>Not at all Completely</p>	1	2	3	4
1	2	3	4		
7. What is your overall rating of this course?	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p>Poor Very good</p>	1	2	3	4
1	2	3	4		

8. What was especially good about this course?

9. Which changes would you recommend to the content of the course?

10. Do you wish more information on some areas taught on this course? If so, which are those?

Figure 5. Uponor U2 end-user training feedback survey (level 1, reaction). © Uponor.

The reaction sheet has until now been the only level of end-user training evaluation performed in the U2 project. In addition only the training attendance has been tracked and extra training offered to areas where many end-users have missed the training for one reason or another.

4.3 Improving end-user training evaluation in Uponor's U2 program

One of the aims of this thesis is to find new, suitable methods for Uponor U2 program to better evaluate the end-user training effectiveness. Trying to choose the right evaluation methods for a particular end-user training program, it is important to consider the nature of the training itself. In Uponor's case the training has to do with a new ERP system supporting a new way of working according to harmonized set of processes.

4.3.1 Choosing the methods for further evaluation

As explained in the previous chapter, the only evaluation in U2 end-user training so far have been the "smile sheet" - that is, evaluation of participant reaction. Based on literature review in chapters 2 and 3, there are many options to utilize to reach a more thorough evaluation result. The tricky part is to choose the methods most suitable to the U2 end-user training.

As Salas & Cannon-Bowers (2001) state in their review of the training research literature from the decade 1990-2000, the Kirkpatrick's four levels continues to be the most popular training evaluation framework. Although weaknesses, such as a need to find more diagnostic measures have been identified, the Kirkpatrick model still seems to provide the basis for a thorough and meaningful training evaluation. Further, Kirkpatrick's model reduces the measurement demands for training evaluation: all levels of evaluation are focused on outcome data collected after the training has taken place (Bates, 2004). Hannigan et al. (2000) even describe Kirkpatrick's model as the "outcomes approach" since it emphasizes that the outcome of training is appropriate. This approach is especially suitable in ERP

training programs, where it is not possible to compare the training outcome with the situation before training: the whole work environment has changed, and comparing is not possible. What also speaks for turning to Kirkpatrick model in search for further evaluation methods for Uponor is the fact that the Kirkpatrick level 1 evaluation is already in use at Uponor. Based on the mentioned factors I make the decision of choosing my methods for further evaluation among the Kirkpatrick model.

Evaluating learning with specific post-training tests has been considered in the U2 program during the rollouts. Creating and executing tests for such a vast training program with hundreds of participants per rollout would, however, require high amount of resources and time. Furthermore, as Tannenbaum & Yukl (1992) have concluded, trainee learning appears to be a necessary but not sufficient prerequisite for behaviour change. As the objective set for this particular training program is “the end-users should be able to successfully perform their daily job also after go-live”, we focus rather on the outcome, transferring the learned skills and attitudes to performance on the job. In addition to this aspect, due to the high resource requirement I believe it is unrealistic to expect that evaluating learning would create value correspondent to the resources invested in it. This is especially true in the context where no external consultants or ready-made materials and tests are available to be utilized. Thus I decide not to evaluate level 2, learning, as a separate effort. Instead I will move from level 1, reaction evaluation, straight to evaluating level 3, behavior.

Further, as Tharenou, Saks & Moore (2007) have concluded in their review of research on training and organizational outcomes: “Training is positively related to human resource outcomes and organizational performance but is only very weakly related to financial performance.” Based on this conclusion I make the assumption, that whatever changes in the financial performance of the rollout unit might be notable, it is more linked to the outcome of the total program than training itself. At least it will be impossible to differentiate training results from the overall ERP

implementation results as it comes to the financial factor. Thus I rule out the extension, level 5, of the Kirkpatrick model (developed by Jack J. Phillips). Kirkpatrick himself insists that the information about the level 4 outcomes is possibly the most valuable or descriptive information about training that can be obtained (Bates, 2004). Further, when considering the sources of information for each level of evaluation, final organizational results is clearly the only level of evaluation where the primary source of information should be the managers of the end-users; see figure 6 (Mahapatra & Lai, 2005). As I trust that the viewpoint of managers / department heads will offer a valuable angle to the evaluation of training outcomes, I decide to conclude my training evaluation with evaluating level 4, results.

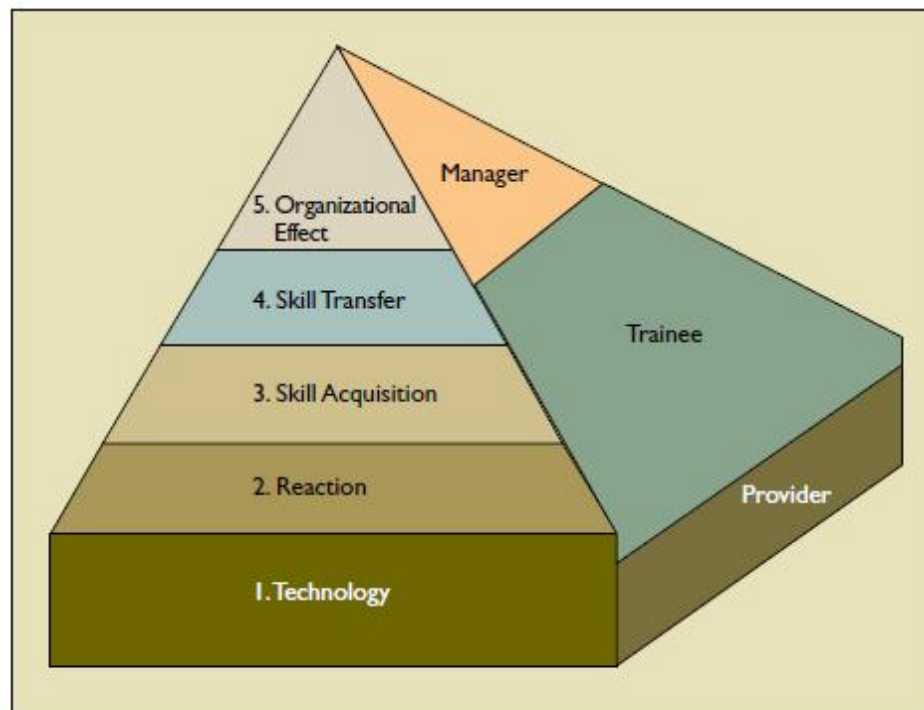


Figure 6. Framework for evaluating end-user training. (Mahapatra & Lai, 2005)

4.3.2 Level 3 evaluation: behavior

The U2 end-user training at the Lutterworth (Uponor Housing Solutions Ltd.), United Kingdom site took place in October-November 2008. Altogether 85 end-users were trained. Lutterworth is a site with sales activities and a warehouse; it is not a production site and thus no training for the manufacturing modules was offered. The go-live took place in Lutterworth on the 1st December 2008. The site was chosen for the level 3 evaluation due to a suitable time having elapsed since the go-live took place. For the learned skills to actually transfer on the job, a reasonable amount of time has to be allowed, and in a major change like an ERP implementation, I estimated that more than half a year should be allowed between the go-live and the level 3 evaluation. The evaluation was conducted by a survey questionnaire (see Appendix 1) which was filled out by a group of 12 anonymous employees (out of the aimed sample group of 15 persons) in July 2009. The group of respondents was selected by the HR manager Karen Morris at the Lutterworth site, and the selection was based on a best possible representation of all departments involved in the U2 solution rollout. The evaluation survey was initiated on site by the HR manager, which probably aided in getting the questionnaires filled in.

4.3.3 Level 4 evaluation: results

Nastola site (Uponor Suomi Oy, Housing Solutions (HS)), Finland, went live with the new U2 solution 5.5. 2008. The training for the Nastola HS employees took place during March-April 2008, and altogether 160 employees were trained.

Evaluating the final results of a training program is not easy. Especially in an extensive transformation program like U2, it is very difficult to analyse which results really are due to the training program itself and which might be affected by other factors. Firstly, a vast business transformation and ERP implementation does not

leave much choice for the employees to decide whether or not they want to change their behaviour to match the behaviours taught in training classes: in order to stay competent in their daily tasks, they simply have to learn how to use the new ERP system according to the newly designed processes. Secondly, quantitative measures such as “number of orderliness entered per day compared to the situation before go-live” are out of question, since this kind of measures are the result of the entire program, not only the end-user training. The ERP software itself is supposed to improve the efficiency; not the training alone. On top of all this comes the post go-live key-user support, which in many cases might be compared to on the job training. Still I am convinced that the view of the department heads will most probably give a different angle on the effectiveness of training, and thus I am willing to try.

Due to the above-mentioned reasons, the final results evaluation will give qualitative results: the respondents received a list of questions, which they could either answer freely on paper, or discuss on the phone as an interview. The respondents are the department heads for each relevant department / function at the Nastola site. In addition, the unit manager for Nastola gave his view on the training effectiveness for the whole unit. Reaching these busy people to actually give their responses to the training evaluation was not easy. Two out of seven persons in the chosen sample group did not, in the end, respond to the survey at all.

The questions for evaluating the results are the following (translated from Finnish. For the original Finnish questionnaire, see appendix 2):

1. Did the U2 end-user training fulfill its purpose in an effective manner?
 - a. Were the resources (time, premises, people, money) well utilized?
 - b. Do the results of the training correspond well to the resources (time, premises, people, money) invested? What is your opinion based on?

2. If there would have been no training at all, just the post go-live key-user support , what do you think would have happened?
3. What would you change about the U2 end-user training if it would be run again? Please also mention, if you would not change anything.
 - a. Materials (including the language)
 - b. Method of teaching
 - c. Timing
 - d. Group size
 - e. Amount of training per participant
4. Do employees in your department / unit now work according to the new processes and the ways of working agreed for the new system (Oracle eBS)? If / if not, how much do you think it has to do with end-user training?
5. Evaluating the results of end-user training is challenging, since many other factors than the training itself affect the experienced outcome of the training. Which of the following might, in your opinion, affect the experienced success and effectiveness of the end-user training organized in Nastola?
 - a. Extensive key-user support right after go-live
 - b. Continued key-user support (still available)
 - c. Current economical situation
 - d. Support of the direct manager or the lack of it
 - e. Computer literacy of the training participants
 - f. Other factors, which?

4.4 Results of evaluation levels 1, 3, and 4: reaction, behavior, and results

In this chapter, the results of the total end-user training evaluation on levels 1, 3, and 4, are discussed. In the end, the results are drawn together in order to form an overview on the value created by the whole process of evaluation.

4.4.1 Level 1: reaction

The reaction evaluation during the end-user training before go-live gave rather high grade averages both in Lutterworth (3,43 out of 4) and in Nastola (3,07 out of 4). The Nastola results are overall a little less positive than the Lutterworth results. The language of the user interface most probably plays a role here; the Finnish participants may react less positively to the whole idea of a new system since they have to use a foreign language to deal with it.

As it can be assumed based on the factor of social desirability discussed in chapter 3.6.1, the highest of the individual grades in both cases is the one appreciating the knowledge level and presentation skills of the instructor (see figures 7 and 8). Especially since the instructors have in both cases been the colleagues of the training participants, it is easy to understand that you would not want to give a low grade in the question about skill level and overall presentation skills of the instructor. The lowest grade for both rollout sites is given for the question about handling exception cases in the class. This has been a recognized issue throughout training, and the instructors' attention has been drawn to the topic as much as possible. At both rollout sites, the training participants have had a fairly positive view on being able to work after go-live based on what they have learned in training (Lutterworth 3,44 and Nastola 2,91). All in all, based on these positive results, it was not seen necessary to

make any major changes to the training program. Thus it is interesting to see how the further evaluation might change the impression of the outcome of training.



Overview of Training Feedback

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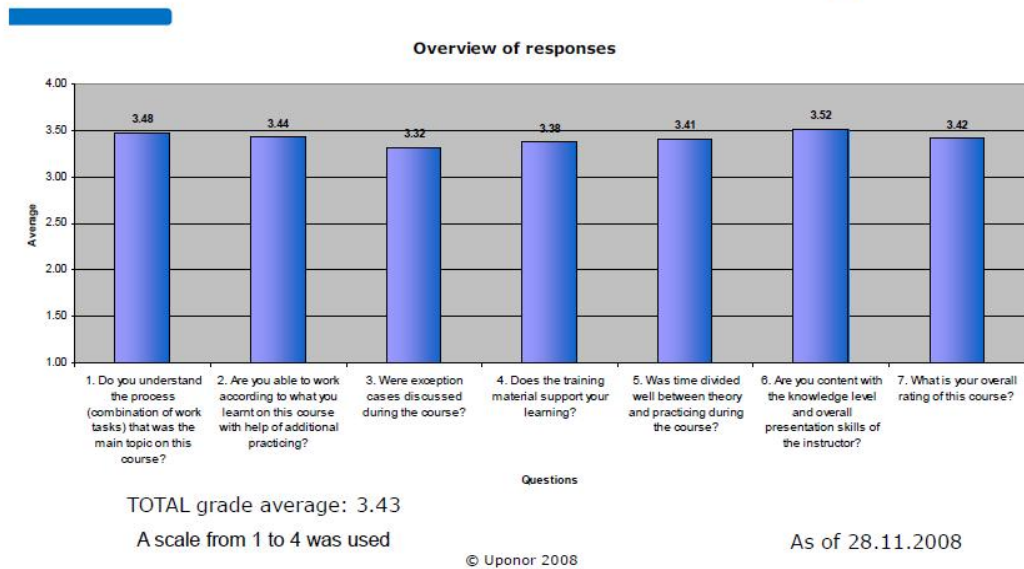


Figure 7. Overview of the feedback analysis for Lutterworth site (level 1, reaction). © Uponor 2008.



Training overview of the participant responses

uponor

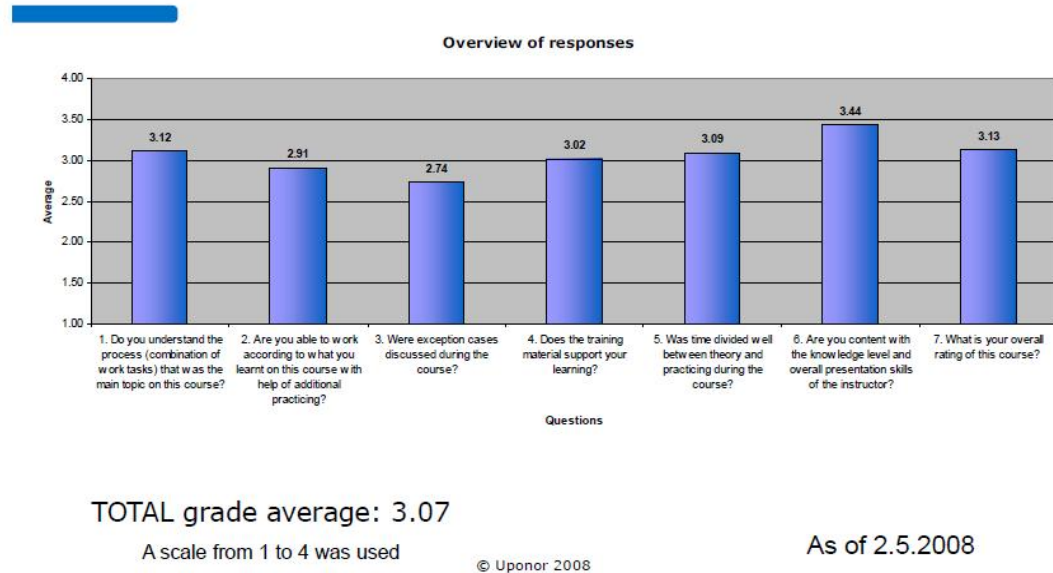


Figure 8. Overview on the feedback (level 1, reaction) in Nastola HS end-user training. © Uponor 2008.

4.4.2 Level 3: behavior

The results for the level 3 evaluation in Lutterworth, UK, give a less positive impression of the outcome of the end-user training than the results on reaction (see figure 9). The grade average of 2.75 is exactly the same as the grade for overall rating of the training program. It is significantly lower than the overall rating of the training courses given in the reaction evaluation in Lutterworth (3,42). This result implies that the training participants' view on the training offered has become less positive after they have actually had to manage in their daily tasks based on the skills and attitudes they have learnt in the training classes. The participants still give the lowest grade, 2,25, for the handling of exception cases during training. The same grade is now given for managing in their daily work without key-user support in the

kind of tasks that could have been taught during training: this grade tells, that the end-user training may not have prepared the training participants to work effectively also after go-live to the extent that might have been expected.

Overview of the transfer level (3) evaluation in Lutterworth (UK)

The scale from 1 (weakest, worst) to 4 (strongest, best) was used.

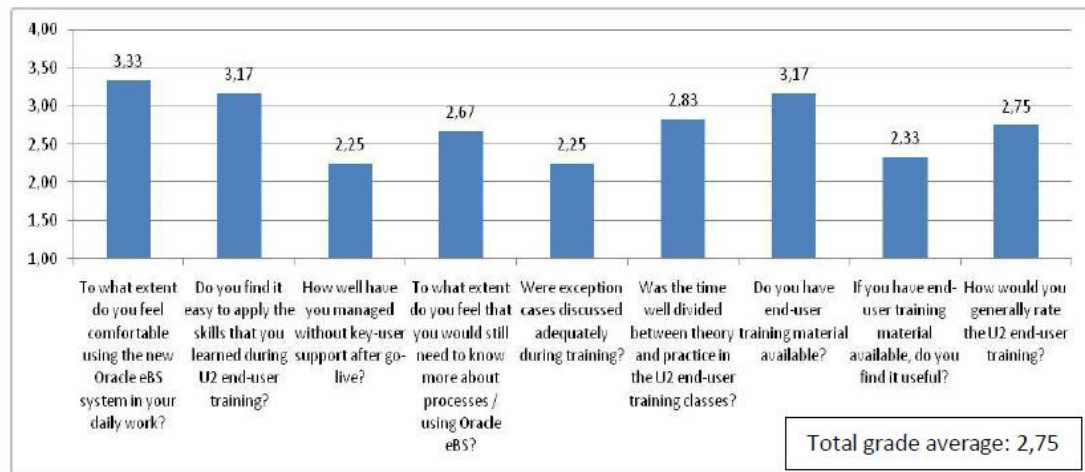


Figure 9. Overview of the responses to the level 3 training evaluation in Lutterworth 07/2009.

A rather low grade is given also for training material: although all respondents have at least some training material available, they do not find it very useful (see figure10). The good news about the results of the behavior evaluation is that the highest grade, 3,33, is given about feeling comfortable working with the new system supporting the daily tasks of the respondents. This implies that even if it has required more key-user support than expected, one way or another the end-users have managed in the new work environment.

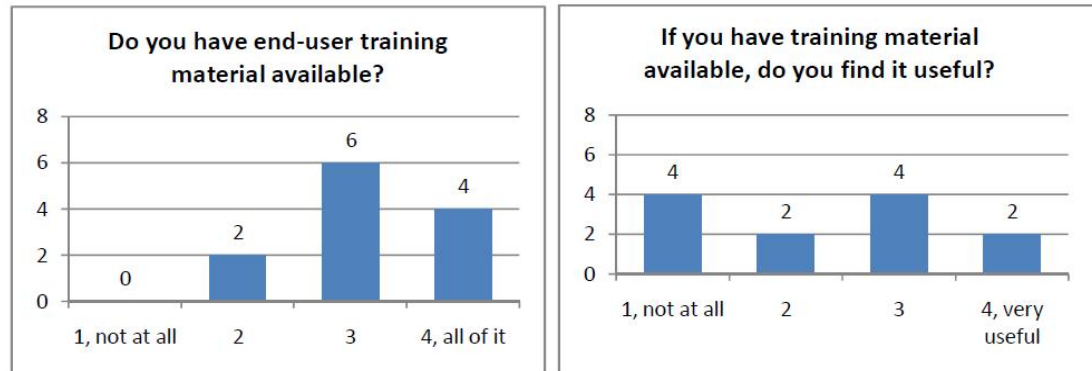


Figure 10. The availability and usefulness of end-user training material. Level 3 evaluation, Lutterworth (UK), 07/2009.

The survey respondents were encouraged to give free comments in addition to the quantitative responses. The most significant comment comes from a participant who is overall very unsatisfied with the training and has found it very difficult to cope with the change. This participant states that he / she is pretty much computer illiterate and feels that this factor has not been considered when planning training. Most probably this participant is not the only one who has faced the challenge of getting used to new IT tools, and more attention should be directed at this topic in the future.

4.4.3 Level 4: results

The level 4 evaluation produced qualitative results, as mentioned in the chapter 4.3.3. Analyzing qualitative results is not as straightforward as it can be with quantitative analysis. Seidel (1998), however gives the impression that analysing qualitative data is not too complex: “Analyzing qualitative data is essentially a simple process. It consists of three parts: Noticing, collecting, and thinking about interesting things”, he says. As the figure 8 shows, the process is not linear. It is an iterative and progressive process, like a cycle that keeps repeating itself.

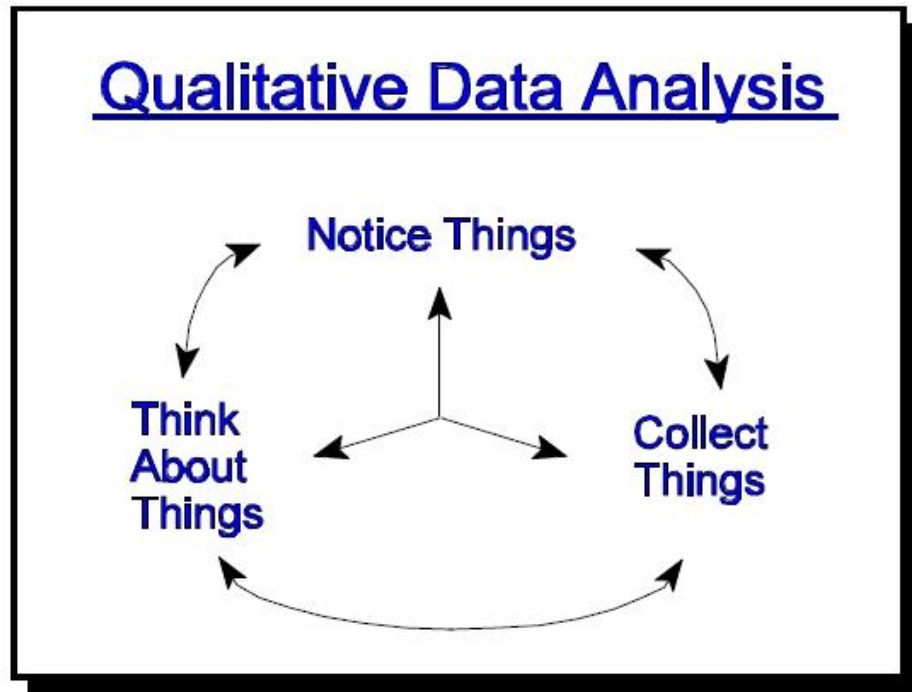


Figure 11. Process of qualitative data analysis. (Seidel, 1998)

As the first step, the responses of the level 4 evaluation were coded: coding simply means noticing interesting things among the data, and marking them. I coded the responses by highlighting significant, repetitive, or otherwise interesting words or sentences in the data. After the material was coded, I collected the similar comments to smaller entities: for example, I found multiple comments about “some general training could have been offered earlier”, and collected all these comments into one stack. After collecting the coded data into smaller entities, the following entities were identified:

- General training could take place already earlier
- Quality of training is inconsistent
- More attention needed in choosing instructors
- Training should be offered in completely in local language
- Timing of training was good

- Key-user support after go-live affects the experience of training success and effectiveness to the positive direction
- Key-user support can't replace end-user training
- The group sizes have been too big in some cases, small group sizes appreciated
- Repetitive training could be offered after go-live
- Computer literacy issues mainly affect training in the departments with less educated employees (warehouse, production)
- Support offered by the manager affects experience of the end-user training success and effectiveness to the positive direction
- The quantity of training was not sufficient in all areas

After the data has been coded and collected, what is left to do is the thinking part. In the case of training evaluation, I try to think of the collected entities that have most significance to the outcome of training, and the entities that can most easily be done something about. In order to have most useful results, I created two lists: 1. quick wins to be reached in the upcoming U2 rollouts 2. Most significant new information gained with the level 4 evaluation. The lists read as follows:

1. Quick wins to be reached in the upcoming U2 rollouts

a. Organise general training already earlier: General knowledge about the U2 solution can easily be offered earlier with the U2 overview course that is already included in the curriculum. It can be separated from the process & tool training.

b. Offer more training repetition after go-live: After go-live, some key-user resources can be directed in a more structured way to

special re-training sessions that concentrate on practical examples as well as exception cases.

c. Keep group sizes small: The limit of group sizes for training in U2 has been 12 participants. The learning experience could be enhanced by trying to limit the group size so that only overview courses and others with only little practical exercises could be given for groups of 12, and the more practical courses to groups of maximum 8 pax.

2. Most significant new information gained with the level 4 evaluation

a. Quality of the training is inconsistent: it was clearly visible that the quality of training has been (at least in Nastola end-user training) quite inconsistent: one department reports very good training with very good results, and the representative of another department says training was either very good or very useless depending on the knowledge and skills level of the instructors. This is new information that has not been visible in the anonymous responses by the training participants to the previous evaluation levels.

b. Computer literacy is an issue in some departments / functions: Computer literacy of the end-users is a topic that has not gained much attention in the U2 program. Advice has been given to the rollout sites to check whether computer illiterate end-users exist, and to train them on basic skills before the rollout begins. The advice has however been quite vague and left the responsibility in the hands of the rollout site management. Although the responsibility to train employees in basic computing skills lies not with the ERP implementation project, the computer literacy of the end-users is a shared interest between the rollout site and the project. Thus a more

thorough set of advice could be in place, and the issue should be brought up early enough.

c. Training offered in a foreign language is not the best solution:

Translating the training material to local languages is costly and time consuming. Thus it is natural that in some cases where training is offered to end-users with higher education and experience in international co-operation, English training material has been used. Based on the results of the level 4 evaluation, this is not a good choice. No matter how educated you are, the best learning results are reached when the training takes place in the native language. This result encourages the use of local versions of the training material also in the future whenever possible.

5 DISCUSSION OF RESULTS AND RECOMMENDATIONS

The U2 end-user training program was ongoing at Uponor when this thesis was initiated. Thus the improvements suggested for evaluating training in this particular training program are rather reactive than proactive in nature. There are some rollouts left in the U2 program, though, where the results of this thesis can be utilized. In this chapter the overall impression of the three level evaluation process is discussed, and further, some recommendations are made for the future training programs.

5.1 Overview on the results of the three-level evaluation process

The whole evaluation process of the levels 1, 3, and 4 shows, that the level 1 evaluation really is not enough to get a truthful view on the effectiveness of end-user training. The level 1 evaluation shows over positive grades – partly due to the social desirability factor and partly most probably since the end-users are not yet able to imagine what it really will be like to work in the changed work environment after go-live. The magnitude of the change may be underestimated. The level 3 evaluation offers more insight to the importance of key-user support after go-live. Although the training participants believed in the level 1 evaluation, that they would be able to manage after go-live with the training they had just attended, the level 3 evaluation reveals that they have apparently not been able to manage without key-user support as well as they hoped they would. It also seems, based on the results of the level 3 evaluation, that the training material is not found particularly useful for the post go-live purposes of the end-users. It might be worthwhile to focus on the post go-live value when reviewing and updating the training material in the future. Practical

examples, exception cases, and similar should get more focus in the creation of the material as well as in the planning of the content of training.

The level 4 evaluation provides a new viewpoint to the success and effectiveness of the end-user training, having the department heads as respondents. The results of this evaluation level show that the unequal skill and knowledge level of the instructors seems to be the biggest barrier to delivering equally effective end-user training in the U2 program. This factor was only visible in the level 4 evaluation, where the different departments could be identified due to non-anonymous responses. Based on the case study by Sammon & Adam (2007) this is not a unique situation: they studied four companies with the topic “Project preparedness and the emergence of implementation problems in ERP projects” and found out that at least two of the companies had faced difficulties regarding unequal instructor / super-user skills. It seems that the most important improvement for U2 end-user training would not be anything about the training itself: rather, it would be investing more effort in finding the right resources to train the end-users, and offering a sufficient amount of training and support to the instructors prior training.

5.2 Investing effort in setting objectives pays off

As research clearly shows (Kirkpatrick & Kirkpatrick, 2006; Phillips & Phillips, 2002), it all begins with setting objectives for the training program. For the U2 end-user training program, the only real objective set was to “make sure that the employees can successfully perform their daily tasks also after the go-live”. Defining the training program objectives more distinctively (as also Gartner clearly recommended in their report (Gartner, 2006)) in the future may support planning the content of the program and definitely it will make it easier to evaluate whether or not the training program has been successful and whether or not it has reached its goals.

5.3 A learning evaluation strategy is worth considering

Finding the suitable time and resources to execute the phase 3 and phase 4 evaluations was quite challenging. As end-user training in such a large transformation program requires a lot of resources, any further effort when training already is in the past seems difficult to reason. Evaluating the results of the training program does not really benefit the unit / site any more: it aims to improve the training program in the future and tries to find out whether or not the investment has been worth the money. The typical WIIFM (what's in it for me?) principle is clearly visible: it was difficult to get the evaluation participants to see the "company level benefit" of spending half an hour of their time on evaluating something that took place months or even a year ago. The respondents most probably felt that they were only making favours to someone by responding to a survey or participating in an interview. This phenomenon is recognized also in the research: Ward, Parkin, & Medsker (2006) describe common roadblocks to conducting training evaluation in their study. These concerns include e.g. a feeling that there is no payoff; that nobody cares. It might also seem that management doesn't support the evaluation activities performed. In some organizations there might be a lack of skilled evaluators to actually take care of the process. It might also be that since the training programs and individual courses are not systematically planned and designed, it feels difficult to evaluate them. In the end, it is not uncommon, that it seems that nobody does anything with the evaluation results, so why bother in the first place.

The reluctance of the Uponor employees and managers to participate in the post go-live evaluation levels fall, in my opinion, to the categories "no payoff" and "no support". To overcome these evaluation obstacles, it would make sense to make evaluation a more visible and respected part of any training initiative. For this purpose I recommend Uponor to come up with a "learning evaluation strategy", LES. The learning evaluation strategy is a document that sets out the organizational

context for evaluation, the high-level goals of evaluation, and the overall evaluation approaches that should be used in this particular organization. The aim is to tie the elements of evaluation to the overall strategy and goals of the organization; thus building the foundation on which a coherent and strategic evaluation policy can be built. (Ward et al., 2006)

Table 2. How a LES addresses concerns about evaluations. (Ward et al., 2006)

Concern	Explanation	How a LES Helps
No payoff	There is no payoff; nobody cares.	The payoff is evident because evaluation activities flow from evaluation strategy, which ties to organizational strategy. Everybody cares.
No support	Management doesn't support evaluation activities.	Managers have bought into the evaluation strategy and understand that they need the results for decision making.
No expertise	We don't know how to do it; our staff have limited skills.	The policies, plans, and procedures reduce the need for evaluation skills because many activities are routinized.
No time	Evaluation projects are chaotic, ad hoc <i>collateral duties</i> that take too much time.	Standard operating procedures are assigned as regular, highly effective duties. Ad hoc projects are few.
No system	Our courses are not developed using good instructional design, so they are hard to evaluate.	Evaluation policies can drive better instructional design policies and practices.
No use	Nobody uses evaluation results.	Procedures specifically address how results will be used, when, and by whom.
No respect	We might look bad and lose credibility.	Forward-looking, actionable evaluation encourages continuous improvement rather than finger-pointing. Everyone looks good.

Table 2 above shows how having a LES will help addressing the evaluation roadblocks described earlier. In addition to these obvious evaluation obstacles, it will also help to address a concern of my own: during the time I have spent evaluating end-user training in the U2 program – first as a part of my daily job and now as a part of my thesis work - I have come to realize what a tricky task evaluating training really is. I would have benefited from some more years of training evaluation experience myself. Thus I realize, that for those future training managers and coordinators at Uponor who might not be even as deep in the science and art of

training evaluation as I have been, it will be a demanding task to reach relevant, valuable results in evaluating training programs. Having a LES will definitely help them by setting up evaluation procedures that can be conducted by modestly trained evaluators. (Ward et al., 2006)

6 CONCLUSIONS

The literature review yields to the 50's and 60's as it comes to the concept of evaluation. When discussing training programs evaluation and especially evaluating ERP end-user training, the research reviewed gets more and more recent. This tells me that the topic studied in this thesis is of continuous interest and importance among the researchers. And why should it not be? Human capital is gaining ever growing attention as an invaluable asset and success factor for any company. Investments made for employee learning and development get bigger by the year, and the corporate management wants to know what the money spent on training actually produces. From the systems point of view, integrated ERP systems are becoming a rule rather than an exception in today's business world. The implementations are complex and fail all too often. End-user training has been identified as one of the critical success factors in an ERP implementation – and not so much as it comes to quantity of training, but more as it comes to quality. And the quality calls for evaluating the outcome of the effectiveness of training.

So far at Uponsor U2 program, the end-user training evaluation has been taken care of on a similar minimum level as in most of the training programs run in today's companies. This evaluation method (so called smile sheets) has not, however, shown that the quality of the training delivered by the end-user training instructors is not consistent in all areas, and could be further improved. Only by applying further evaluation levels (level 3: behavior, and level 4: results) it became visible that the training quality does not seem to be consistent, and that quick wins might still be possible during the U2 project by a few easy-to-implement corrective actions. Thus, although the evaluation on the higher levels was frustrating to perform, it was worth the effort. The frustration simply resulted from the partial reluctance of the respondents to actually participate in the evaluation, and also to a lesser extent from

the fact that training evaluation is rather an art than an exact science. The training evaluator must learn to settle with evidence, when proof is not available – and most of the time, proof is indeed not available.

The final results of an ERP program take time. At this point it still remains to be seen, how much benefits the global corporation of Uponor will, in the end, gain due the implementation of the U2 solution. The first rollout sites have been working according to the new processes and system for years already, some have just started, and some are still waiting to implement the solution, train their end-users, and see how it goes. The results of this thesis may still come useful for the remaining rollouts. The results also show that although some improvements could be made to reach higher effectiveness of U2 end-user training, the training is already very well planned and performed. Where many other companies have “saved money” by cutting corners with end-user training, Uponor has understood the value of training as a critical success factor of such a great transformation program. Based on my experiences as a member of the U2 project and further with the research made for this thesis, I have every reason to believe that the corporation is on a successful journey towards the goal of One Unified Uponor.

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APPENDICES

Appendix 1. Level 3 evaluation survey questionnaire. (Lutterworth, UK)



U2 End-User Training Survey

Please respond by marking an X to the option that best describes your opinion! Please also write your comments freely for the open questions. You can add a 2nd page for free comments.

1. To what extent do you feel comfortable using the new Oracle eBS system in your daily work?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Not at all</td> <td></td> <td></td> <td style="text-align: right;">Fully</td> </tr> </table>	1	2	3	4	Not at all			Fully
1	2	3	4						
Not at all			Fully						
2. Do you find it easy to apply skills that you learned during the U2 End User Training?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Not at all</td> <td></td> <td></td> <td style="text-align: right;">Fully</td> </tr> </table> <p>Why / Why not? _____</p> <p>_____</p>	1	2	3	4	Not at all			Fully
1	2	3	4						
Not at all			Fully						
3. To what extent have you had to rely on Key User support to learn something that could have been taught to you in class?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Heavily</td> <td></td> <td></td> <td style="text-align: right;">Not at all</td> </tr> </table>	1	2	3	4	Heavily			Not at all
1	2	3	4						
Heavily			Not at all						
4. To what extent do you feel that you would still need to know more about processes/use of Oracle eBS?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Not at all</td> <td></td> <td></td> <td style="text-align: right;">Fully</td> </tr> </table>	1	2	3	4	Not at all			Fully
1	2	3	4						
Not at all			Fully						
5. Were exception cases discussed adequately during the U2 End User Training?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Not at all</td> <td></td> <td></td> <td style="text-align: right;">Fully</td> </tr> </table>	1	2	3	4	Not at all			Fully
1	2	3	4						
Not at all			Fully						
6. Was the time well divided between theory and practice in the U2 End-User Training classes?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Not at all</td> <td></td> <td></td> <td style="text-align: right;">Completely</td> </tr> </table> <p>If not, which part should be increased : theory / practice? _____</p>	1	2	3	4	Not at all			Completely
1	2	3	4						
Not at all			Completely						
7. Do you have End-User Training Material available?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Not at all</td> <td></td> <td></td> <td style="text-align: right;">All of it</td> </tr> </table>	1	2	3	4	Not at all			All of it
1	2	3	4						
Not at all			All of it						
8. If you have End-User Training Material available, do you find it useful?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Not at all</td> <td></td> <td></td> <td style="text-align: right;">Very useful</td> </tr> </table>	1	2	3	4	Not at all			Very useful
1	2	3	4						
Not at all			Very useful						
9. How would you generally rate the U2 End User Training?	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 25px; text-align: center;">1</td> <td style="width: 25px; text-align: center;">2</td> <td style="width: 25px; text-align: center;">3</td> <td style="width: 25px; text-align: center;">4</td> </tr> <tr> <td style="text-align: left;">Useless</td> <td></td> <td></td> <td style="text-align: right;">Excellent</td> </tr> </table>	1	2	3	4	Useless			Excellent
1	2	3	4						
Useless			Excellent						
10. Please provide general feedback on how to improve the U2 End-User Training?	<p>_____</p>								

Appedix 2. Level 4 evaluation survey questionnaire. (Nastola, Finland)



U2-loppukäyttäjäkoulutus keväällä 2008: lopullisten tulosten arviointi

Nastolassa järjestettiin U2-käyttöönottoon liittyvät loppukäyttäjäkoulutukset keväällä 2008. Go-live-päivästä on nyt kulunut yli vuosi, ja on aika miettiä kulunutta aikaa ja arvioida koulutuksella saavutettuja tuloksia: sen onnistumista, tehokkuutta ja mahdollisia puutteita. Arvioinnin tuloksia käytetään Fox-ohjelman koulutusten edelleen kehittämiseen.

Tässä lomakkeessa on muutamia kysymyksiä, joihin toivon sinun vastaavan vapaamuotoisesti. Voimme keskustella kysymyksistä myös puhelimitse: numeroni on 040-5622610.

Pyydän sinua palauttamaan lomakkeen ti 29.9. mennessä osoitteeseen elina.suhonen@aditro.com.

Lämmin kiitos palautteestasi ja hyvästä yhteistyöstä!

1. Täyttikö U2-koulutus tehokkaasti tehtävänsä?
 - 1.1. Käytettiin koulutukseen varattuja resursseja (aika, tilat, ihmiset, raha) järkevästi?
 - 1.2. Vastaavatko koulutuksen tulokset näkemyksesi mukaan koulutukseen panostettuja resursseja (aika, tilat, ihmiset, raha)? Mihin näkemyksesi perustuu?
2. Jos koulutus olisi korvattu pelkällä key user –tuella käyttöönoton jälkeen, miten olisi käynyt?
3. Mitä muutoksia tekisit koulutukseen, jos se järjestettäisiin uudestaan? (Mainitse myös, mikäli et muuttaisi mitään)
 - 3.1. materiaalit (ml. kieli)?
 - 3.2. opetustapa?
 - 3.3. ajankohta?
 - 3.4. ryhmäkoko?
 - 3.5. koulutuksen määrä / osallistuva henkilö?
4. Toimitaanko omalla osastollasi / yksikössäsi nykyään uuden toimintamallin (prosessit, Oracle) edellyttämällä tavalla? Mikäli / mikäli ei, kuinka paljon se mielestäsi johtuu / ei johdu loppukäyttäjäkoulutuksesta?
5. Koulutuksen lopputuloksen arviointi on haastavaa, sillä niin monet muutkin asiat kuin itse koulutus vaikuttavat koettuun lopputulokseen. Mitkä seuraavista asioista saattavat omasta mielestäsi vaikuttaa kokemukseen Nastolassa järjestetyn koulutuksen tehokkuudesta ja onnistumisesta, ja mihin suuntaan?
 - 5.1. Key user –tuki heti go-liven jälkeen
 - 5.2. Jatkuva key user –tuki myös tällä hetkellä
 - 5.3. Vallitseva taloudellinen tilanne
 - 5.4. Esimiehen tuki ja kannustus tai niiden puuttuminen
 - 5.5. Koulutukseen osallistuneiden henkilöiden tietotekniset valmiudet
 - 5.6. Muut mahdolliset seikat, mitkä?