Theoretical Frameworks in Practice; Evaluating End-user IT Training Strategies at Baker Hughes INTEQ

By

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Introduction 1

The rapid changes in technological development have set a new focus on the importance of end-user training. Organizations are aware of the fact that they need to increase the knowledge level among their workforce to be able to stay ahead of competitors and survive.

> *"Information systems practitioners and researchers widely acknowledge that providing appropriate end-user training is critical to successfully implementing systems, and key to promoting productive use of the technology"* (Compeau, Olfman, Sein and Webster 1995:26).

The focus of this study is based on how the strategic structuring of end-user training is in an organization. Baker Hughes INTEQ (BHI) forms the basis for the study. It emphasizes evaluating their training and learning strategy based on a theoretical framework which was developed by Olfman, Bostrom and Sein (2002). Figure 1.1 demonstrates how the study is divided into two evaluative studies forming separate research questions. The aim of the research is to find out whether BHI operates with effective end-user training. The findings from this evaluation are used to assess the frameworks' usefulness in practice. The research questions are:

- *Does Baker Hughes INTEQ have an effective learning and training strategy?*
- *Are the Learning and Training Strategy models practicable?*

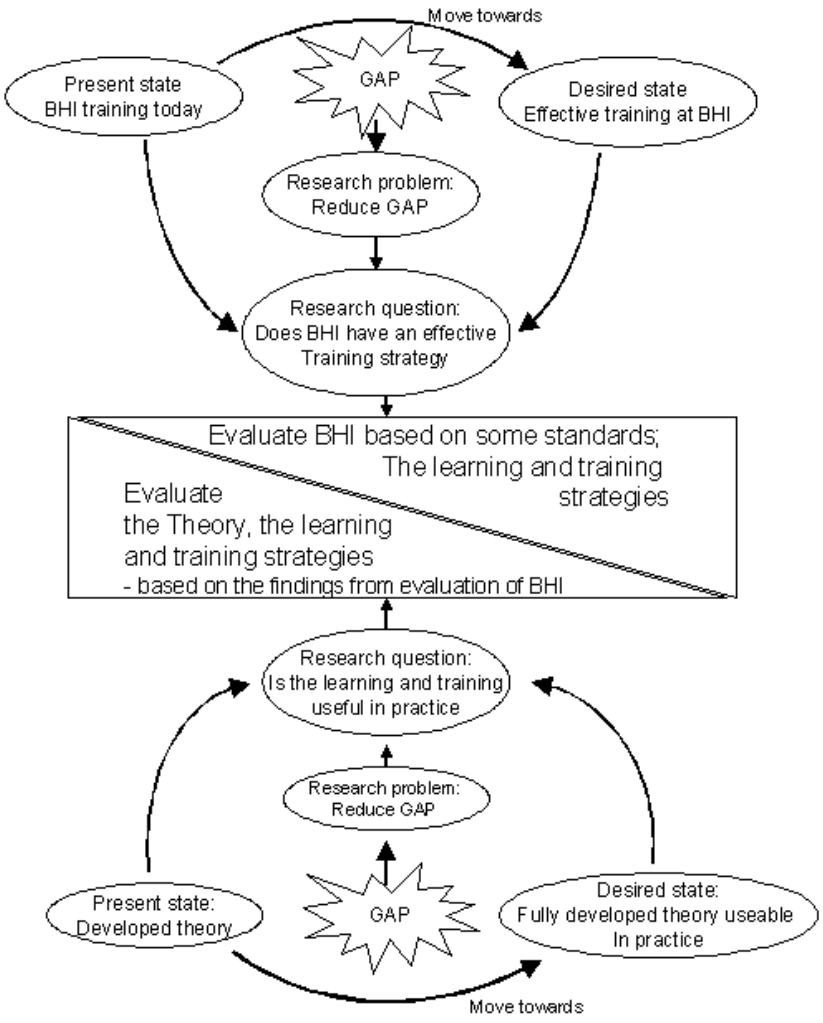


Figure 1.1: The Evaluation Design for this study

The evaluations are divided between two separate chapters; one emphasizes the evaluation of BHI's training practice where the chapter is naturally categorized based on the content in the Learning and Training Strategy models, chapter 5. The findings which conflicts with the theoretical framework make up the content of chapter 6; the evaluation of the Learning and Training Strategy models.

The theoretical framework which is the foundation in this research is presented in **chapter 2**. The content of the models are discussed in detail. Some of the models basis is taken from cognitive psychology and these aspects are outlined in the chapter. **Chapter 3** contains a description of BHI, the content involves information regarding their

organizational structure and how their training is organized. In **chapter 4**, the research design and research methods of the study are described according to the project, the research questions and the theoretical framework. The following two **chapters 5 and 6** are as mentioned the evaluation and discussion of the outcome of the research questions. The dissertation concludes with a discussion in **chapter 7**, which includes the limitations of the study and possible future work both for BHI and the research.

Literature Review 2

"The world of business has shifted from one dominated by capital to one dominated by knowledge" (Geus 1997:16).

The constant development in the environment forces managers to cope with the changes by managing shifting of skills and attitudes within their own company. Arie de Geus (1997) defines the ability to change by changing yourself as learning. It is known to every management that training plays a critical role in organizations. It is no longer possible to stay ahead of competitors if the organizations do not invest in training *"…the only competitive advantage the company of the future will have is its managers' ability to learn faster than their competitors"* (Geus 1988:74). The increasing technological development has resulted in large investments in training programs. The "State of the Industry report 2002" developed by the American Society for Training & Development, ASTD, confirms this. The report indicates that the average U.S. company is training more of its employees than ever before. In 1999 (stated in the 2001 report) the largest share went to technical skills training (ASTD), and in 2001 e-learning reached its highest level since 1997. The ASTD President and CEO, Tina Sung, observed *"The continued growth in training is encouraging. It illustrates that companies are beginning to understand the importance of investing in their people."* (ASTD (a)).

The content of this chapter is meant to give an overview of the theory which this project is based upon. The chapter gives a presentation of the psychological aspects within learning to explain the background for the theoretical framework used in the study. Further it gives a detailed description of the content of the theory. The next section outlines the development of end-user training with emphasize on how it is represented in the theory.

2.1 End-user training

In Goldstein's "Training in Organizations" training is defined as "*the systematic acquisition of skills, rules, concepts, or attitudes that result in improved performance in another environment*" (Goldstein 1993:3). The main objective of end-user training is to enhance end-users understanding of the system and motivation to use the system (Olfman and Sein 1997; Compeau et al. 1995; Sein and Bostrom 1989; Sein, Bostrom and Olfman 1987). *"The goal of training is to produce a motivated user who has the basic skills needed to apply what has been learned and then to continue to learn on the job"* (Compeau et al 1995:26) End-user training is one of the key factors influencing the effective use of IS (Santhanam 2002; Gattiker 1990; Sein et al. 1987; Cheney, Mann and Amoroso 1986; Brady 1967). *"Education is a major activity of the traditional MIS systems development process"* (Cheney et al. 1986:306).

In information technology the term end-user is used to distinguish the person using the system from the other components connected to the product. Complex products require involvement of designers, installers, administrators and system operators. The "end" part of the term indicates that at the end of this chain we find the "user". The term end-user thus distinguishes the user for whom the product is designed from other users making the product possible for the end-user (WhatIs 04.12.02).

Rapid development in new technological products results in need for training end-users to use the products effectively. In most organizations the end-users do not see the benefit from using the new systems they have received training in (Santhanam 2002). To gain effective training requires the organization to focus on the larger picture. They have to integrate training with the organizational strategies (Olfman, Bostrom and Sein 2002). This set of integrated strategies is illustrated in Figure 2.1.

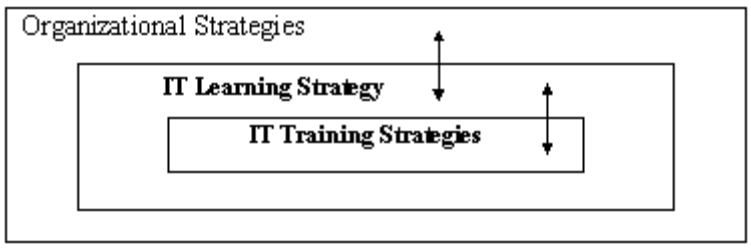
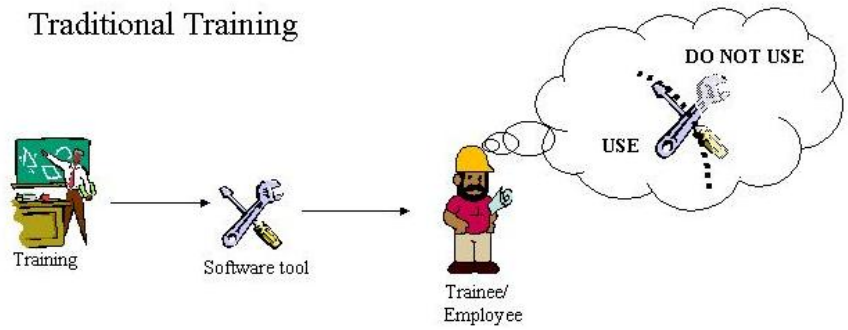


Figure 1.1: A layered view of Training and Learning Strategies (Olfman et al. 2002)

The figure shows how training is divided between learning and training strategy, and how they are related. Learning strategy represents how the training resources are deployed to develop the knowledge and skills in the organizations workforce. The training strategy is related to the selection of best training methods for specific situations (Olfman et al. 2002). Together the two strategies should operate in accordance with the overall organizational strategies to gain a common vision that is represented throughout the whole company.

Even though end-user training has become a major part of organizations there is very little literature related to guidelines on how the strategic aspects of training should be organized (Olfman et al. 2002; Bostrom, Olfman and Sein 1990; Sein et al. 1987). Traditional technology training has been defined in terms of skills (see figure 2.2). In skills-focused training the goal is to make sure that the users have knowledge to operate the tools and applications, focusing on the system itself. The figure demonstrates how this training methodology gives an insufficient result compared to the investments into training. The training only focuses on how to use the tool without emphasising on the users understanding of its role in the organization and motivation to use the tool.



INPUT	GOALS	RESULT
Training in end-user software tool	•Knowledge to operate the tool	Traditional skill-focused training. Employees only use a small part of what they have learnt

Figure 2.2: Traditional End-user Training

Sein, Bostrom and Olfman (1999) have stated that this narrow approach to training is inadequate for training the workforce of the future. The limited success for training programs the majority of organizations are using indicates that the large investments have failed to make the trainees use the skills that they have learned. Research studies on end-user training show that the employees, in their job, only use a small fraction of what they have learnt (Santhanam 2002; Olfman & Bostrom 1991).

As mentioned above, understanding and motivation are the main goals within end-user training. Training in information systems should focus on the concepts underlying it. It is important that the employees understand what the system can do for themselves individually and for their organization. If organizations want to have successful end-user computing they have to have effective training. The users must develop a sense of control over the system to get the motivation to use the system effectively (Olfman and Sein 1997; Sein et al. 1987). To get control means developing understanding of the system and how it works. Understanding and motivation thus result in effective training which leads to successful use of the system (see Figure 2.3).

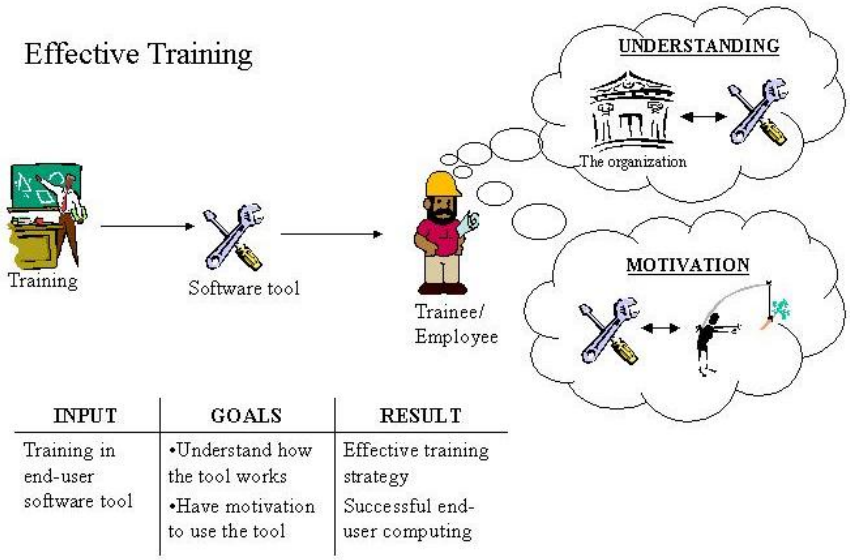


Figure 2.3: Effective Training

A knowledge level framework introduced by Sein et al. (1999) integrates the traditional skill-focused training view with the outcomes from the effective training stated above. The framework has a more complete range of knowledge outcomes, and it is developed to help accomplish effective training *"It is designed to serve as the cornerstone of developing an effective training strategy"* (Sein et al. 1999:2). It has a seven level hierarchy which integrates motivation and meta-cognition, elements from cognitive psychology, with prior research focusing on the system itself and the user's understanding of it (See Table 2.1).

Knowledge level
1.Command-based
2.Tool procedural
3.Business procedural
4.Tool conceptual
5.Business conceptual
6.Business motivational
7.Meta-cognition

Table 2.1: Knowledge Levels (Sein et al. 1999)

Sein et al. (1999) propose that organizations should structure their training so that employees attain these levels of knowledge. To achieve this objective, organisations must have comprehensive learning and training strategies. Bostrom et al have developed such a learning and training strategy model. This project is based on these models.

The next section outlines the cognitive theory aspect of the model which this project is based on, with emphasis on the knowledge level framework. The learning and training strategy models will be described in detail in section 2.3.

2.2 Psychology of learning

Throughout the history of educational psychology there has never been a universal agreement on how learning occurs. The study of learning is primarily carried out by psychologists. They have a need for ordering facts into systems of laws and theories. Because a great deal of a man's behaviour is the result of learning, psychologists with a liking for systems find a theory of learning essential (Hilgard 1956). Having a theory within learning means providing frameworks for interpreting environmental observations (Schunk 2000). *"A theory is a scientifically acceptable set of principles offered to explain a phenomenon"* (Schunk 2000:3). Without a theory the research findings would be disorganized collections of data. The researchers and the practitioners need overarching frameworks to link their findings with. Theory thus serves as a bridge between research and education.

During the 20th century theory within learning has been influenced by different psychological principles, and the psychological view on the subject has changed significantly. The definition of learning is therefore divided between theorists, researchers and practitioners. Despite this disagreement Shuell has managed to capture the basis that most educational professionals consider central to learning. This general definition of learning is based on cognitive principles, emphasizing on learners' thoughts and beliefs (Schunk 2000). *"Learning is an enduring change in behaviour, or in the capacity to behave in a given fashion, which results from practice or other forms of experience"* (Schunk 2000:2). From a cognitive point of view learning this means developing new actions or modifying existing ones. The result of learning is not demonstrated at the time learning occurs. It is not something we observe directly, but rather its products (Schunk 2000).

Learning theories can be divided into two major types: stimulus-response theories and cognitive theories. Recently these main psychological views have been joined by new cognitively oriented theories called constructivism (Alessi 2001; Schunk 2000). The research of the constructivist assumptions regarding learning is at an early stage, and therefore will not be elaborated further in this project.

Stimulus-response is represented by the principles of behavioural psychology. In the first half of the 20th century behaviourism was dominating, and the oldest theories of learning remain behavioural. The work of B. F. Skinner is an example of behavioural theory. In his view

learning was understood as *"…changes in the observable behaviour of a learner made as a function of events in the environment"* (Alessi 2001:16). He argues how learning is connected to the association between stimuli and responses, where reinforcing consequences makes the event more likely to occur whereas punishing consequences makes it less likely (Schunk 2000). The behaviourists believed that psychology was to be entirely concerned with external behaviour and was not to try to analyse the workings of the mind that underlay this behaviour (Anderson 1995).

In the 1950s cognitive psychology emerged, and within a short period it became dominant within learning theories. This approach states that internal structure is necessary to an understanding of human behaviour (Anderson 1995). *"Cognitive psychology takes its name from the word cognition, which means the process of knowing"* (Alessi 2001:19). As in any science the desire to understand is an important motivation in cognitive psychology. However, as the name implies, the main motivation is to study how people receive knowledge and intellectual skills. If we understand how people perform intelligent acts it will make it possible to improve our intellectual training and performance (Anderson 1995; Posner 1989). Until recently human cognition was looked upon as philosophical speculation. It is only in the last years that we have realized that this subject can be scientifically studied. The consequence is that cognitive psychology as a science is only a little more than a hundred years old (Alessi 2001; Anderson 1995; Best 1995).

Best in "Cognitive psychology" (1995) states that technically cognitive psychologists might study anything they like because practically every human activity requires some sort of knowledge. But in practice cognitive psychologists are more likely to investigate specific sorts of mental events, rather than anything else (Best 1995). Even though there is no complete agreement on which mental events should be studied, there exists a consensus about those topics that are truly cognitive. Cognitive psychology emphasises on unobservable constructs like mind, memory, attitude, motivation, thinking, reflection and other internal processes (Alessi 2001).

The theoretical premises on which this project is based upon draw extensively from cognitive psychology. The foundation in theory emphasises two types of training outcomes; performance and motivation (Sein et al. 1999; Bostrom et al. 1990). Performance is in this context understood as the ability to use the software on the job after training, whereas

motivation is connected to the trainee's attitude towards the system. These outcomes relate to and depend on understanding. Understanding is represented as the trainee's knowledge after the training, meaning the trainee's mental model. Olfman and Sein (1997) define mental models as *"the user's internal understanding of the system that guides interaction and helps solve problems"* (Olfman and Sein 1997:3). Having a correct mental model will result in feeling of control over the system. When the trainees feel control over the system it will lead to the perception of how to use it and how easy it is. This sense of control gives the trainee's motivation to use the system in their job. It will result in accurate interaction with the system and the task performance will increase (Santhanam 2002; Sein et al. 1999; Olfman and Sein 1997; Bostrom et al. 1990; Sein et al. 1987). The relationship between these components is shown in Figure 2.4.

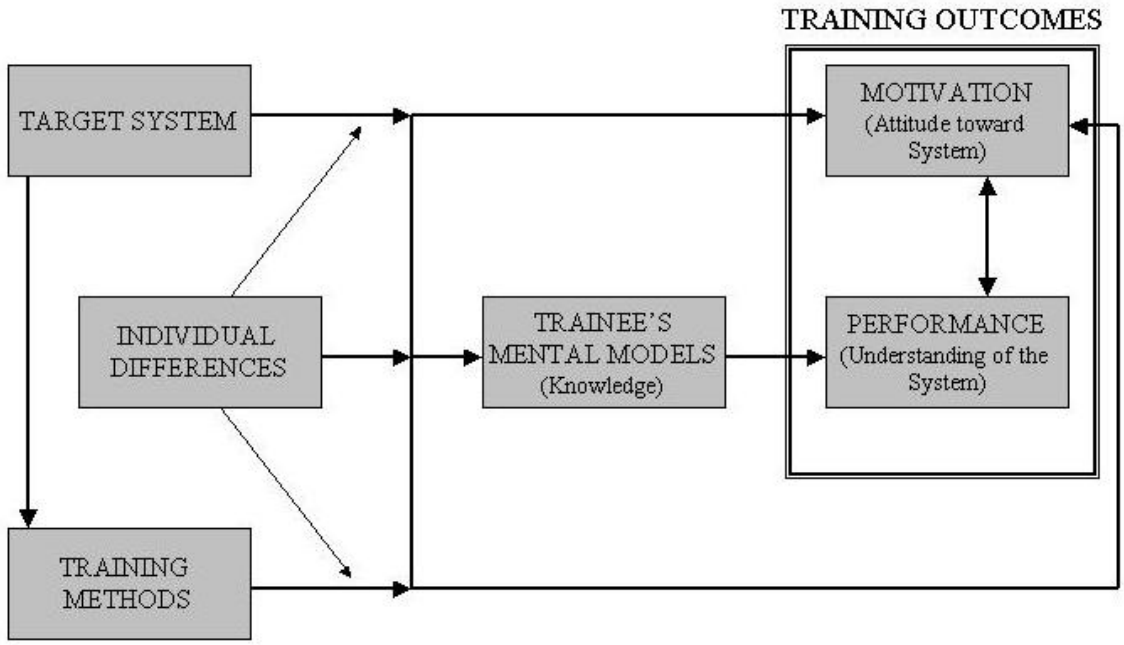


Figure 2.4: Research framework for training outcomes (Bostrom et al. 1990)

As mentioned above this model serves as a research framework and it outlines the foundations for the theory which this project is based upon. It is presented in this section to show the relation to cognitive psychology and its principles. A more detailed description of the model will follow in chapter 5, Evaluation of BHI's training, the analysis of the project.

In connection to these components there exists a model giving more specific description of what kind of outcomes the trainees should have after training. The framework emphasises on

mapping the knowledge level which the trainees achieve. As mentioned in previous section the knowledge level model integrates motivation and meta-cognition with basic skill training (see Figure 2.5). The integration is in line with the main objectives regarding end-user training. They are key knowledge components in this model, and it should be the goal for any organization to try to reach these levels to achieve effective training (Sein et al. 1999). End-users need to know what the new system can do for them and how they can use it for the benefit of themselves and the organization.

Knowledge Level	**Individual Productivity Software Example**	**Integrative Application Software Example**
Command-Based *Syntax and semantics*	Mouse click on a button to delete a sentence	Mouse click on a button to enter a transaction
Tool Procedural *Combining commands to do generic tasks*	Create a document	Create a transaction
Business Procedural: *Application of tool procedures to a task*	Do a mail merge (produce letters for a group of people)	Query the database for other functional transactions
Tool conceptual: *The big picture of what to do with the tool*	Productivity tool	Workflow tool
Business conceptual: *The big picture of where the specific business process fits in the organization*	Productivity in the business operations	Entry of a transaction affects order processing
Business Motivational: *What can the tool do for the trainee and the organization*	Raises my skill level, I can do more in my job, my company can raise productivity	Enables consistent transactions across organizational functions
Meta-cognition: *Learning to learn*	Teach learners to recognize and use a visual-kinesthetic pattern	Teach learners to use the learning cycle in exercises

Figure 2.5: Knowledge Level Framework (Sein et al. 1999)

The first three levels in the model are required as a minimum of knowledge the trainees should achieve after training (Sein et al. 1999). These refer to basic knowledge connected to the traditional skill-based training mentioned in 2.1. The command-based level relates to Shneiderman's view on knowledge. He emphasised the syntactic and semantic knowledge aspects of the tools (Sein et al. 1999; Shneiderman 1983). This knowledge level refers to the set, structure and the meaning of the IT tool commands. The next level, tool procedural, is needed to set these commands into a method for accomplishing a task. It is based on Anderson's understanding on knowledge. This goes a bit further than Shneiderman, supplementing the knowledge outcome by asking what it is and how to use it (Sein et al. 1999; Anderson 1982). These aspects are represented in the declarative and procedural stage.

To give the users ability to use the tool in work situations they need to be taught how to integrate the tool procedures to business processes. This type of knowledge is accomplished through the third level, business procedural. This level is not always covered through traditional end-user training, but recently more focus is being set on this type of knowledge (Sein et al. 1999).

These levels emphasises only the tool itself, and several studies show that this type of knowledge is insufficient (Snell 1996; Nelson, Whitener and Philcox 1995). The trainees receive training in how to use new tools, but they do not know the function of it and the reason for the implementation of it. The result of the training is therefore not adequate. To get successful training the training methods have to be extended (Sein et al. 1999). To facilitate the learning of the three levels mentioned above it is important to provide the trainees with an overall knowledge of the tool. The tool conceptual level focuses on the purpose and the structure of the IT tool. This knowledge should act as an explanatory level for the learning of command-based, tool procedural and business procedural knowledge. In addition to knowledge connected to the understanding of the tool, it is vital that the trainees receive knowledge that provides the whole picture of the tool, their job and the organization. This type of knowledge is accomplished through the business conceptual level. Receiving an overview of the IT tool in relation to their tasks at work, will help them to get knowledge on what they can accomplish by using it. Further the business motivational level will be covered; by letting the trainee's know what the tool can do for them and the organization it will result in motivation to use it in the business.

Sein et al. (1999) managed to integrate these components with the traditional skill-based knowledge. Their development is based upon Ye's five-level knowledge hierarchy. He wanted to classify a user's understanding of a system and used Rasmussen's abstraction hierarchy (AH) of physical systems to describe the knowledge beyond the tool itself. His framework contains the conceptual and objective levels in training. The distinctions between these frameworks are the motivational and the meta-cognitive levels which Sein et al. (1999) have integrated as their main components in the training outcome. By adding meta-cognition as the last level of knowledge they managed to present a more complete framework. The meta-cognition knowledge level focuses on learning to learn. There are several aspects in the meta-cognitive knowledge. One is that the knowledge gives the trainees the ability to be successful in any type of learning environment. Another is the ability to transfer the learning

to other IT tools (Sein et al. 1999). Organizations are expected to strive for the highest levels in this knowledge framework.

The outcomes relating to the knowledge level framework represents only one aspect of the components that lead to effective end-user training. The model is integrated in the training strategy. As mentioned earlier this strategy is formulated together with the learning strategy to operate in accordance with the overall organizational strategy (See Figure 2.1). The next section discusses in details the learning and the training strategies.

2.3 Learning and Training strategies

Coping with rapid technological development is an important component to maintain a competitive organization (Olfman et al 2002; Kerka 1995; Gash and Kossek 1990; Geus 1988). End-user training has become and will remain a critical factor in the effective use of these new information systems. The objectives for the training should have a long-term design where employees continually are being updated in knowledge to manage to deal with the rapid and continuous changes in hardware and software. Today's organizations emphasises on operating as learning organizations. According to Peter Senge learning organizations are *"…organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together"* (www.infed.org). Thus end-user training has to be viewed as a continuous learning process. In addition it is important to maintain end-user training in relationship with the organizational mission and strategy. As mentioned in section 2.1, organizations depend on integrating training with the overall strategy to facilitate a successful implementation and accomplish their goals. To integrate training with the other strategies mean having training objectives in line with the organizations'. End-user training should be considered a sub-system in the organization and it should be a strategic human resource concern (Gash et al. 1990).

Despite the fact that training plays a major part in organizations there exists no agreement either in the literature or in practice on how to organize the training resources (Olfman et al. 2002, Bostrom et al. 1990; Sein et al. 1987). The organizations do not apply an explicit strategy regarding end-user training (Olfman et al. 2002). Olfman et al. (2002) argue that to

deliver effective training*"…it requires an integrative and comprehensive set of strategies"* (Olfman et al. 2002:2). During their work they did not find even one organization with this kind of integration. In their research they integrated the best practice found in their studies and combined them with studies from the literature. It resulted in a normative framework which is composed of learning and a training strategy. The two models combine to form a comprehensive strategy together with the overall organizational strategy (See Figure 2.1). It is meant to integrate training with the overall organizational activities, making it a part of what the organization's objectives are (Olfman et al. 2002).

The learning and training strategy are both outlined with four dimensions which are linked together. It indicates that the decision of one dimension will impact the decisions in each of the others. The dimensions are based on a set of components. Both the dimension and the components connected to it are defined along a continuum with two opposite strategic positions. To gain a strategic position it requires for the components to support congruent organizational characteristics or areas. In the same way that the four dimensions influence each other, so do the components.

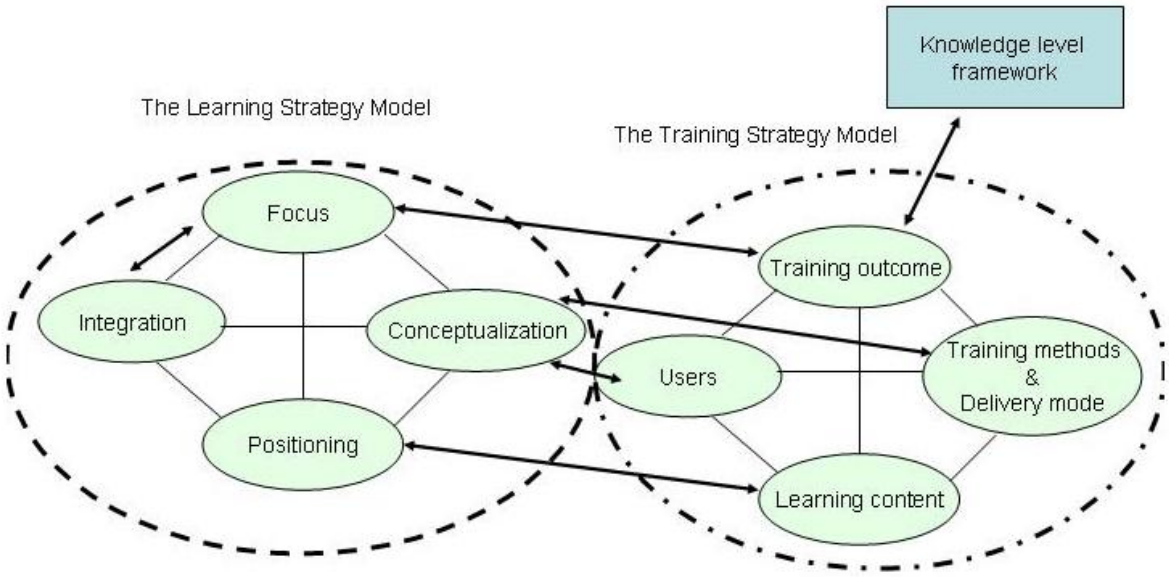


Figure 2.6: Learning & Training Strategy overview

The dimensions in the learning strategy are Focus, Conceptualization, Integration and Positioning. The model is proposed to determine how training resources are deployed to develop the knowledge and skills in an organization's workforce (Olfman et al. 2002). It

emphasizes the administrative part of the training unit and how the training is viewed in the organization. In addition to the issues from the learning strategy model Sein et al. (1999) defined training strategy *"…as the selection of a training method appropriate to a specific type of trainee and a specific IT tool give specific knowledge outcomes"* (Sein et al. 1999:2). This strategy consists of components regarding Training Outcome, Training Methods & Delivery Mode, Learning Content and the Users of the system. The figure below demonstrates how these two strategies relate with one another, and how the knowledge level model (see Figure 2.5) is integrated in the IT training strategy. The next sections outlines the content of these two strategies with emphasize on the learning strategy model.

2.3.1 Learning Strategy Model

As mentioned earlier the learning strategy deals with the administrative aspects of the training. The first dimension, Focus, is related to what extent training is based on business needs. The continuum is made up by technology at one end and business at the other. The purpose of the dimension is to determine where the training is placed regarding what is best for the business. The technology end implies that the goals of end-user training are to develop and improve the individuals' computer skills. The opposite side, business, emphasises how technology can enhance business processes (Olfman et al. 2002). Best practice is maintained at the business end of the continuum (Figure 2.7). The components connected to the Focus dimension are shown in Figure 2.8.

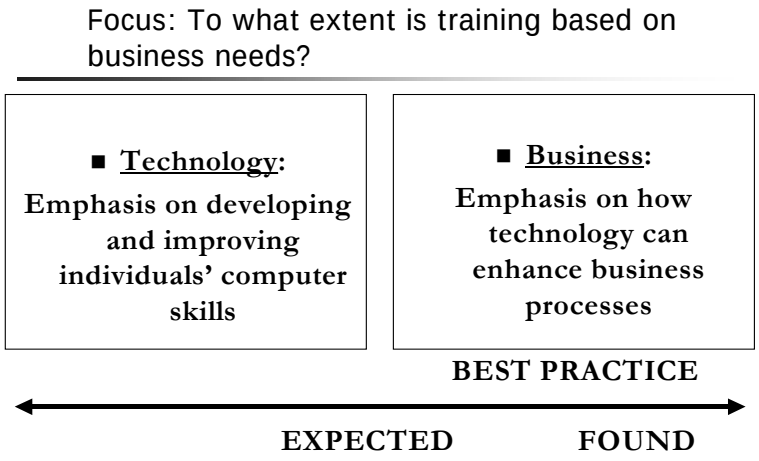


Figure 2.7: The Focus dimension (Olfman et al. 2002)

To gain a business focus it is important that the mission of the training is in line with the organization's objectives. The first component, training mission, is connected to this issue. The training units should be closely linked to the other units to maintain a common understanding on what the organization emphasises. When the principles of training is in line with the organization's it is important to find the requirements for training. To be able to gain effective training the organizations have to determine their training needs. The continuum of this component is represented with the training group at one end and the functional area at the other. The training unit should use the functional area and rely on requirements from the business units to identify training needs. There should be continuous communication between the functional units and the training group. The functional units' responsibility regarding training needs is closely linked to the next component which determines the training ownership. A natural consequence of best practice in the previous component leads to the functional unit also taking initiation of training programs. When it is the functional units who determine the training needs, it is they who have control over the training programs. The fourth component relates to the content of the training sessions. Organizations should use training exercises taken from business areas, and have functional personnel running the training to maintain a business focus. The last component is related to whether the focus is being achieved. The organizations should have different efforts to evaluate and assess the administration of the training unit.

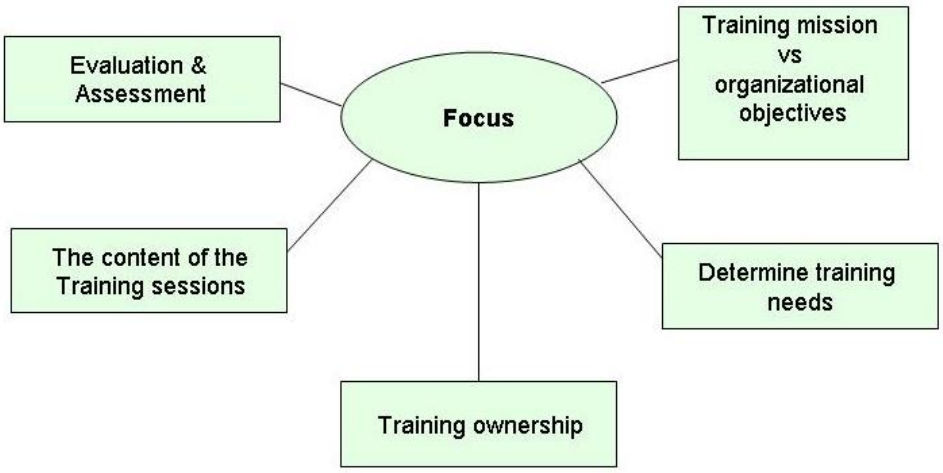


Figure 2.8: Focus with components

The next dimension in the learning strategy model, Conceptualization, represents how the training process and its trainees are viewed. Conceptualization addresses to what extent training is an ongoing learning process. The continuum for this dimension is made up by training being discrete/ passive at one end and continuous/ active at the other (see Figure 2.9). The components connected to this dimension are shown in Figure 2.10. As stated above organizations today needs to be a learning organization to cope with the rapid changes in technology and best practice is therefore viewing training being continuous (Geus 1997; Grattiker 1990 chapter 8, Sein et al. 1987). They need to have trainees operating as active learners. There are different criteria for implementing continuous training which is related to the structure of the training. The training offerings should vary, the size should be in small chunks and it should be delivered when needed (Olfman et al. 2002). The discrete approach does not have these requirements mainly because it is primarily connected to classroom training. It is face-to-face training which does not provide the trainees with knowledge whenever they need it and it is out of their control.

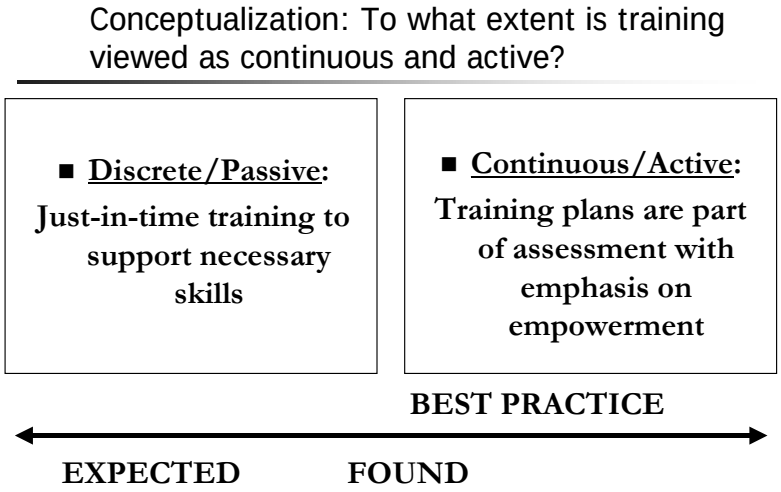


Figure 2.9: The Conceptualization dimension (Olfman et al. 2002)

The other components in this dimension are connected to the trainees. If an organization wants to have a continuous training strategy they have to prepare the trainees for training. In the pre-training stage it is important that the organizations arouse the trainees' motivation. It is stressed that it is crucial for the effectiveness of the training to gain understanding among the trainees. Understanding relates to their ability to know how to use the knowledge. It is a result of active and motivated employees. In addition to motivation they have to match the trainees to the right training methods. The organization needs to offer a variety of training methods and let the trainees choose from them.

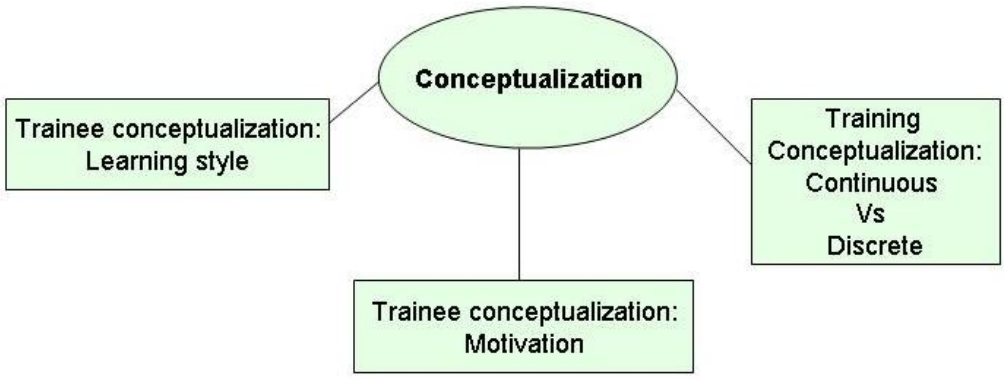


Figure 2.10: Conceptualization with components

To operate with a business focus where the training process is viewed as continuous and where the different functional units are in control of the training it required that there exists integration between the functional and the training units. The next dimension, Integration, addresses the question regarding to what extent the training unit and other functional units are working together. The two opposite positions along the continuum are whether the units are reactive or proactive (Figure 2.10). The components of this dimension are shown in Figure 2.12. When organizations operate with business units having own responsibility for keeping updated in technological knowledge with no links to other units the organization has a reactive strategy. The units have no links to other parts of the organization and they do not see the benefit of working together on training matters.

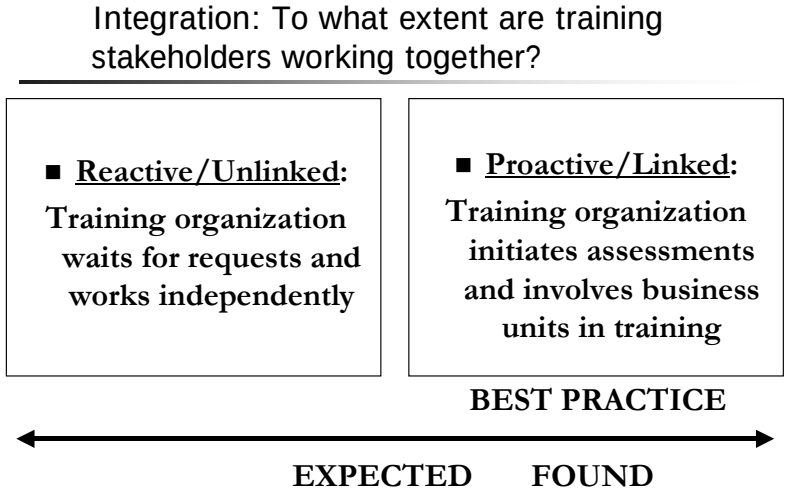


Figure 2.11: The Integration dimension (Olfman et al. 2002)

As mentioned above in connection with the Focus dimension it is important that issues related to determination of training need and ownership is managed by the functional units. This dimension should have the same structure to accomplish best practice. The components should lead to a proactive stance with high integration. The outcome of one component has impact on the other one. If the functional units are involved in the training process it automatically means that they are closely linked to the training unit. The component related to integration refers to several different units in the organization. In addition to the linkage with the functional units the Human Relation unit's policies should have an impact on the structure regarding reward and status connected to training participation. It is essential that the

Information System unit which takes care of the design and implementation of new technological development have strong links with the training unit. Good communication between these units will make it easier to plan the training of the workforce and regulate the technological knowledge gap.

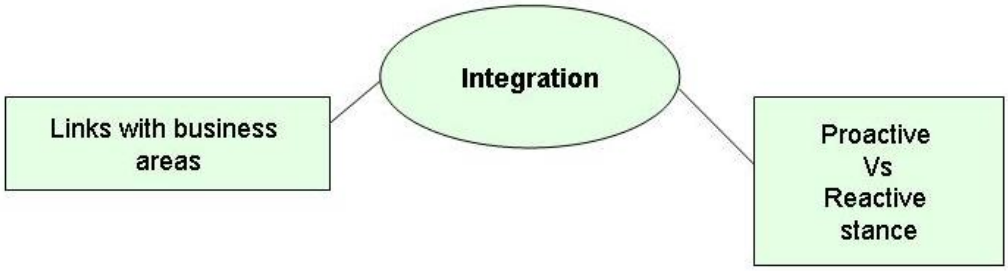


Figure 2.12: Integration with components

The last dimension, Positioning, is connected to where in the supply chain the training is placed. This dimension has no ideal best practice and it depends on the choices made in the other strategic dimensions (see Figure 2.13). The issues are related to the decisions regarding creating, distributing and delivering training. The choices along the continuum represents doing the whole training process inside the organization or having someone outside take care of it.

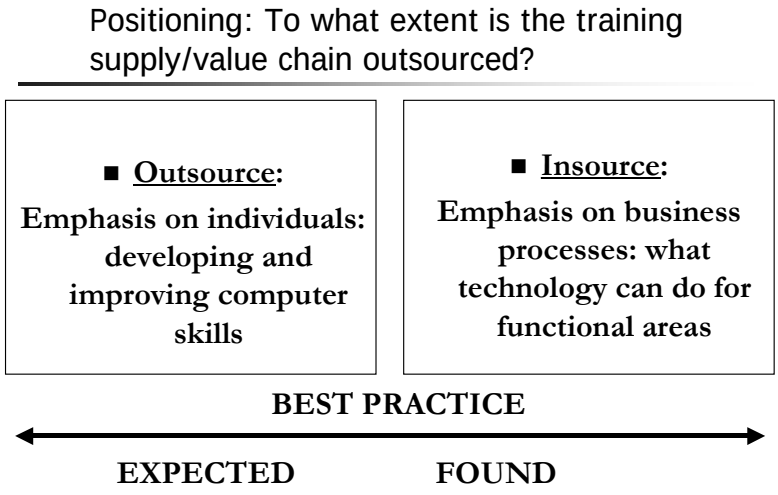


Figure 2.13: The Positioning dimension (Olfman et al. 2002)

The components connected to this dimension are shown in Figure 2.14. They are assessed in two contexts, traditional and on-line. The traditional context implies classroom based training offered face-to-face to trainees by an instructor. The online context is related to distance learning or web based training, and the trainee uses a computer to execute the training session. The placement of the organization regarding the training supply is divided between these two contexts. The organization has the ability to create, distribute and deliver, but it all depends on the structure in the other dimensions in the learning strategy model.

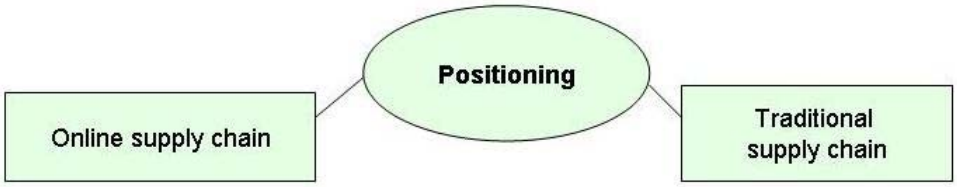


Figure 2.14: Positioning with components

The learning strategy makes out the administrative aspects of the training structure in an organization. As shown in Figure 2.1 and 2.6 it is integrated in a comprehensive strategy together with a training strategy. They depend on and relate to one another and are set in line with the overall strategies in an organization.

In this project the emphasis is on the learning strategy model because it is the more developed of the two strategies from the research conducted by Olfman et al. (2002). Their studies are mainly explanatory: the models need to be tested. One of the purposes with this study is to use the framework to evaluate Baker Hughes INTEQ's training strategy and also to test the framework. The next section gives a brief outline of the content of the training strategy model with its dimensions and components.

2.3.2 Training Strategy Model

The training strategy model is related to what structure the training must have to become effective. To achieve effective training an organization should offer training which results in motivated employees with understanding of how to use the new system. To gain these objectives it is important to make the right selections of training methods appropriate for their

type of trainees and for the IT tool they are being trained in (Sein et al. 1999). These different alternatives are represented through the dimensions in the training strategy model.

The first dimension, Training Outcomes, is related to the outcomes the trainees should end up having after a training session. The training outcomes are measured based on the knowledge level framework mentioned in section 2.2 (see Figure 2.5). The levels in this framework outline how traditional skill based training should be enhanced by overall understanding of the system and its role in the organization and motivation to use the system in work situations. These outcomes are represented in one single component shown in Figure 2.15. Organizations should try to accomplish these outcomes to gain effective training.

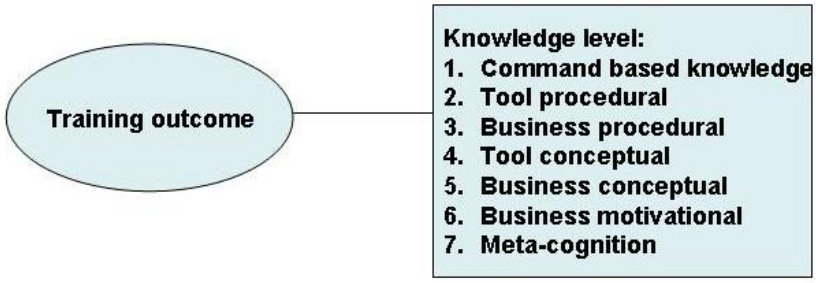


Figure 2.15: Training outcome with components

As mentioned above there is a close link between the different dimensions, and it is therefore important that they are adjusted to each other. To have motivated employees with the appropriate knowledge to use a new system effectively it depends on what kind of training methods the organization use.

The next dimension, Training Methods and Delivery Mode, emphasises on offering the right methods for the trainees in the right delivery mode. The components in this dimension are shown in Figure 2.16. Training methods refer to the setting where the training is given, from traditional, instructor-led to self based. Instructor-led training is offered through an instructor either in real time or virtual classroom. The virtual classroom has an on-line delivery mode, and it is up to the trainee to go through with the training session, whereas instructor-led sessions are traditional face-to-face training mode. When traditional delivery mode offers training at fixed time and place, self based training enables the participants to do the session at any time and anyplace, and the training is in control of the trainees.

Figure 2.16: Training methods and Delivery mode with components

In relation to the training methods and the training setting, it is important to look at the content of the learning. The third dimension, Training Content, is represented by components that form the training material. They make up the size of the training material and its ability to be combined for different classes or users. The components are shown in Figure 2.17. The opposite positions along the continuum are either large chunks of material that are difficult to combine or small chunks of material that are easy to re-use and combine. The positioning dimension in the learning strategy model is related to the latter choice of the components. Best practice in this dimension represented by small chunks of re-useable material that can be better created, distributed and delivered in an on-line context. The current form is based on the material coming in big chunks with little possibility to be combined for different uses. As technological development rapidly changes, so does the design of the training unit and its components. Organizations are moving towards what is seen as best practice.

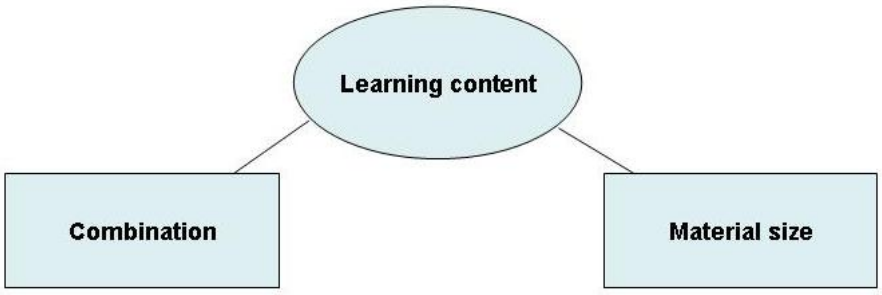


Figure 2.17: Learning content with components

The last dimension, The Users, in the training strategy model is based on finding out who the users are, what job classes they belong to, what roles they have and what learning style they have. The components connected to this dimension are shown in Figure 2.18. The classifying of users is linked to the decision regarding what kind of training method to use. For an organization to achieve effective training they need to find out what is best for the users. They

might view the trainees as the same and adopt the same training method for everyone or see them as different in classes and roles and therefore vary the alternatives for training. If the trainees in the conceptualization dimension in the learning strategy model are viewed as active, motivated learners with need for variation in training methods it is essential with a user classification. Best practice in this dimension is matching users by their job class and learning style.

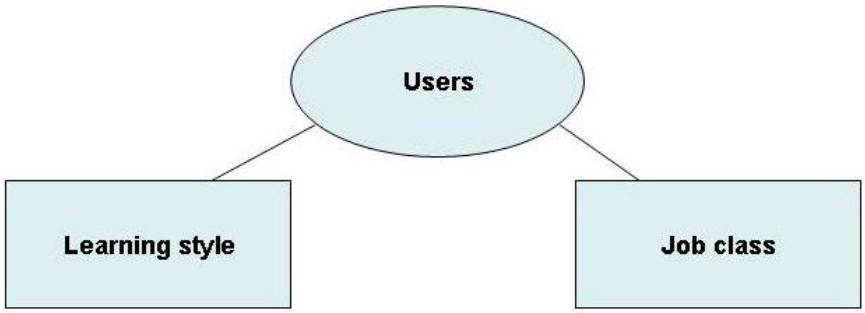


Figure 2.18: Users with components

2.4 Summary

To implementing effective end-user training, it is important that there exists a structured form on what elements to take into consideration. The training strategy model outlines how organizations should develop their training for specific sets of users on a particular IT tool. Due to the close linkage of training strategy to the learning strategy model and the dependence between them their components have to be in accordance with each other to express a common strategic position. The learning strategy model deals with administrative issues on how best to use the resources to develop effective training. Together the outcome of the two models should lead to achievement of organizational strategies. They are a part of a research framework which is the foundation for this project. The framework states the importance of giving trainees understanding and motivation regarding the use of new information systems. In addition to the learning and training strategy models, Olfman et al. (2002) have developed a knowledge level model to make up this comprehensive framework which addresses a new view on end-user training. The traditional training has focused on the tool itself, but today's situation forces the organizations to look above the tool and see the whole picture.

This study uses the research foundation outlined in this chapter to evaluate the structure and organization of end-user training in an oil service company, Baker Hughes INTEQ. The next chapter will give a description of how the organizational structures are in Baker Hughes INTEQ.

Baker Hughes 3

This project is based upon a study of Baker Hughes INTEQ and their training department in Tananger, Norway. The content of this chapter outlines the organizational structure of the company. It gives a presentation of the business operations and the IT context in the organization. Further it outlines the structure of end-user training with emphasis on INTEQ's training department in Tananger. The first section gives a description of the historical background of Baker Hughes.

3.1 Baker Hughes' History

"Every day in oilfields around the world, Baker Hughes engineers, geoscientists and field service personnel apply knowledge and technology to efficiently find, develop and produce oil and gas." (BakerHughes.com (a), BH Annual Report 2201:1)

Baker Hughes is a worldwide company widely considered a leader in oilfield services. It was formed in 1987 when Baker International, founded by Reuben C. Baker in 1907, merged with Hughes Tool Company, founded by Howard R. Hughes in 1909. The company provides a broad range of products and services through seven divisions, Baker Atlas, Baker Oil Tools, Hughes Christensen, Centrilift, Baker Petrolite, Baker Hughes INTEQ and Bird Machine Company. The first six are operating divisions connected to the oilfield segment of the company, while the last named is in the process segment. With headquarter placed in USA, these divisions operate in over 70 counties through several different regions, i.e. each division is divided into geographical regions (BH Annual Report 2002). For example, Baker Hughes INTEQ has a Scandinavian region. They offer knowledge and services on different technical fields and they see themselves providing best-in-class products and services to the petroleum industry, *"… our leading technologies and our ability to apply them effectively create value for our customers and shareholders."* (BakerHughes.com (b)).

Baker Hughes' divisions have their own expertise and offer their part of the service related to oil and gas development. They can receive single assignments independent of each other, where the division is part of cooperation with other clients employed by an oil company. The company can also get assignments as a complete working team, where the services of the divisions make out a package deal. **Baker Atlas** helps the oil and gas producers to evaluate and access reservoirs more efficiently and reliably. This means they provide well logging and data analysis. **Baker Oil Tools** works with completion, work-over and fishing solutions. They help the oil companies maximize the value from their hydrocarbon-bearing assets. **Hughes Christensen** is the leading manufacture of drill bit in the world. Their products are recognized around the world as the industry standard. **Centrilift** is connected to a variety of pumping systems, they use these systems to produce oil from reservoirs that do not flow sufficiently from their own pressure. **Baker Petrolite** offers oilfield chemical programs for drilling, well stimulation, production, pipeline transportation and maintenance reduction. **Baker Hughes INTEQ** offers the technologies and services to deliver efficiency and precise well placements. Finally **Bird Machine Company** provides specific solutions to the chemical, municipal, pharmaceutical, mineral, industrial, recycling and food markets. They are the global company specializing in solid-liquid separation (BakerHughes.com (b)) (See Appendix A).

3.2 Baker Hughes' Organization

Baker Hughes and its divisions focus on developing technology, providing service for the customers, field operations and financial performance (BakerHughes.com (c)). Together with corporate support groups and business shared services they form an enterprise management (see Figure 3.1). The enterprise management business model enables Baker Hughes to be best in class in addition to provide broader technology solutions. Being an enterprise management enhances the effectiveness in the company by sharing resources throughout the whole organization. More detailed description regarding Baker Hughes Business Shared Services (BHBSS) will follow in section 3.3.

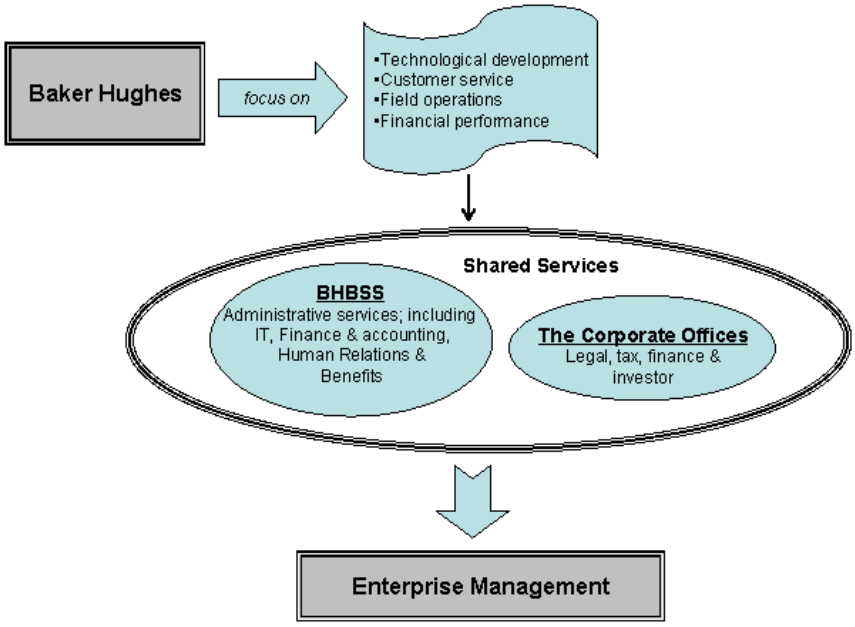


Figure 3.1: Baker Hughes; an enterprise management

Baker Hughes is a hierarchical organization with vertical functional structure. It operates with a Chief Executive Officer (CEO) as head of the organization. The CEO is the Chairman and President of the company. Together with Senior Vice Presidents and Vice Presidents he is in control of the administration of Baker Hughes (see Figure 3.2). In addition to these leaders each division has a President.

Within each division the staff is grouped and located by speciality into functional departments each lead by a functional manager. For example, the finance and administration department in the Scandinavian region has a functional manager (see Figure 3.3). This means that each member of the staff has one clear superior. In all of the units stationed in different continents and countries, the employees have one regional manager. The regional manager is subordinated to the President of the division. The President of the company is placed on top of all.

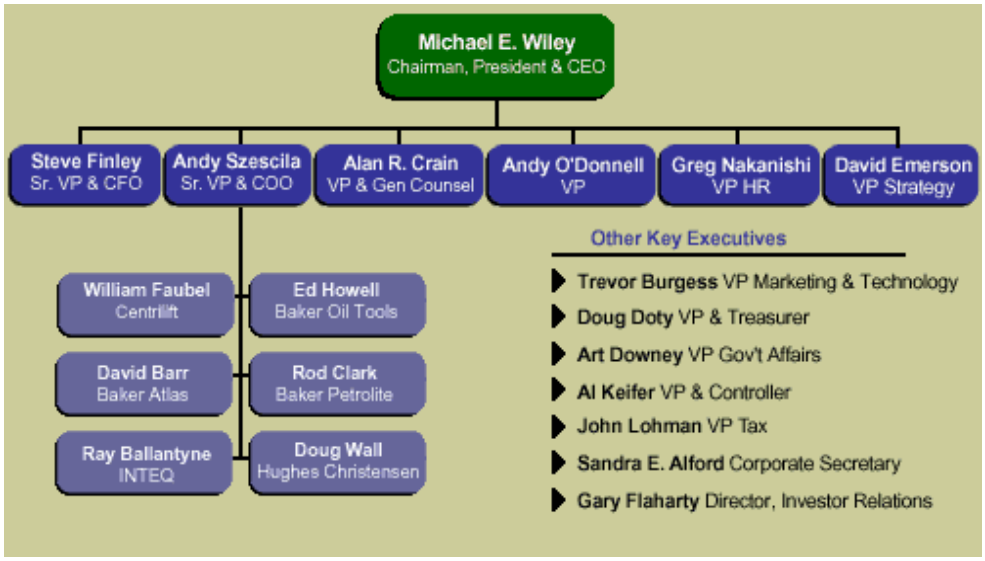


Figure 3.2: Organizational structure in Baker Hughes (BakerHughes.com (c))

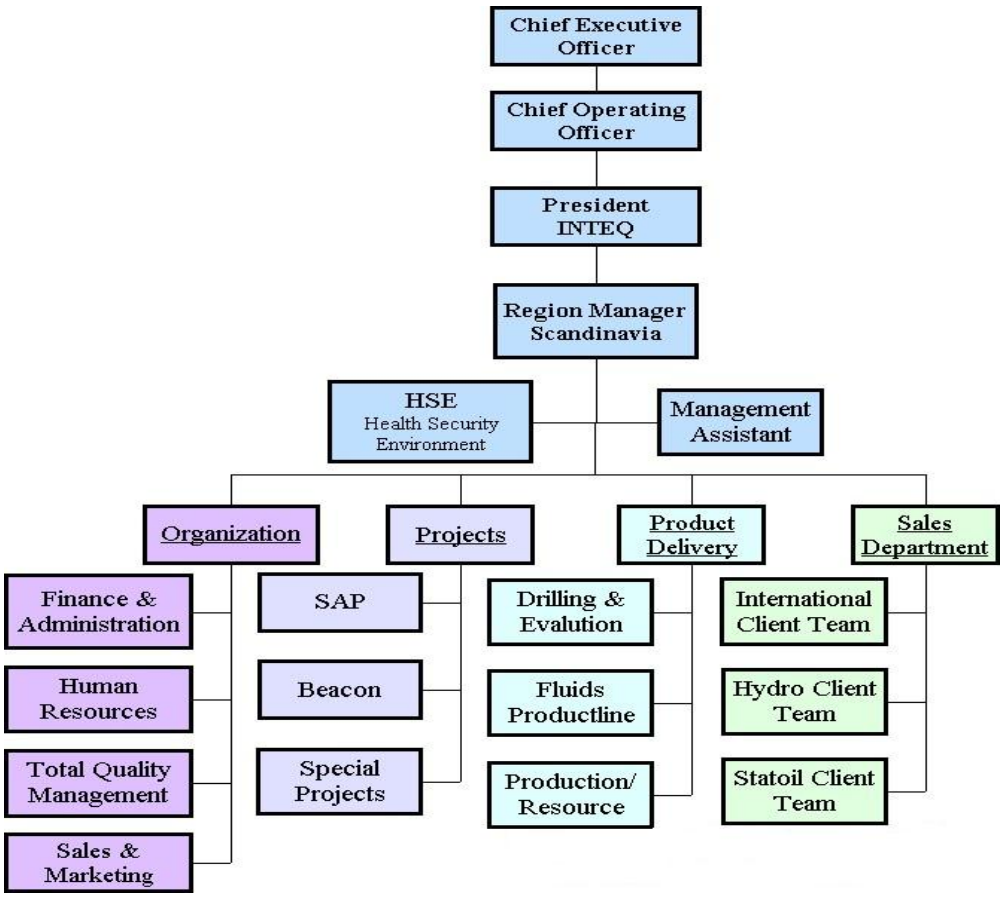


Figure 3.3: Management Structure model in Baker Hughes INTEQ, Scandinavia

3.3 IT context

The shared services which the different divisions use as support have their own IT services. The BHBSS IT services provide guidance and support regarding IT applications such as Hardware, Office products, network and other general IT questions. This division is organized in the same way as all the other divisions, i.e. divided into a department at the head of the division under which are several small regions. This result in a team-based organization, which shares knowledge based on general technical tools. More specific IT systems used in the different divisions' business operations are handled within each division. With this shared service arm for all the operation divisions, Baker Hughes sees itself as a high performance organization that provides quality and cost effective business support.

Baker Hughes has a best-in-line product focus in keeping with their status as one of the leading oil service companies in the world. To maintain this position it requires constant technological development. In addition to the technological evolution, the industry is experiencing a reduced lifecycle on the products being developed. Compared with earlier technological products that had a lifetime of around 8-10 years, today's products do not last for more than 2-3 years before they have to be updated or renewed. It means that the employees in the organization have to be constantly updated in the use of new systems and techniques. It requires the employees to be kept up to date regarding technological knowledge to be able to use new IT systems. It is therefore in Baker Hughes' interest to train most of their employee in the shortest time in as many systems as possible. This is gained through constant training of the workforce. Baker Hughes has internal training through its own training departments. These processes are described in the next section.

3.4 Baker Hughes INTEQ

3.4.1 History

This study is based on Baker Hughes INTEQ, and its regional department at Tananger in Norway. Baker Hughes INTEQ was formed in 1993 from merger of Eastman Teleco, Milpark, EXLOG, Develco, Baker Sand Control and Integrated Engineering Services. All these companies were Baker Hughes' divisions, which the company had acquired and assimilated during its history. INTEQ is connected to the drilling industry. Its business operation is to make sure that the well is placed in a precise and efficient manner. The major units within this division, specialize in directional drilling (DD), measurement-while-drilling (MWD), logging-while-drilling (LWD), drilling fluids, coring systems and well-site information management services.

The focus of this project is on the organization of training of the employees working at Baker Hughes INTEQ Scandinavia. It is therefore important to have knowledge about the basic operations within this division. The next section outlines the main business processes which each of the different units in INTEQ take care of.

3.4.2 Business processes

To gain an understanding of how INTEQ's operations work, we divide these units into 4 main process categories/ product lines, Directional Drilling (DD), Measurement While Drilling (MWD), Surface logging systems (SLS) and Fluids. The directional drillers' task is steering the drill to the right geographical target. The geographical position is located by MWD which uses an advanced tool; placed on the drill-string down in the well, to get these directional data. MWD interprets the different data they receive from the sensors on the tool. Their main purpose is to find out how the physical rock conditions are. This information includes everything – density, porosity, electrical resistance, natural radiation, temperature, depth and pressure. Together with the directional data they can

make up a picture of how it looks like down in the well. The interesting part is to see what the rocks are made out of, and especially if they contain oil or gas.

SLS is separated into two categories, mud-logging and data-operator. Mud-logging analyze what is being dug out while drilling is in process. The mud is pumped up to the surface, where some tests are performed to see if the assumptions made by MWD and DD are true. The data-operator monitors several sensors on the rig to point out early if something such as gas leak or blow-outs is about to happen. Other related reports such as logs to the clients are also produced. To make sure the well does not collapse, Fluids adds chemicals to the fluid that is being pumped in the well. This also helps to keep the well and the drill cold.

The interacting operations of INTEQ's units are graphically described by Bengt Hope, the manager of the training department in Stavanger, when interviewed for this project.

> *Imagine a plane. By using instruments, GPS satellites, radio and radar they can at any time get information about their position in the air, give their position to avoid collision with other aircrafts, etc. The control on the ground can send instructions to change course, all this involves what the Directional Drilling is doing. The meteorological data will tell them about the meteorological conditions (weather) they will face, this is connected to the MWD unit. In addition there is the actual measurements on real-time how the weather is/ have been, these tasks belong to SLS. If we place some of this equipment on a rig and rest of it 10 km down in a well that is in broad outline what INTEQ is doing.*

3.4.3 End-user training at Baker Hughes INTEQ

When INTEQ was formed in 1993 it lead to a major co-ordination of the different systems each of the united companies had. This process combined with the constant development in new technology has led to a great challenge for INTEQ to train their

employees and to maintain a right knowledge level among them. The following from a company document, translated from the original Norwegian version, illustrates this.

"Employees at Baker Hughes INTEQ (BHI) shall at any time have the right competence to attend to the assignments that is being performed. The company shall organize to meet the needs for the futures requirements within competence." (Kaspersen and Hope 1999:3)

Baker Hughes believes that a learning environment is the way to achieve the full potential of each individual and the company (BakerHughes.com (d). Learning is stated as one of BH's core values. See Appendix C). To gain this vision and to be able to maintain their position as a leader within technology, the company has established several education centres called Competence Development Departments (CDD) all around the world. These departments are meant to serve as a resource to help employees educate in new systems and tools. The different divisions in Baker Hughes have their own training centres, connecting several regions together. INTEQ has 5 official training centres spread around the world each covering their own regional area. The 5 centres are Houston (USA), Lafayette (USA), Aberdeen (UK), Singapore and Stavanger (Norway).

The focus of this project is on the Competence Development Department (CDD) in Stavanger, providing training for the Scandinavian region. This centre was established in 1998. Prior practice was to send the participants to courses in either Aberdeen or Houston. The founding of the Norwegian centre was based on an assessment on the requirement for further knowledge development in the company. The need for the establishment of a new centre was to reduce the large expenses connected to sending employees abroad.

The different Competence Development Departments in Baker Hughes are functionally reporting to central CDD in USA. This department is placed under Human Resource (HR). As shown in Figure 3.2 HR is placed as a shared business unit for the different divisions in the company. In the department in Stavanger the training unit is further placed under the Total Quality Development (see Figure 3.3). They have divided

reporting system. The manager of the training department reports directly to the head of Organization and Learning (OL), and in some cases functional reporting to both Aberdeen and Houston. It is up to the regional department to decide how the training should be executed and organized.

The training centre provides classroom training, with an instructor demonstrating how the task in the program is to be handled. Baker Hughes has its own international, specialized instructor team taking care of the training. They have been specializations in fields within a division, and they travel around to help regions receive the knowledge they need to be able to use new systems. In addition to these international specialists, the different training regions have the opportunity to use their own personnel as part-time local instructors. At the CDD in Stavanger 70 different offshore and onshore employees are registered as instructors. Between 20 and 30 of them are used regularly. Normally the instructors working offshore use the time onshore to run courses. If there are large implementations of systems influencing big groups of employees, the centre needs instructors for a longer period of time. In these cases the courses are either taught by an international instructor or an offshore employee working as instructor full-time during the training period. The intention of using own, local workforce as instructors is to facilitate the organization of the training. In addition the company makes the most out of the knowledge within each individual in the organization. Some have more experience than others and the idea behind the training sessions is to share knowledge. It is not meant for the instructor to do lecturing during the whole session, but also to inform and invite participants to converse about the system on which they receive training.

The management of the training centre is based on cooperation between the training administration and the different product lines within INTEQ. As mentioned in section 3.4.1 the different business units of INTEQ, make up the product line. The different product lines are represented by contact persons who form a competence group. The competence groups represent Measurement While Drilling (MWD), Surface Logging Systems (SLS), Directional Drilling (DD), Fluids, Production and contact persons connected to the client team. The relationship among these different components within

the organization of the training is shown in the Figure 3.4. The model shows how the competence groups serve as a link between the training administration (Competence Development Department) and the offshore employees. In addition to the representatives in the competence groups, each employee has a supervisor who serves as the contact person regarding work related issues.

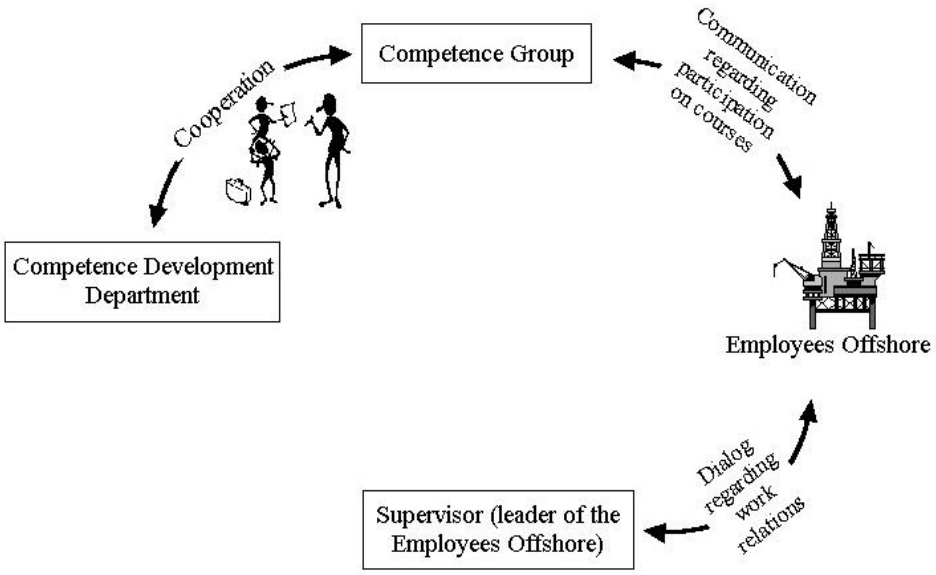


Figure 3.4: Cooperation and relation model

The training administration has full responsibility for running the courses. They organize the place, time and instructor, while the competence groups give the requirements for the type of course to run, and supply the participants. The competence groups perform an evaluation of the competence gap among their employees in their line, and based on those assessments, set up course requirements for the next 3-6 months (see Figure 3.5).

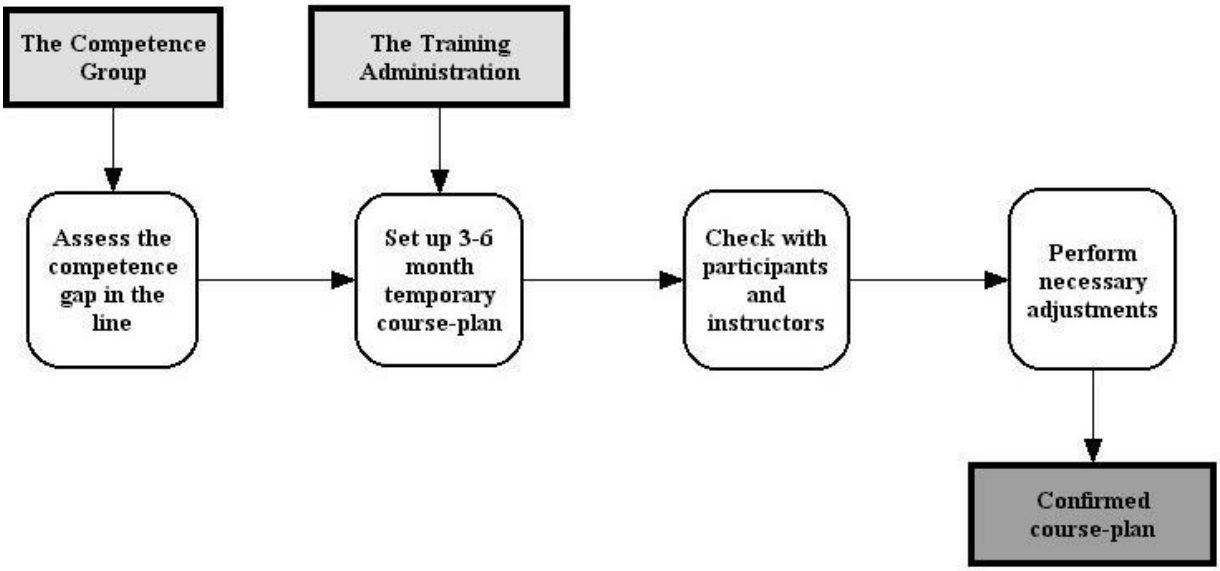


Figure 3.5: The course planning at BHI's CDD, Stavanger (Overview model)

It is the competence groups' responsibility to decide what courses the training administration has to set up in the near future. They initiate the training and make sure that they have got employees who can participate in the course at that time. The administration takes care of booking instructors for the different courses. After a back and forth planning process they end up with a final course-plan for the next 3-6 months. The planning meetings are regular, taking place each quarter, but new implementations or other restructures in the company may require more frequent and unscheduled meetings. The whole organization of the training department depends on other factors taking place in the company, and they have to adjust to the development. If the company wants to stay ahead of competitors, it needs a strong and organized education unit.

The CDD in Stavanger is currently involved in an international plan for the future work on developing the training structure within the company. It is focussing on a new learning management system (LMS), which brings in e-learning to the training. This will be a supplemented factor giving the participant the opportunity to practice before and after the classroom session. This is a new element in the future plans for the training strategy in INTEQ. A more detailed description will be outlined in the section regarding implications of the study.

Research design 4

This chapter contains an introduction of the purpose of doing research and how a research study should be executed. It forms the basis for the further explanation of the research methods this specific project is based upon. A more detailed description of the data collection methods used will follow, together with an outline on how the findings were conducted and structured.

4.1 The purpose of research

"*I keep six honest serving men. They taught me all I knew: Their names are What and Why and When. And How and Where and Who."*

(Rudyard Kipling, in Patton 2002:276)

Research can be defined as "*…a scholarly enquiry involving a careful and diligent search"* (Remenyi, Williams, Money and Swartz 1998:289). The reason why we do research is to try to add something of value to the body of knowledge connected to all kinds of disciplines (Remenyi et al. 1998). Remenyi et al. (1998) argue that there are two levels on which the explanation of why we do research should be considered. The first aspect is related to the fact that there are many issues and subjects about which we have incomplete knowledge. In different areas there exist several examples of this lack of knowledge. One of the most important is perhaps the studies connected to business and management. The rapid changes in the industry forces organizations to constantly develop (Geus 1997). They need more knowledge to stay ahead of competitors and keep the business alive. It is crucial to have the ability to know how to run the processes in the organization more effectively. Training plays a critical part in this struggle (Santhanam 2002; Gattiker 1990; Sein et al. 1987; Cheney et al. 1986; Brady 1967). For example the

fact that there does not exist guidelines on how the strategic aspects of training should be organized indicates that there is need for more research on the area (Olfman et al. 2002; Bostrom et al. 1990; Sein et al. 1987).

The second aspect is explained through the human natures need for growth (Remenyi et al. 1998). We have requirements for everything to become better, faster and bigger. The needs in our daily lives are becoming even more demanding. We believe that the increase of more knowledge will lead to benefit for the society at large. The need of research is therefore in our nature.

Successful research depends on the researchers' ability to argue convincingly that his or her research has value and relevance. It is not reason enough to have lack of knowledge on a subject or a desire to seek more knowledge: the audience needs to know why the research is important. The researcher must present precisely what he or she has found and what use the findings are to us. To gain this result it is required for the researcher to use a structured research process with strict set of rules on how to execute the study. The set of research conditions will ensure the integrity, reliability and reproducibility of the research work (Schunk 2000; Remenyi et al. 1998).

Before choosing the research approach the researcher should try to gain understanding on what the research task is about and what he or she has set out to achieve (Silverman 2001; Cornford & Smithson 1996) *"…the choices between different research methods should depend upon what you are trying to find out."* (Silverman 2001:25). The researcher should ask questions connected to who the participants will be, where the study will be conducted and what procedures will be used to set the conditions for the research. The answers will give a framework on the kind of tasks the researcher is about to perform. Iivari (1991) provides three distinct conceptions of the research task, constructive, nomothetic and idiographic research (Iivari 1991). Constructive research is based on solving real world problems by implementing new constructions. This kind of study is regarded as a test instrument in an attempt to illustrate, test or refine a theory, or develop an entirely new one. It involves something that is invented and developed rather than

discovered (Iivari 1994; www.sfu.ca). Nomothetic and idiographic research is the extreme points along a research continuum (see Figure 4.1). Nomothetic research attempts to discover what systems of laws or principles are by testing hypotheses of a general character. It involves large, diverse groups with varied settings and the results are widely generalizable. Idiographic research is interested in describing only a single event, person or situation. This type of study does not require the same size and it is executed with small groups. It emphasizes on finding specific knowledge with deep descriptions and the aim is to understand phenomena in its own context (Cornford & Smithson 1996).

The techniques connected to the nomothetic and idiographic research is further described in the next section to make up an explanation on the choice and use of research approach in this project.

4.2 Research methods

Research form the basis for theory development (Schunk 2000). We use research findings to see whether theories are applicable or not. In addition we use theories to help make sense of the research study and to understand a phenomenon. Without a theory the findings would be disorganized collections of data. Scientists from different disciplines observe differently. It is therefore important to know that none of the observations or theories is more real or truer than the others (Silverman 2001). It is the research question on which it all depends. The research question can either test a theory or build a new theory.

The research question in this study emphasizes on testing a theory. Based on the theory and a set of research conditions the researcher can find out the research approach that is the most applicable one to use in his or her study. The aim is to get findings which can enable the researcher to test the theory. In these settings the theory and the research serve as elements that are dependent on each other. The objectives for this study is to use a conceptual framework, Learning and Training Strategy models, to find out how BHI's training strategy works and to use these findings to assess if the framework is practicable.

The theoretical models provide the study with a framework which determines the task of the research. When the research task is set it helps the researcher to choose the right research approach (Suppes 1974 referred in Schunk 2000). Figure 4.1 demonstrates the two main research approaches, quantitative and qualitative.

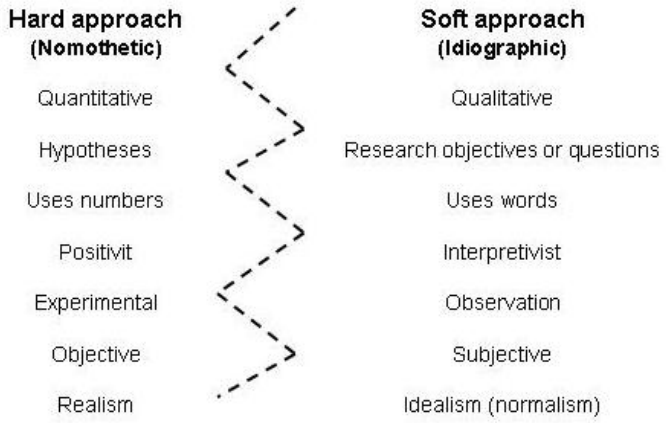


Figure 4.1: Research approach

The research approach in this figure is based on the continuum divided naturally between research formed as hypothesis, nomothetic, and those studies which is based on research objectives or questions, idiographic (Schunk 2000; Remenyi et al. 1998). These two approaches can be characterized in several different ways. Nomothetic research is better known as quantitative research. The data is based on hard methods which emphasize on regularities in patterns and processes. The data takes form as numbers and there is often use of statistical and mathematical analysis techniques (Cornford & Smithson 1996; www.oikos-stiftung.unisg.ch). This research is based on positivism and has an objective point of view (Patton 2002; Silverman 2001; Remenyi et al. 1998; Cornford & Smithson 1996). It is the data alone which is supposed to give the answers without influence of any kind and where distance is important *"…all true knowledge we may obtain is based on the observation or experience of real phenomena in an objective and real world"* (Cornford & Smithson 1996:37). The quantitative research describes many cases and the study is concentrated on the things that can be measured. The methods within this research approach have an experimental and hypothetic style where the researcher assumes, confirms or refutes based on standardized tools.

Idiographic, qualitative research makes up the soft approach end of the research continuum. The soft approach emphasizes on including the non-measurable. As mentioned above idiographic research is based on deep, thick descriptions of the elements being studied (Patton 2002). *"Qualitative methods is an array of interpretive techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world"* (Van Maanen 1983:9). It looks upon knowledge as facts and value being intertwined where there is no distinction between them. In contrast to quantitative research which is interested in testing known territories, qualitative research is interested in exploring new ones (Thomas Dyllick notes from www.oikos-stiftung.unisg.ch). The researcher who uses this kind of research approach sets out to do an interpretive study with a more subjective view of reality. He or she bases the study on research objectives or questions to be able to receive more knowledge on a subject (Schunk 2000). Even though Figure 4.1 marks a clear distinction between the two approaches there might be idiographic context in hard approach studies.

The next section outlines the research design for this project. It argues the choices made based on the conceptual framework which the study is based upon.

4.3 The research study

"Not everything that can be counted counts and not everything that counts can be counted" (Albert Einstein in Patton 2002:12)

Quantitative and qualitative research serves as alternative strategies for research with different strengths and weaknesses. Even though they make up the ends along a research continuum they do not exclude one another. A study can contain data of both quantitative and qualitative character (Patton 2002; Cornford and Smithson 1996; Van Maanen 1983).

It is the setting of the research study that forms the basis for the appropriate methods that can be used.

4.3.1 The focus of the project

The focus of this project is end-user training in organizations. The importance of training is connected to the fact that companies need to increase knowledge to follow the rapid technological development and keep the business alive. Effective training makes organizations competitive. To be able to gain successful results from training it requires a set of conditions on how it should be administrated and executed. Olfman et al. (2002) have developed Learning and Training Strategy models which are meant to provide companies with a structured framework on how to organize training (Olfman et al. 2002; Bostrom et al. 1999; Sein et al. 1999). The research in this study is divided into two tasks (see Figure 4.2). The first is connected to evaluation of end-user training in Baker Hughes Inteq based on the strategy models. The results from this evaluation form the basis for the second aspect in the study which is evaluation of the framework itself. The reason for performing an assessment of the Learning and Training strategies is that it has not been evaluated earlier. The project is a good opportunity to see if the strategies are usable in practice. The learning strategy will be the main focus in the evaluation, because the training strategy has not fully been developed yet.

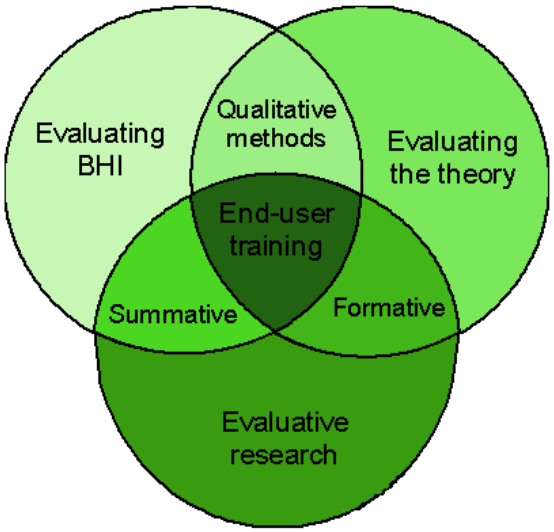


Figure 4.2: Data collection and evaluation model

4.3.2 Evaluative research

The study has an evaluative research character and the intention is to judge the effectiveness of learning in the organization. *"When one examines and judges accomplishments and effectiveness, one is engaged in evaluation. When this examination of effectiveness is conducted systematically and empirically through careful data collection and thoughtful analysis, one is engaged in evaluation research"* (Patton 2002:10). As shown in Figure 4.2 evaluative research can be divided into two directions, summative and formative. The two methods have quite different purposes for the evaluation. Summative evaluation is looked upon as a judgment of the overall effectiveness of a program, process, organization, etc. The outcome of the evaluation determines whether the program or process should continue (Patton 2002; Repstad 1994). In this case the evaluation of BHI's strategies regarding training has a summative character. The study is meant to make up a judgment of whether the organization of the training is executed in the right way based on what the theoretical framework says. The strategies used at BHI have never been evaluated and the study is a complete assessment of how the training department works. It is meant as an indicator of how they are doing.

While research based on summative evaluation gives a summing-up judgment of the subject being studied, formative evaluation aims to improve something (Tessmer 1995; Repstad 1993; Flagg 1990). *"Formative evaluations aim at forming (shaping) the thing being studied"* (Patton 2002:220). The evaluation of the strategy models used in this project is, as mentioned above, not complete. The Learning and Training strategies are still in the development phase and it is therefore natural to see the evaluation of it as formative. The results of the evaluating of BHI and their training are meant to give suggestions on how to improve the theory developed by Olfman et al. (2002). The first section in the project uses the theoretical models as an ideal to have something to compare BHI's practice with. Further the judgments are used to illustrate what and where the theory is lacking or where the researchers are wrong in their assumptions on how training should be executed.

4.4 The data collection

In every evaluative study the question of whether the right outcomes are accomplished arises. The study emphasizes on making judgments on the program, policies, personnel or organizations. It is therefore important to capture "the story" of the situation. One needs to put faces on the statistics and show the people behind the numbers to be able to gain the desired study results. Evaluation research tells what happened, when, to whom, and with what consequences (Patton 2002).

4.4.1 Research method in the project

Patton (2002) uses a good example to illustrate the difference between qualitative and quantitative research. If you want to know how much people weigh, use a scale. If you want to know what their weight means to them, what they feel about it and how it effect them you need to ask them questions and hear their stories. As Einstein also pointed out, there are things that you can count that do not have a purpose being counted, and things you know counts that you can not count. In evaluating the training at BHI there involves assessing the whole organization of training. It is summative because it is meant to give

an overall judgment about the effectiveness. This type of measurement will normally depend on both quantitative and qualitative data. Quantitative data offer large samples with statistical results to help make a measurement of the standardized outcomes. To add some depth and details, summative evaluation often also involves qualitative research (Patton 2002).

In this project data collection is based on primarily qualitative methods because the conceptual framework requires more specific findings than what quantitative data presents. Since the project emphasizes the whole strategy of the training department, there is little interest in having generalized findings. This precluded the use of questionnaires to other than evaluate some aspects of the training, e.g. the content of the training. It is not the specific training sessions that is of interest, but the overall outcome and organization of it. In contrast, it is important to capture individual's opinion on what they think of the training session to get an impression on how they experience it. The data being collected regarding this study is therefore based on observations of the training sessions, interviews of both participants and instructors, meetings with the head of the department and document analysis. The different aspects make up a total package of how training is executed, the outcome of training, how it is administrated and the focus of training based on the business policies. The information is gathered to fit into the theoretical aspects in the conceptual framework.

The second aspect of the study was the evaluation of the framework, which is a natural outcome of the evaluation of BHI. There may be things where there are conflicts between the theories and how things are done in practice; some things done by BHI can turn out to make more sense than what the models says. These aspects form the basis for evaluation of the Learning and Training Strategy (Olfman et al. 2002). The purpose with this assessment is to empirically validate the conceptual framework, and to enhance and improve it based on real life situations. It is therefore a formative evaluation. Formative evaluation is usually connected to qualitative methods (Patton 2002). The reason for using qualitative methods is because there is need for a detailed description of every

aspects of BHI's training strategy. The findings will help to give an in-depth description of how the theoretical framework works in practice.

To perform this kind of research, a variety of data is required. According to Silverman (2001) observation, interviews and document analysis make up the major methods within qualitative research. The evaluations of both BHI and the theory are formed based on these methods (see Figure 4.3). The next sections present a description of the three methods with an explanation on how they were executed followed by a detailed figure over the whole research design for this study (see Figure 4.4).

Data collection techniques	Rules
Observations	Informally with no interaction
Interviews	Open-ended, in-depht
Document analysis	Compare data with the theory, the learning and training strategies
Interviews on mail	Informal, questions on email

Figure 4.3: Data collection techniques

4.4.2 Observation

Patton (2002) defines observational data with the purpose to describe the setting that is observed. In contrast to quantitative research where data collection through observations is argued to be not very reliable because of the possible difference in recording by the different observers, such observational studies form the foundation of many qualitative studies (Silverman 2001). The observations in this study are related to the training sessions and aimed at gaining an understanding of how the training was run. The purpose

was to give an insight on the content of the training and the training material, who the participants are and what type of accessories was being used. The observations served as a preliminary stage in the research where the findings were combined with interviews to get a more detailed description of the participants' and the instructors' thoughts on the training.

The observations were conducted during several trips to the BHI training department in Stavanger. During this period of time, BHI had continually interesting courses on their timetable and the participation was good. The observations were based on informal involvement emphasizing on how the communication was between the instructor and the participants. The aim was to get a feeling of the setting of each course being observed. There was no interaction between the researcher and the participants or the instructor during the observation.

To complete sense making, observation was followed by interviews.

4.4.3 Interview

"We interview people to find out from them those things we cannot directly observe. This issue is not whether observational data are more desirable, valid, or meaningful than self-report data. The fact is that we cannot observe everything…" (Patton 2002:340).

Yin (1994) stated that interviews are one of the most important sources of case study information. In business and management research it is the most frequently used method to gather data (Remenyi et al. 1998). With interviews we want to capture the involved individual's perceptions of something. In this study it is important to know how the employee's perspectives are regarding the training they are obligated to take. Their experiences with the training department and the training sessions are qualitative issues that are best caught through open-ended questions (Silverman 2001).

The interviews were conducted in relation to the courses. The participants and instructors were asked if they could answer some questions, and the interviews took place during breaks. The questions were formed based on the learning and training strategies in the theory and an overview of what kind of information that was needed for the study. Because the observations and the interviews were done over several weeks, there was opportunity to improve the questions to better form them to gain the wanted data.

The interviews were expected to give an overview of the motivation for both the participants taking the courses and the instructors running the courses. The questions emphasized on mapping what the participants felt about the training sessions, material and the tools they received the training on. In addition the employees were asked to describe the business processes they were involved in their work situations (See interview guide in Appendix B). All this information gave an overview of BHI and it formed the basis for doing the evaluation. All interviews had an open-ended structure, with the purpose of capturing the employee's point of view on the subject. The person being interviewed was completely free to give whatever response he or she liked *"…qualitative findings are longer, more detailed, and variable in content; analysis is difficult because responses are neither systematic nor standardized. Yet, the open-ended responses permit one to understand the world as seen by the respondents…"* (Patton 2002:21).

In addition to interviewing the employees connected to the specific training sessions the head of the training department, Bengt Hope, was interviewed. He gave a more detailed description on how the whole organization of training worked. These interviews often turned into meetings, having a conversational form. As a supplement to the interviews it was possible to use email as a forum for asking questions. All the email communication with BHI was conducted through Bengt Hope.

The interviews taken at BHI were recorded on tape and transcribed in their entirety. In total, 22 course participants and 6 instructors were interviewed. There were also 5 interviews/ meetings with Bengt Hope, out of which 4 had form as conversations and only notes were taken from these sessions. The theory which the study is based upon

formed a starting point in the structuring of the data. The data were categorized into different concepts and topics to make it well arranged and easier to analyze. The findings were used together with the other sources to form a more complete basis for the analysis phase. Next section outlines the third data collection method document analysis.

4.4.4 Document analysis

Qualitative data consist, among other things, of quotations and observations. These findings make up a story about the subject being studied. In addition documents are used to confirm and support the things being said and observed (Patton 2002; Silverman 2001; Yin 1994; Repstad 1993). Patton (2002) outlines several challenges connected to document analysis, such as getting access, understanding of the documents, assessing their accuracy and how to link them to other sources. It is important to know how to handle the documents. They are often meant for a specific event and it is therefore crucial that the researcher is able to see their intention and objectives (Yin 1994). Documents are usually coordinated with the other sources found in the data gathering.

During the trips taken to Stavanger, full access was given to BHI's Intranet, where several interesting documents and business process descriptions were available. They contained information connected to the organizational structure of the business, and detailed descriptions about the business processes. The text found on the Intranet and at the training department included training material, administrative reports and other internal documents. They were used to make an in-depth investigation on what the organization was all about, to understand its business strategies and to be able to put the company's training in relation to the Learning and Training Strategy Models developed by Olfman et al. (2002).

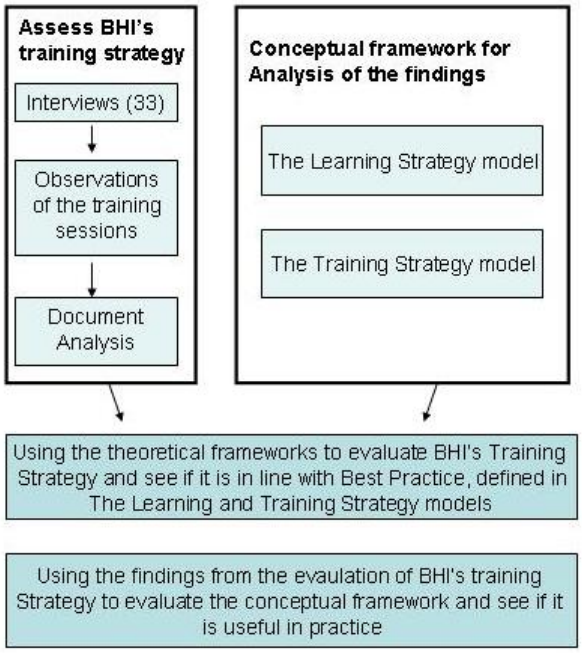


Figure 4.4: The Research Design in this study

4.5 Summary

The content of this chapter emphasized on placing the project in a research setting. It gave an overview of the purpose of research and what requirements the researcher is faced with. Further it described how research is being formed, what to do, and when. Figure 4.1 distinguished between the two ways to do research studies, soft and hard approach. These research approaches are both based on what the research task is, whether one is engaged in testing hypothesis or research questions there is need for a theory. The fact that the theoretical framework is part of the evaluation in this study made it even more important to relate research method and theory.

The next chapter evaluates BHI's training strategies. It compares BHI's way of organizing the training with the theory, where the contrasts form the basis for further evaluation of the theory.

Evaluation of BHI's training 5

The conceptual framework which is presented in chapter 2 forms the basis for the analysis of the data findings in this study. Together with the research design and methods outlined in chapter 4 it makes up the tool for the evaluation in this project. It is an evaluative research project which uses qualitative research methods to assess the effectiveness of Baker Hughes INTEQ's (BHI) local training unit, Competence Development Department (CDD) at Tananger. Further it address whether the Learning and Training Strategy models used as theoretical framework is applicable and usable in practice.

This chapter describes an evaluative and analytic presentation of BHI's end-user training based on the Learning and Training Strategies with emphasis on the Learning Strategy model. The next chapter outlines the evaluation of the theory with basis in the findings from this chapter.

5.1 The research question

In all research projects it is the purpose of the study that forms the basis to determine the type of research it is. The researcher uses the purpose as a foundation to make up the design for the study "*Purpose is the controlling force in research. Decisions about design, measurement, analysis, and reporting all flow from purpose…"* (Patton 2002:213).

The purpose in this project is to evaluate BHI based on an end-user training strategy framework and evaluate the framework. The theoretical framework is based on an academic model on how organizations should structure and manage the training and how

their training strategy should be. The fact that it is a normative model and though based on observed Best Practices but has not been evaluated, makes it natural to use in relation to the findings from the evaluation of BHI to see if the arguments in the models are appropriate. The study has an evaluative research character. In evaluations there are often a several aspects to assess and models provide a framework to make the process easier. They offer evaluators with structure and support (Patton 2002). The evaluation of the training department is a summative evaluation. It is meant to do an overall judgment of the effectiveness of BHI's training. The findings of the study are conducted through qualitative research methods. Chapter 4, Research Design, outlines the details of the research methods used.

The research question in this chapter is to see whether BHI's training is in line with what the theoretical framework presents as Best Practice. The study is meant to map the strategic aspects within the management of the end-user training at the local CDD in Stavanger. Based on the Learning and Training Strategy developed by Olfman et al. (2002) it is assessed how BHI fits into the framework (see Figure 5.1).

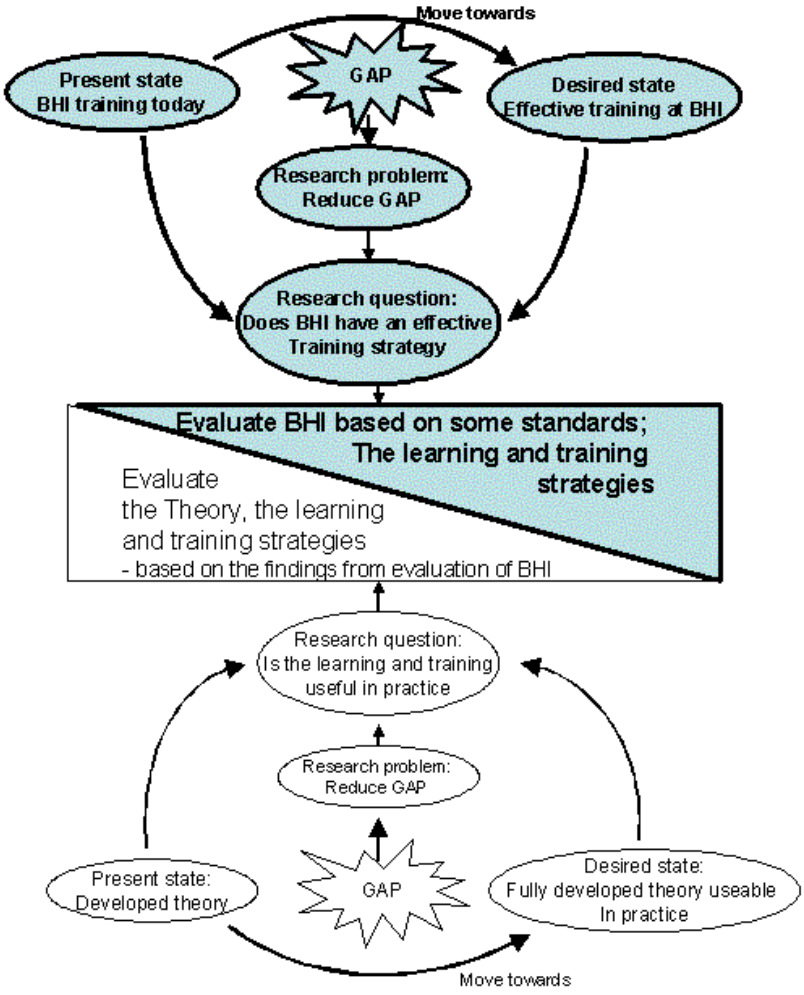


Figure 5.1: The Evaluation design in this study

Figure 5.1 shows how both the state of BHI and the framework strives towards wanted goals. The gap between present state and desired state represents the research problems which the project is based upon. For example if a person wants to get hold of more money than he/ she has got, there is a gap between present and desired state. The problem forms a question whether there is something that can be done to make more money. To answer the question there is need for a method or a solution to reach one's goals. In this case the gap raises the question whether the organization has effective end-user training. To be able to assess the state, there is need for a framework telling how training should be organized to gain successful results.

There are different terms which are being used in this evaluation that can cause confusion. Baker Hughes (BH) has six business divisions and within these divisions there are several different units. This study is based on Baker Hughes INTEQ (BHI), one of BH divisions. The major units within BHI are Directional Drilling (DD), Measurement-While-Drilling (MWD) and Surface-Logging-Service (SLS). These units will be referred to as the business units/ lines. They are involved in the training program on a system called, Advantage, on which this project is based upon. Advantage is a new Information System (IS) which is going to be used in BHI's operations offshore. Advantage is a common software platform integrating the business unit's tasks to make their work easier *"Project goal: To develop an integrated software platform that will provide cross Product Line and Inter-Divisional support for wellsite and office based services. Advantage v1.00 will provide a strong foundation for future development to support current and new services"* (From Advantage homepage on the Intranet, 16.04.02).

The observations and the interview objects are mainly taken from Advantage courses, either for the DD, MWD, and SLS. The reason for using the Advantage courses as basis for the data collection was because of the system's big influence and size. The terms which are used in relation to the training department all refer to the local training unit at Tananger in Norway, known as Competence Development Department (CDD). The planning phase of the training is based on cooperation between the training unit and the different business units. The representation from the business units is made up by different competence groups; they do the mapping of the competence gap among their own workforce. A more detailed description is outlined in chapter 3.

As stated earlier in the paper there is an increasing awareness of the importance of training in organizations. The next section outlines the focus of this project.

5.2 The focus of the study

In BHI the business processes is operated by large systems and they depend on having a workforce which is able to handle the technological equipment. End-user training is

therefore necessary when their systems are updated or replaced with new installations/ implementations. The focus of this project is on the importance of training in relation to Information Technology (IT). The study is based on the understanding that it is not possible for an organization to survive if they implement a new IS without giving the employees sufficient knowledge on how to use it. Organizations of a certain size have often systems which have influence on most of the business operations. Having an effective training is therefore the foundation of every organization in development (Cheney et al. 1986).

The next sections will give an evaluation of whether BHI has an effective strategy within the organization of training. The Learning and Training Strategies from the theoretical framework (Olfman et al. 2002) outlines a natural classification of different aspects. These aspects make up the discussion and evaluation of the management of BHI's training department. Figure 5.2 demonstrates the content of the two strategies. The structure of the models is based on four dimensions which are made up by different components. The dimensions are linked together and their characteristics depend on each other. Both dimensions and components are defined along a continuum of choices and the opposite aspects have to be congruent with each other so they support the same strategic position (Olfman et al. 2002).

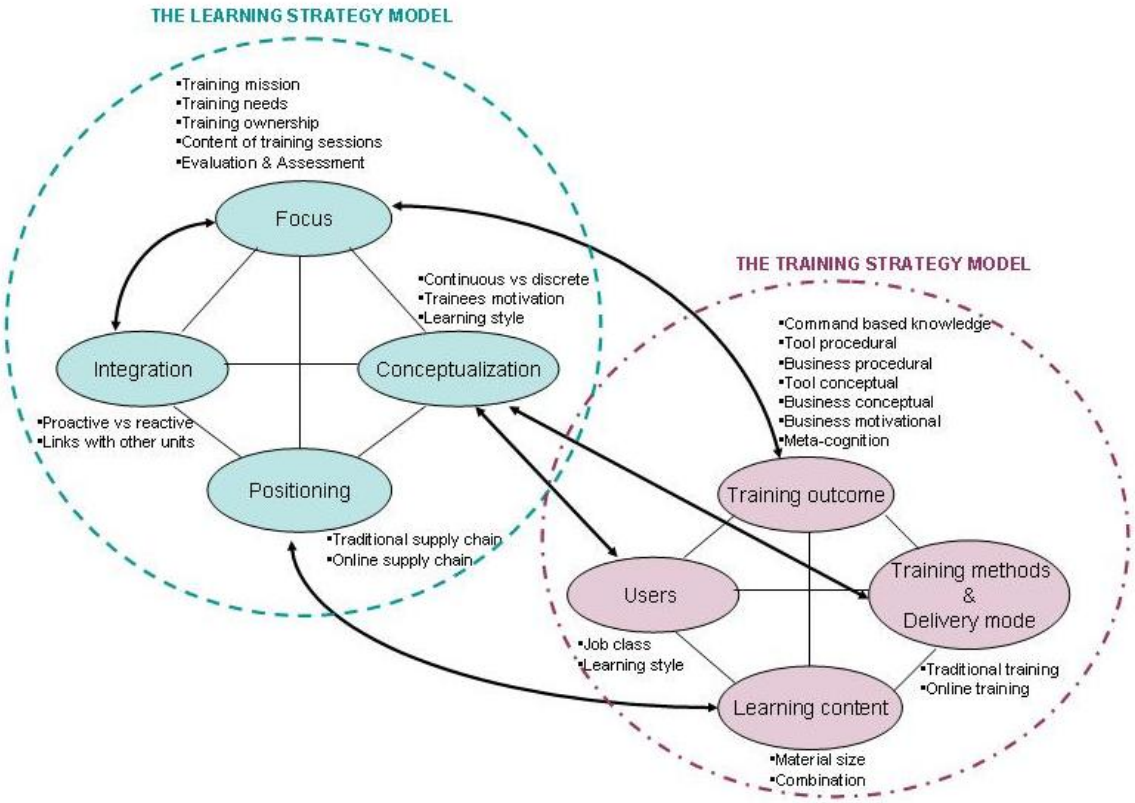


Figure 5.2: The Theoretical Framework with dimensions and components

Since the main focus is set on the Learning Strategy this will be the starting point. The sections are arranged after the dimensions in the model; Focus, Conceptualization, Positioning and Integration.

5.3 The Learning Strategy model

The Learning strategy model (Figure 5.2) is one of two strategies which make up a Best Practice theory within end-user training. The authors (Olfman et al. 2002) argue that an integrative and comprehensive set of learning and training strategies together with other organizational strategies is the only way to deliver effective training (Olfman et al. 2002). The whole idea behind the theory is to form end-user training strategies to support the overall organizational strategies. They define IT Learning Strategy as "*…the pattern of IT actions for deploying resources to develop the repository of computer knowledge and skills in an organization's workforce"* (Olfman et al. 2002:1).

The next sections presents an evaluation of BHI's training based on the dimensions and their components in the Learning Strategy model.

5.3.1 Focus

The focus dimension describes what the main driver of training in an organization is. The main driver is set along a continuum with Technology at one end and Business at the other. Its character is represented by five different components; Training mission, Training needs, Training ownership, Content of the training sessions and Evaluation and assessment. The outcomes of the components should end up at the Business end of the continuum which represents Best Practice in this dimension (Olfman et al. 2002).

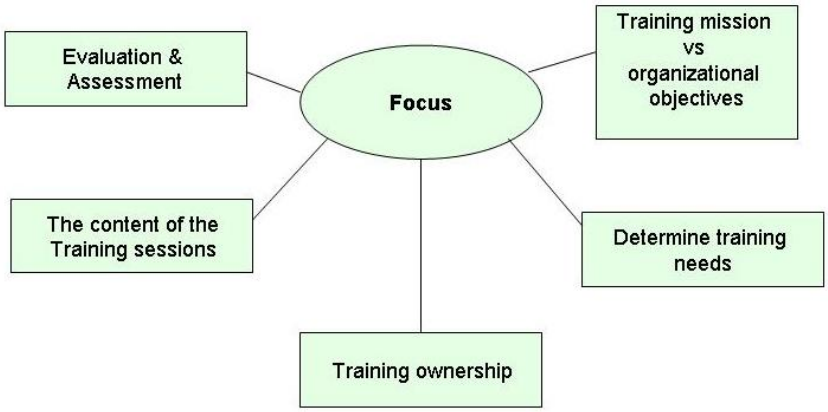


Figure 5.3: Focus dimension with components

5.3.1.1 Mission statement

The first component, Mission Statement, is connected to the communication between the training unit and other organizational units. They should work closely together to align their missions to achieve the organizational objectives and technology should be used as a tool to gain these goals and not as an objective for the training (See Best Practice mechanisms in Figure 5.4).

Some of the fundamental core values that Baker Hughes (BH) has are directly used in the training unit at BHI (BakerHughes.com.) (See Appendix C: Baker Hughes Core values and keys to success). The statements are meant to form a culture for the company to unite its six operating divisions to strive for common objectives (see chapter 3 for more information about the divisions). It is important that these objectives are represented through the training department's missions and goals. Learning is one of the values where BH emphasizes on being a learning environment. The CDD at Tananger is an effort to reach this mission. The training department is developed based on the importance of sharing experience and receiving knowledge about new implementations to increase the organizations knowledge level. This idea is also transferred to work situations where employees are meant to learn from each other.

Further BH aims towards working as a team committed to common goals using Teamwork as one of their core values. The administration of the training reflects this through its cooperation with different business units. They come together to determine a plan for the future regarding what training courses to run etc. These meetings represent how the training unit works together as a team to fulfill the needs within new knowledge among the employees in the different units. In addition they achieve the teamwork spirit by running courses based on the idea that it is expected of everyone to participate actively. The focus in several courses is based on good communication among the instructor and the participants. Everyone is supposed to participate with their knowledge and experience so that others can learn from it (From meeting with Bengt Hope, October 2001 and observations). This also addresses another BH value; the willingness to share resources, where knowledge and experience can be looked upon as a resource.

BH also uses different mechanisms to form what they see as keys to success. They believe that their resources will be effectively employed if they assign people where they can make the biggest contribution. This is shown in the training unit where they give the opportunity for offshore workers to become instructors. It is suitable to use employees as instructors because they work with the business operations where several of the new

software is installed and they are familiar with the tasks. The training unit uses these people in new assignments where they can make a difference for the organization.

The different mechanisms in BHI's which is connected to the mission of the training administration is demonstrated in Figure 5.4. The model demonstrates how the mechanisms for best practice are compared to BHI. The fact that the CDD operate in accordance with the overall organizational objectives gives an indication of business focus. BHI seem to have best practice regarding the focus of the training.

Component	Best Practice mechanisms	BHI's mechanisms
▪Mission Statement	▪Align the training unit's mission with the organizational objectives ▪Closely work with organizationa units ▪Regular meetings with key managment personnel	▪**Use Baker Hughes core values in the training unit;** ➢**Learning**; BH emphasize on having a learning enrivornment. The CDD is an example ➢**Teamwork**; CDD operate with close cooperation with the business units to fullfil the training needs; they have regular meetings. In training session; the teamwork spirit where everybody participate with their knowledge. ➢**Share resources**; Share the knowledge and the experience (seen as a resource) during the training sessions ➢**Resources effectively employed**; offhore workers opportunity to instruct; BHI uses the employers with skills within training

Figure 5.4: BHI's mechanisms regarding Mission statement

The next component in the Focus dimension is related to how the training needs are determined.

5.3.1.2 Training needs

The Training needs component addresses how the training needs should be determined and by who. The continuum is made up by the training unit at one end, and the functional units/ business units at the other. Best Practice is for the business units to determine what courses to run in the near future. The best practice mechanism which is connected to the training needs component is shown in Figure 5.5.

The training unit at BHI includes representatives from the different business units to form competence groups which are involved in the planning of what training courses to run in the near future. Based on the regular meetings, the training unit receives requirements from the competence groups on their training needs. They give an overview of their needs based on new software and how the knowledge level of their workforce is regarding it etc. The following quotation from the head of the CDD at Tananger illustrates this: *"…we sit together, and based on the information they (business units) have collected, we find the competence gap which they need to fill during the next 3 – 6 months…"* (From meeting with Bengt Hope, 17.04.02). The structure of the administration at the training department address high involvement from the business units in determination of the training needs. BHI's mechanisms are demonstrated in Figure 5.5. The model demonstrates that BHI's practice is in line with best practice regarding how and by whom the training needs are determined. Close cooperation between the training department and the business units are emphasized.

Component	Best Practice mechanisms	BHI's mechanisms
▪Training need determination	▪To idintify trainine needs: Analyze corporate business plans, and business processes, specialized roles such as relationship managers ▪Training managers regularly held meetings with functional area managers	➢Business units have representatives who form competence groups, which map the knowledge gap in the organization ➢The training unit and the competence groups have regular meetings to plan the training for the furture

Figure 5.5: BHI's mechanisms regarding Training need determination

The structure for this component is closely linked to the next which determines who owns the training.

5.3.1.3 Training ownership

Training Ownership is the next component in the Focus dimension. It refers to whom in the organization should control and own the training. The continuum is made up by the training unit at one end and the business units at the other. The determination is based on

the outcome of the pervious component; if the business units are the ones mapping the training needs it is natural that they are the ones initiating and control the training. Best Practice is to give the business units full ownership of the training (See best practice mechanisms in Figure 5.6).

At BHI, it is the business units who determine what training courses to run and when to run them. To be able to identify the training needs for the future the business units need to know of new software installations in the future. Thus it is they who initiate the training because they know how many of their workforces will need the different courses. As the head of the training unit puts it: *"…they* (the business units) *bring us a need statement. They know the priority on what is going to happen the next 6 months/ year, and then they ask us to put up x numbers of courses in the next quarter, two of that one, three of that, one of that, etc…"* (From meeting with Bengt Hope, 17.04.02).

The structure reflects the Focus dimension's aim to operate with a mission for the training that is based on the overall organizational objectives. It emphasizes the cooperation between the training department with the different business units on who should be the initiator and lead the planning of the training. The CDD's existence is based on the training needs among the workforces in each business division; without the need of business units for knowledge there would not be a training unit at Tananger.

Figure 5.6 demonstrates that BHI uses best practice in relation to how the organization of the training department should be. They leave it all in the hands of the business units to control the training.

Component	Best Practice mechanisms	BHI's mechanisms
▪Training ownership	▪The training ownership completely in the hands of the business units, or controlled by them	➢Business units determine the training needs thus it is they who initiate thraining ➢Business units is represented in the training administration through competence groups; they who map the training needs and initiate training

Figure 5.6: BHI's mechanisms regarding Training ownership

The three components mentioned is based on how the training unit should work in accordance with the overall organizational objectives and how the structure of the training should be. To maintain a business focus also requires the training sessions to involve elements from the business units and their operations. The next component addresses this issue.

5.3.1.4 Content of the training session

The next component, content of the training sessions, is based on how the training sessions should be. To have a business focus it is expected that BHI use practical examples from work situations as training exercises to set the right focus on the training. It is not intended for the employees just to learn to use a new system but to learn how to use the system to do their tasks. It addresses motivation among the employees. The mechanisms within best practice are demonstrated in Figure 5.7.

The training material at BHI is formed to illustrate work situations. They go through similar tasks in the classroom to make it as real as possible. The following quotes from employees taking the training illustrate this: *"…it is prepared for us to do as much exercises as possible…"* (k), *"…it is mainly to give us the practice and confidence in actually connecting to the tools and going through the software… Lot of exercises…"* (m), *"…the book which is very useful because it… gives you an explanation and takes you through things… it also have a section 8, which is a idiot-proof guide on how to do things…"* (w) (Observations and quotations from interviews). The training manuals are also meant for the participants to use in the beginning of practicing the tool offshore. As one participant put it: *"…we have a big course book… when you are in the field you can use it as a guideline…"* (u) (Quotation from interviews).

As mentioned earlier in this section the CDD at Tananger uses business unit employees from the field to run some of the courses. It is part of integrating the business procedures with the training sessions. The theoretical framework emphasizes the use of functional

area personnel to conduct the training to maintain a business focus. It gives the instructors opportunity to make an influence on the training sessions. They are familiar with the tasks offshore and therefore they have knowledge on what parts importance should be attached to. In addition to offshore employees working part time as local instructors, BHI also has a professional workforce of international instructors traveling around. Several of them have experience from earlier fieldwork and they can therefore be considered as representatives from the different business units, having understanding for what the training sessions should be about. As one international instructor puts it: *"…I used to be in the field… Not with the latest systems but the idea is the same. So I have used it before…"* (i).

Figure 5.7 illustrates accordance between the mechanisms in BHI and what the framework emphasizes as best practice. BHI uses best practice through their training examples taken from business processes and by use of offshore employees as local instructors.

Component	Best Practice mechanisms	BHI's mechanisms
▪Content of the training session	▪Use specific business process examples during training to address motivation ▪Use functional area personnel as trainers	➢BHI use practical examples from the business processes offshore to gain understanding of the system ➢Use local instructors; employees working offshore also work part time as instructors

Figure 5.7: BHI's mechanisms regarding Content of the training session

To be able to find out if BHI gained a business focus in their training it is necessary to assess the training. The last component in the Focus dimension in the Learning Strategy model is related to evaluation and assessment.

5.3.1.5 Evaluation and Assessment

Evaluation and Assessment is a judgment whether the business focus is achieved or not. The conceptual framework emphasizes on two mechanisms to do the assessment,

certification and evaluation by line managers (See best practice mechanisms in Figure 5.8). The aim is to find out how well the trainees understand how to apply the technology to solve the business processes.

BHI supplements the training with on-the-job practice in what the employees have learnt on the courses. In these situations/ periods there is always a manager present to evaluate whether the employer has adapted sufficient knowledge to be able to perform the business processes (From meetings with Bengt Hope). The assessment is a part of an overall assessment of the competence level in the workforce in relation to a career advancement system BHI uses called INFACTS or INTEQ Field Advancement Career Tracking System. It is used to find out if the trainees have gained enough knowledge to receive the certification for a new title in INFACTS. BHI uses the evaluation by the supervisors to find out whether the employee has satisfied the knowledge level required by him/ her after attending a training course.

Their mechanisms are demonstrated in Figure 5.8. Compared to the requirements BHI uses the right factors to help assess whether they have business focus and thus they use best practice.

Component	Best Practice mechanisms	BHI's mechanisms
▪Evaluation and assessment	▪Use certification ▪Perform evaluation by line managers	➢The employees are evaluated by their supervisor to check if they have received sufficient knowledge ➢The employer can climb the INFACTS, a career advancement system at BHI if they receive approval from the evaluation

Figure 5.8: BHI's mechanisms regarding Evaluation and Assessment

The component which is discussed above makes up the Focus dimension. The mechanisms figures show how BHI's training practice is in line with the best practice from the theoretical framework. The outcome is summed up in Figure 5.9. BHI is represented with the capital X, and best practice with the lower-case x. The Focus dimension is related to how BHI view the mission for the training. It is important to supplement a Business focus with the right view on the training and the participants.

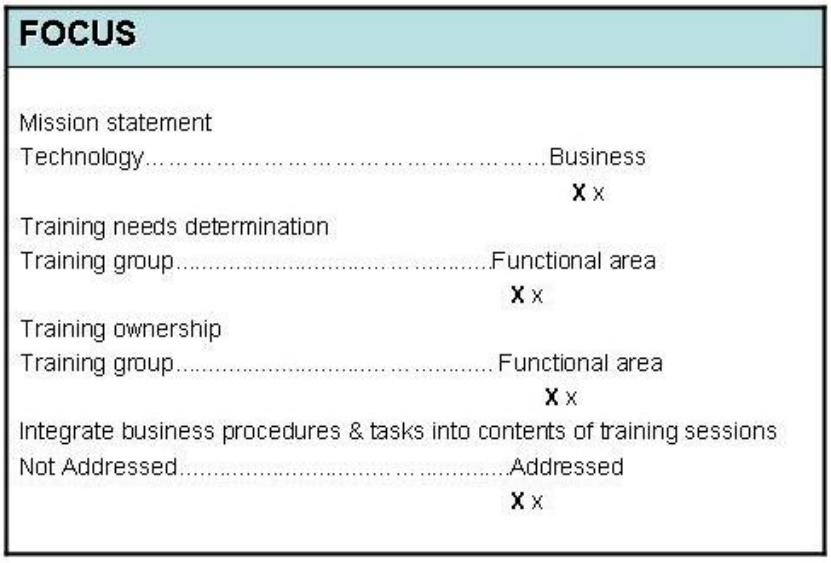


Figure 5.9: Focus dimension's summary model

The next dimension in the Learning Strategy model is connected to the conceptualization of the training and the trainees.

5.3.2 Conceptualization

The second dimension, Conceptualization, is meant to identify how CDD views the training processes and how they view their trainees. The dimension is made up of three components, one representing the conceptualization of the training and two related to the trainees (see Figure 5.3). The conceptualization of the training addresses whether the training is looked upon as an ongoing process or identified as sessions with a definite start and a definite finish. The continuum for the trainees are either passive at one end or active learners at the opposite side. In addition the organization should try to meet differenced among their workforce and match the trainees to the right learning style.

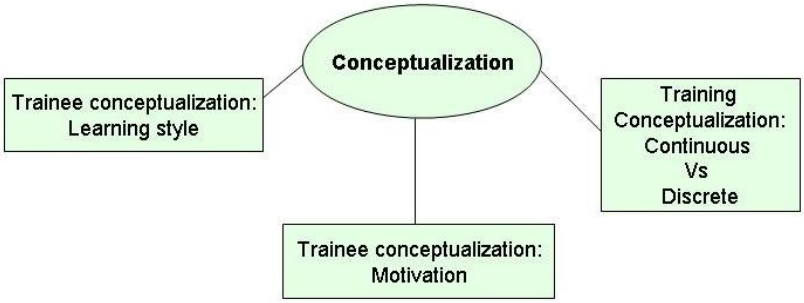


Figure 5.10: Conceptualization dimension with components

Based on the theoretical framework Best Practice is related to that end of the continuum where training is looked upon as continuous, having active trainees and where they are matched to the appropriate learning style. The next section presents the conceptualization of the training at BHI.

5.3.2.1 Conceptualization of the training

The first component, conceptualization of the training, addresses several aspects on how to gain Best Practice. It is required for an organization to see training as continuous; where they have an ongoing learning process (See best practice mechanisms in Figure 5.11). To gain this structure they have to offer a variety of training with staff providing support, where the training comes in small chunks on a just-in-time, when-needed basis (Olfman et al. 2002). In a continuous training setting it is possible to have discrete offerings as well, which provides the training when new systems are being installed and when training is required.

In BHI training is determined based on what new systems the company is implementing in the near future. The main workforce affected by these implementations is the ones using the programs offshore. In addition there are some managers and other personnel onshore who need to have knowledge of the tools who also receive training. BHI depend on having an effective training for each of their employees, not interfering too much with the business. Their only choice regarding Advantage and most of the other training

sessions is to run classroom courses, where the trainees are placed face-to-face with the instructor so that they can make sure that important details are received and understood (From meetings with Bengt Hope, 12.11.01). According to the theoretical framework, BHI therefore does not appear to have an ongoing learning process. The training gives instructions in new installations; either new parts of a bigger system or whole new IS (From observations). In the oil industry, implementation of new IS involves a great deal of changes and it requires for everyone using it to gain complete knowledge about it. It results in long-lasting courses involving a great deal of training material. Following quotations from employees taking the training illustrates this: *"…the training is good. It is quite hard… there is quite a lot of information the first couple of days…"* (w), *"…I think in the end, with DD Advantage, the beginning is a little bit tough, but after all it is ok…"* (u) (Quotations from interviews). The large-sized chunk of training material reduces the freedom of choices regarding the requirement of offering variety in training to make it continuous. Though BHI has started supplementing some of their training courses with cd-roms it is not sufficient according to what the framework demands. It requires training to be available at any time, giving the employees access to training material and sessions 24x7x365. BHI argues that most of their courses are not feasible to execute as e-learning sessions, they need to be 100% sure that their workforce have received enough knowledge to use the system without putting somebody's life at risk. As an international instructor puts it regarding the trainee's expertise after training: *"…most people who come on DrillByte or Advantage for example, if they are experienced people I think they can run it straight away. If not at least they have a certain level of competence, so they are not completely dangerous in situations"* (i) (Quotations from interview). As an assurance against accidents they provide technical support in work situation offshore. These differences between the models and BHI's practice regarding support will be further discussed in the next chapter, the evaluation of the conceptual framework.

The decision regarding when employees at BHI should participate in training is based on a mapping of the competence gap in the business unit (From interviews with Bengt Hope 17.04.02). It is not in the hands of the employees. BHI depend on a workforce with the right knowledge. It is the business units which offer training courses for their employees;

if there is someone who does not want to participate they end up having lack of knowledge and BHI would not use them on assignments offshore. They have to join the training sessions when it is convenient for the company, meaning when they are available and when others can step in and take their shifts. To make it easier the trainees often participate when it is their time off because then they will be onshore anyhow. The head of the training unit gives this explanation: *"…They (the business units) have the charts over the competence, and when f. ex. Per, Pål and Trude doesn't have this and this courses, they put them on a course when they have time off…"* (From interview with Bengt Hope, 17.04.02). This collides with the requirements from what the theory argue as factors making the training continuous. BHI do not offer just-in-time training.

The requirements in this component are not accomplished through BHI's practice. Figure 5.11 demonstrates the differences between best practice and the mechanisms in BHI. It puts BHI on the opposite end of the continuum, where they do not operate in accordance with best practice.

Component	Best Practice mechanisms	BHI's mechanisms
▪Training Conceptualization	▪Ongoing training with variety of training ▪Provide support ▪Training comes in small chunks ▪Just-in-time/ when-needed basis	➢Classroom training, instructor-led ➢Long lasting traning sessions with big chunks of training material ➢Supply classroom training with cd-roms, but not online training ➢Offer technical support; not to the training but to the practice, on-the-job training ➢Trainees join training when it is convenient for the organization

Figure 5.11: BHI's mechanisms regarding Training conceptualization

The last two components in the conceptualization dimension are connected to the trainees and how the training unit defines them. The next section presents the motivational aspect of the trainees.

5.3.2.2 Conceptualization of the learner's motivation

The first conceptualization of the trainees refers to the/ their motivational perspective. It is made up by a continuum with learners being active at one end and passive at the other. It addresses the importance of employees taking initiative to receive more training experience in an ongoing learning environment. If an organization should try to move towards and operate with continuous training their employees have to be involved and be active in their own level of knowledge. In this setting it is important to prepare the trainees to be able to convert those who are passive to become active. In a pre-training stage the goal is to measure the motivation level of the trainees and motivate them to find out what efforts that will make them motivated (See best practice mechanisms in Figure 5.12) (Olfman et al. 2002).

Based on the rapid technological development in BHI and the state of dependence on the information systems in their business processes it is a natural consequence that they have to organize training the way they do. BHI appears to have a discrete training mode according to the requirements in the theory; they do not offer a variety of training methods and their employees can not attend training when they want to. The very fact that the different business units depend on each other to be able to perform their tasks makes it crucial that everybody does exactly the same thing. Therefore it is important for the company that trainees receive the same kind of training and instructions on how to operate a new system.

Employees are not involved in entering a course. In the planning phase the competence groups assess the competence gap in their workforce. They have complete overview of each employee's course participation. When it is decided that someone needs a new course to maintain his/ her development regarding work title their manager and the competence group assign the person to the course. The plan is handed over to the training unit to see if it is possible to conduct the course at that time; do they have a classroom, an instructor, enough participants etc. It results in complete passivity from the employees regarding when and what to participate on. The trainees are not involved in assessing

their own competence and they do not seek out training experience. The only thing which is left for them to control is their decision whether to participate or not. As stated in previous section if they do not join courses which they are asked to do, they would not receive new assignments. On the question of why the employees participate in the course: *"…It is imperative. I have to participate to be able to do my job offshore…"* (k), *"…I am taking it because the nature of my job is being changed, and if you don't keep up with it you might not have a job…"* (p), *"…Basically it is something you have to do, if you want to do your job, you have to do this course because it is how the job is going to be run in the future… it is not a optional thing, if you don't do it you can't do the job…"* (y), *"…I was asked to participate and come here…"* (t).

Figure 5.12 points out the mechanisms at BHI and the best practice mechanisms. The fact that BHI does not give their trainees control of own learning and does not offer variety in training methods indicate that BHI does not use best practice in this issue.

Component	Best Practice mechanisms	BHI's mechanisms
▪Conceptualization of the learner's motivation	▪Offer free choice to teh trainees to select training method, session and place	➢Trainees can not attain training when they want to. When it is decided that someone needs a new training course then he/ she is assign to participate by the leader and the competence group

Figure 5.12: BHI's mechanisms regarding the learner's motivation

The components in the learning model are as stated earlier dependent on each other. The last component regarding learning style in BHI has therefore a natural outcome. The next section outlines the conceptualization of the trainee's similarities and differences.

5.3.2.3 The learning style

The last component is connected to the trainees' learning style. It requires the organization to measure the participants to find out what training mode to offer their employees; if the employees are seen as a training group with the same learning style or different. The outcome of the measurement done in previous component is relevant to

determine what type of trainees the organization is faced with. It is a natural consequence to continuous training that organizations see their workforce as different in learning style and that they have alternative training modes for them. Best Practice is therefore accomplished when the organization matches their trainees to the appropriate learning style (See best practice mechanisms in Figure 5.13).

The learning strategy model requires the organization to measure their trainees. The aim is not just to find out what efforts that will make them active and motivated but also to find out what learning style that is appropriate for them. BHI practice with a one-size fits all type of training where the employees are provided with the same learning method; classroom courses. It indicates that the organization does not look upon their trainees as different. BHI's trainees are not offered choices in training method and therefore their individual differences regarding how they learn is not taken into consideration.

The fact that BHI does not look upon their trainees as different indicate that they do not offer a variation in training approaches. Their thought of classroom being the best training alternative is based on their requirements for a safe and idiot-proof training. They do not measure their trainees to find out what is best for them; they simply use the same training method one on everybody without knowing if it fits the participant's individual learning style. BHI's mechanisms regarding the learning style is summed up in Figure 5.13. The model shows that BHI does not use best practice regarding their training offerings when it comes to matching the trainees to right learning mode.

Component	Best Practice mechanisms	BHI's mechanisms
▪The learning style (the trainees conceptualization)	▪Measure the trainees to find their learning style and training mode and assign them accordingly	➢BHI see the trainees as the same, with the same learning style ➢use one-size fits all training

Figure 5.13: BHI's mechanisms regarding the learning style

By the very fact that the training unit does not provide a variety of training methods for the trainees and they do not have the chance to perform the training when needed (i.e., just-in-time training), BHI has a discrete training mode. The outcome of the components

which is connected to the conceptual dimension is shown in Figure 5.14. The model indicates that BHI have the opposite profile in relation to what the theoretical framework defined as best practice.

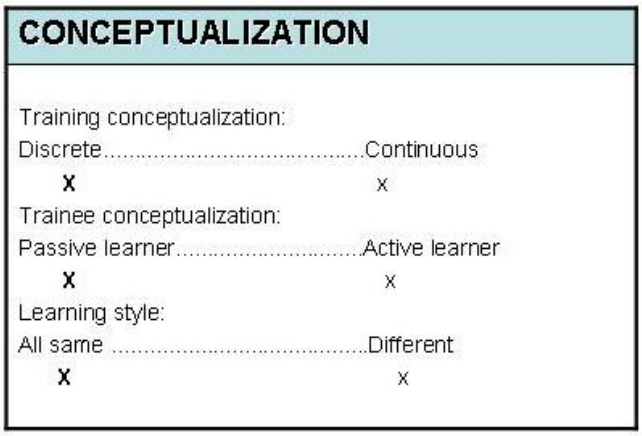


Figure 5.14: Conceptualization dimension's summary model

The next section outlines the training unit's connection with other units in the organization. It is connected to the third dimension in the Learning Strategy model, Integration.

5.3.3 Integration

The Integration dimension addresses the cooperation between the training unit, the different business units and the other functional units in the organization. The aim is to find out to what extent they are working together. The continuum is made up by a proactive side at one end and a reactive at the opposite. The reactive end is related to the context where each business unit has own responsibility for their training and where there is no link to the other units. The proactive side believes it is necessary to have cooperation between the different business units to offer technological training. Best Practice is placed at the proactive side of the dimension, where there exists high integration between the training unit, Human Relations (HR), the Information Systems group (IS) and the different business units. The continuum identifies two components

connected to this dimension, the training unit being proactive or reactive and how the link is between the different parties involved/ units (see Figure 5.15).

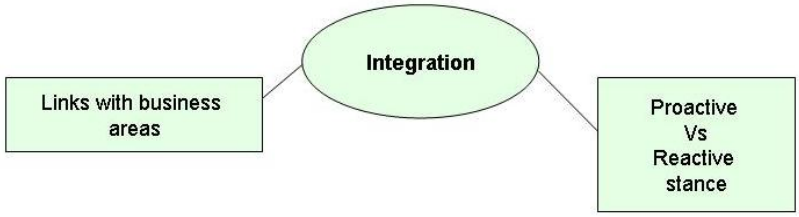


Figure 5.15: Integration dimension with components

The next section describes the outcome of the two components, stance and linkage in the organization of the training. The component's close connection makes it natural to involve both in the same section.

5.3.3.1 The organizational stance and linkage

The first component in the Integration dimension is connected to the training department's stance regarding how to organize the training and how they view their role. It is required for them to take the initiative to involve the business units to participate in their own training needs. The best practice mechanisms are illustrated in Figure 5.16. The proactive stance requires a close linkage between the key organizational areas involved. The second component addresses the demand of this cooperation.

At BHI the planning of the training is done based on training needs assessment from the different business units. Representations from the units form competence groups which is located with the administration at the training department. They conduct a mapping of the training needs among their workforce and based on the findings they make up a preliminary overview of which courses should be run in the next 3 – 6 months. It is then handed over to the training unit which performs a check on the availability of getting instructors, classrooms etc. The planning process goes back and forth between the training unit and the competence groups until there is a complete course plan ready (From

meetings with Bengt Hope and document analysis INSource Norway, Intranet 22.05.02). By the very fact that BHI's training ownership and determination of training needs from the Focus dimension is led by the business units, it is a natural consequence that BHI has a proactive training stance. The training department involves and bases their training on the business units.

The next component in the dimension has influence on how to maintain Best Practice thus it emphasize on the linkage with the other units in the organization, Human Resources (HR) and the IS group.

In organizations with continuous training (see discussion in 5.3.2.1), where employees have own responsibility for their training experience, it is crucial that the training unit has close link to HR and IS group. The training should be implemented based on the HR policies regarding reward structures. In addition there should be tight connection between the training unit and IS group regarding new IS developments. The Learning Strategy model requires HR and IS group to be involved in the training and thus have representatives in the training administration and make up a cross-functional team (See best practice mechanisms in Figure 5.16) (Olfman et al. 2002).

BHI does not operate with a continuous learning process and therefore it is not absolutely required to have linkage with HR according to the Learning Strategy model (Bostrom et al. 1999). The training administration is made up by personnel working with the execution and planning of the training sessions. In addition they have personnel representing the business units in competence groups to help make up the gap of knowledge among the workforce. The structure of the training department does not include cooperation with the HR and the requirements in the model do not seem to be met. The practice at BHI does indirectly involve the HR unit. A further discussion of the linkage between the HR and BHI will follow in chapter 6, the evaluation of the Conceptual framework.

In relation to new developments and implementations of IS, the framework requires the involvement of the training unit at an early stage in the process. The framework emphasizes the cross-functional teams to operate together to gain a proactive stance throughout the whole training administration. Best Practice is based on integrating the training with systems development with a strong link between those units (Olfman et al. 2002). The aim is to have IS group including planning of the training as a factor in their development of new systems. In addition there should be good communication between the IS group and the training unit so they receive messages about new systems roll outs.

The training unit at BHI is involved in all new IS developments. The company can not implement new systems which involve a big group of the workforce without planning how to give them knowledge and understanding on how to use it. BHI uses a Product Development and Management process (PDM) to implement a new system (See Appendix D). One of the elements in this system is the planning of the training (From meetings with Bengt Hope). Although new developments of software systems include planning of the training, there is little involvement from the IS group. The main contributor in the phase is the business units at INTEQ; MWD, SLS and DD. It is they who initiate and perform the development. Participation from the IS group is reduced to the implementation and operating of the system. As mentioned in chapter 3 Baker Hughes has an IS division, BHBSS, on same level as the other divisions, Baker Oil Tools, Baker Atlas, INTEQ, etc (See section 3.3). The IS group is not directly involved in the training unit, but operates with the overall operating of the software throughout each division. It is crucial that the training unit (CDD) at Tananger has cooperation with the local BHBSS unit. They provide CDD with equipment for the courses being held. But BHI does not operate with cross-functional teams when it comes to administration of the training.

The Integration component further addresses the question regarding the location of the training unit. Best Practice refers to strong links between the training unit and the different business units and functional units in the organization. In this matter the importance of the independence of the administration of the training group regarding the

IS group and HR can be pointed out. At BHI the different training unit located all around forms a Competence Development Department (CDD). This business area it is meant to function as an independent unit. The training unit at Tananger has no state of dependence to either the IS group or HR (See Figure 3.3).

The last component in the Integration dimension is related to whether BHI offers business process training.

The Learning Strategy model emphasize on the importance of having training in technological systems with integration of the business processes. The aim is to have a connection between the technological training and the tasks where the new system is supposed to be used (Olfman et al. 2002).

The training in the new system, Advantage, is based on having business processes integrated in the training to give the trainees good examples on how they are going to operate on the system offshore. They embed the work in the training material to make sure that the employees receive the right knowledge (From observations of the training material). In addition the participant's knowledge is tested through an exam on the last course day; the exercises are based on real-life operations where the participants are supposed to picture being offshore and doing the job. The manuals handed out in the courses are meant to be a support for them when they go offshore and practice Advantage. The fact that BHI uses local instructors reinforces the use of business tasks in the training. They refer to operations offshore when they try to explain how Advantage works and how to understand the operations in it. It is easier for them to try to teach when they are familiar with the operations and where they know how the new system is going to operate offshore. As one trainee puts it regarding the training material: *"…we have the book, which is very useful because it allows you to, gives you an explanation and takes you through things… it also has a section 8, which is the idiot-proof guide on how to do things, follow what it says and it should work. That is great, excellent!"* (w) (Quotation from interview, observation of courses and training material).

The fact that the Focus dimension has close relation to the components in this dimension makes their outcome independent of each other. When BHI's training unit is set to have a business focus it is natural that they also have a proactive stance, which is referred to best practice. Figure 5.16 illustrates through BHI's mechanisms that their training unit operate in cooperation with the different business units. Further the summary in the figure demonstrates that CDD has weak relation to both HR and the IS group.

Component	Best Practice mechanisms	BHI's mechanisms
▪Organizational stance and linkage (proactive stance with close linkage with business areas)	▪Ensure presence of business unit managers in training unit policy ▪Establish permanent cross-functional teams, with representatives from HR, IS group and the business units. Set up work groups for projects ▪Embed business process in technical training and use business area personnel as trainers ▪There is independence regarding the administration of the training unit and the HR and IS group	➢Representatives from the business units form competence groups which is located in the training administration. The training unit and the competence groups work as team regarding the planning of the training ➢BHI uses HR to draw up a common code of practice regarding a reward structure (INFACTS). The system is owned by the business units together with HR ➢The training is involved in the developments phase of new systems, but the developement is run and controlled by the business units. ➢BHI uses examples and tasks from the business operations in the Advantage courses ➢The training unit at BHI have complete independence regarding other units in the company

Figure 5.16: BHI's mechanisms regarding Organizational stance and linkage

An overall assessment of BHI's CDD based on the Integration dimension shows that they operate in line with best practice with the exception of linkage with HR and the IS group where there is a weak relation. BHI's profile compared to best practice is shown in Figure 5.17.

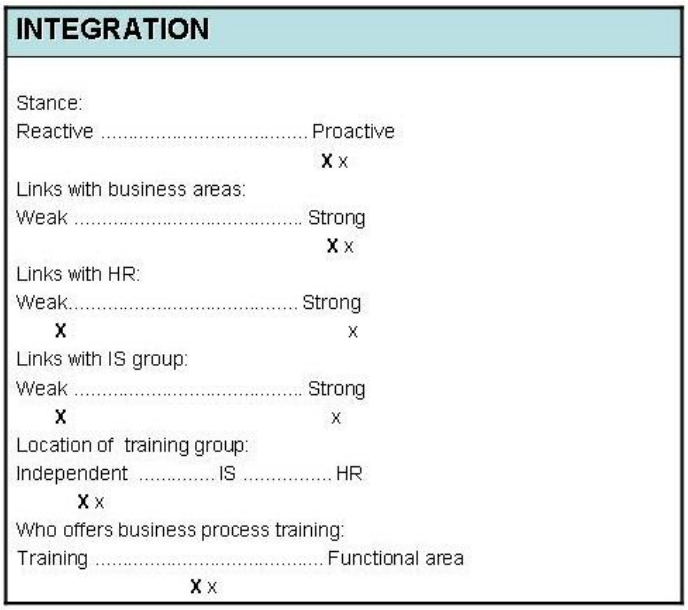


Figure 5.17: Integration dimension's summary model

In relation to the mapping of how the training unit works with the other units in an organization it is interesting to see who offers the training. The next dimension emphasize on addressing the training supply chain in the organization.

5.3.4 Positioning

The last dimension in the Learning Strategy model, Positioning, represents the supply chain in the training organization. It addresses the question of the extent to which their training is outsourced. Outsourcing makes up one end of the continuum. This side relates to organizations where the training material is created, distributed and delivered by external parties. The opposite side, insourcing, refers to organizations which deal with the training material on their own, being the creator, distributor and deliverer of training. The dimension is divided into two components relating to different contexts; traditional and online training offerings (See Figure 5.18). There is no ideal Best Practice (See Figure 5.19). The Best Practice within this dimension is determined based on the outcome from the other dimensions and on the budgets and resource constraints within an organization (Olfman et al. 2002).

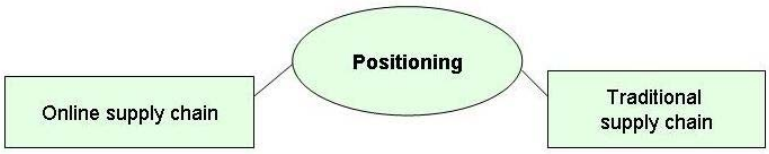


Figure 5.18: Positioning dimension with components

5.3.4.1 Traditional supply chain

Traditional training relates to the basic classroom training or through software providing the employees with computer-based training. This component emphasizes the organization's placement in the supply chain regarding training. The best practice outcome depends on the context of the training unit (See best practice mechanisms in Figure 5.19).

BHI has a traditional delivery mode. They provide their trainees with instructor-led classroom training. An important part of the training involves practice out in the field, i.e., having on-the-job-training (OJT). In some of the courses computer-based training material in form of CD-rom is handed out to make the employees ready for the training. Regarding the Advantage courses which this project is based upon the participants had no preparation material given to them in advance. On question regarding how the participants prepare for the training an international instructor replied: *"A lot of the times nothing at all. It depends on the course. Sometimes there is a pre-course material, cd-rom, some books to read…"* (i).

The whole training process is initiated based on new systems being introduced in the organization. New products are put into action through a Product Development and Management process (PDM), *"The Product Development and Management process is the process by which all product development and management activities will be conducted…"* (From "Global PDM policies" in "Product Development and Management (PDM)" Process Guidebook 2000:19.) (See PDM in Appendix D). Every stage connected

to a new product is determined and planned through this model. They use the model to make the decision whether there should be training connected to the new products and if so how the training should be. This is illustrated in the explanation to the model: *"…At the same time we design a new product, we also will plan for* ***training****, promotional materials, and inventory…"* (From "Product Development and Management (PDM)" 2000:5). It is the central departments in Houston and Aberdeen who make these decisions and is responsible for launching of new systems. The traditional training and the material connected to the training sessions is therefore created by them, within the organization.

The next stage in the supply chain is distribution. The training positioning in BHI regarding distribution has a natural consequence from the creation stage in the PDM process. They plan how training is supposed to be in connection with a new upcoming system. They develop the product and everything influenced by it. Through CDD, they distribute the training throughout the organization involving the whole workforce. BHI operates with an international learning unit containing several international instructors traveling around to perform courses at the different training departments in addition they use offshore personnel as local instructors. This gives them a complete insource (in-source?) training chain. They create, distribute and deliver traditional training for their employees. As the head of CDD puts it: *"…BH central do the creation, meaning it is Houston and Aberdeen which handles the course material and decides and establishes new training courses. BHI distributes everything and they run their own training centre meaning they deliver"* (From meeting with Bengt Hope, 19.04.02).

BHI's mechanisms regarding the supply chain within traditional training is illustrated in Figure 5.19. Their context makes it natural for them to have complete involvement regarding the training. BHI operates according to what seems to be best practice.

Component	Best Practice mechanisms	BHI's mechanisms
▪Traditional supply chain	▪To create, distrubute and deliver in the traditional context ▪Depends on context	➢BHI has a traditional training mode ➢Use a Product Development and Management process (PDM) to develop new systems. The process involves planning and creating the training content. ➢BHI distribute and deliver their training through the Competence Development Department (CDD) ➢BHI has a complete in-source training chain regarding the traditional training

Figure 5.19: BHI's mechanisms regarding the traditional supply chain

The next section is related to the opposite context of traditional training, online supported training and where BHI is placed in the supply chain.

5.3.4.2 Online supply chain

The aim within training which is provided online is to give the employees total control of own learning (Olfman et al. 2002). It is given through a computer-based training offering which is independent of time and place. The trainee can go through a session when and where he/ she likes. The determination whether an organization is in line with best practice regarding how they are involved in the supply chain of the training is dependent on the context (See best practice mechanisms in Figure 5.20).

BHI appears to have a discrete learning process. Training is mainly provided when it is possible for the training unit to organize it and not offered when needed for the employees. The organization does not offer online training for their workforce. But in relation to the new Learning Management System (LMS) which is going to be implemented, they are planning to offer e-learning as a supplement to the traditional training (Kaspersen and Hope 1999). In relation to this planning they have started to work on the material and how it is going to look like when it is put out on the Intranet (From observations). Their planning involves own personnel taking care of the content of the online material, how to distribute it and deliver it to the employees to maintain a more effective end-user training (From meetings with Bengt Hope).

Figure 5.20 sum up BHI's mechanisms regarding their supply chain involvement with online training offerings. They are in the planning phase regarding these offerings and the structure of it indicates that they operate according to what seems to be best practice for them.

Component	Best Practice mechanisms	BHI's mechanisms
•Online supply chain	•To create, distrubute and deliver in an online context •Depends on context	➢BHI do not offer online training but plan to do so in the future ➢Plan to create, distribute and deliver the online training as a supplement for the traditional training

Figure 5.20: BHI's mechanisms regarding the online supply chain

Figure 5.21 show the outcomes of BHI's placement regarding the training. Best practice in the dimension is based on the context BHI is in. The size of the company proves that they have the right resources to handle the creation, distribution and the delivery of training. They run CDD's all around the world, and they are better off by being in control of their own training instead of outsourcing it.

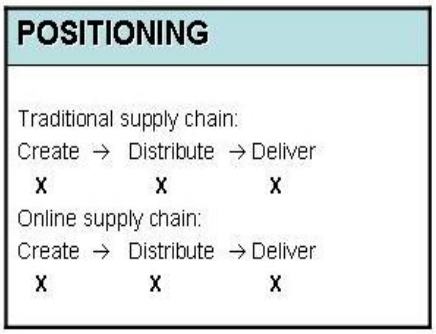


Figure 5.21: The Positioning dimension's summary model

The sections above give a description of how BHI practice training in connection to the requirements in the Learning Strategy model. The model refers to the administrational aspects of training. As mentioned in the introduction the evaluation is emphasized on the Learning Strategy model because this is the more developed of the two strategies. The next section outlines how the organization operates in relation to the second model, Training Strategy model. The aim in the last model is to see how training is conducted.

5.4 The Training Strategy model

The Training Strategy model is the last element in the comprehensive set of strategies which should be used to gain effective end-user training (Olfman et al. 2002). In the theoretical framework on which the Training Strategy is developed the model is defined as *"…the basis for selecting the best training methods for a given situation (training session, project, etc.)"* (Olfman et al. 2002:2). The outcome in the two strategies is defined by and at the same time dependent on each other. Thus the elements in this model will have a natural connection to the Learning Strategy model and the content is in some dimension overlapping (see Figure 5.2). The aim is to make the Learning and Training Strategies in accordance with the overall organizational strategies.

The next section describes BHI's training practice with the dimensions and their components of the Training Strategy model.

5.4.1 The Training Outcome

The first dimension in the Training Strategy model, Training Outcome, is related to the knowledge level which the trainees should achieve after participating in a training session. The main goal of today's training in organizations has been to achieve skill-based knowledge. The theory emphasizes on changing the focus by including motivational aspects to give the trainees an organizational understanding of what the new system can do for them and their company. Best Practice relates to a higher knowledge level than traditional training where the aim is to learn the tool itself. The outcome of the dimension is connected to the Business Focus in the Learning Strategy model. The importance is to have training which achieves business objectives through the use of the new technology. This relationship between the Training Outcome dimension and the Focus dimension in the Learning Strategy model is demonstrated in Figure 5.2.

5.4.1.1 The Knowledge Levels

The component which makes up the Training Outcome dimension is based on a knowledge level framework developed in the theory (see chapter 2, Figure 2.5 under section 2.2) (Sein et al. 1999). The component, Knowledge Level, is made up of the 7 levels in the framework (Figure 5.22). The knowledge level framework connects traditional training with the new elements to gain effective training. The first levels in the training outcome are related to the traditional lower level of knowledge; basic command based and tool procedural knowledge. These levels are generally covered through basic end-user training. To gain Best Practice an organization should implement at least up to the motivational level of training outcome by using specific relevant exercises and examples in a training session (Bostrom et al. 1999). Figure 5.23 demonstrates the mechanisms which are connected to best practice.

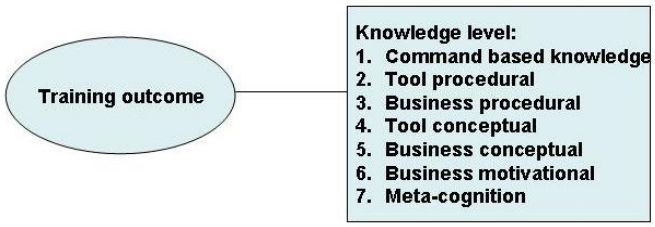


Figure 5.22: Training outcome dimension with components

The content of the training sessions at BHI are based on providing the trainees with a general understanding of the new system being implemented. The Advantage courses which BHI had were based on traditional classroom sessions with an instructor leading the participants through a training manual (From observations). The introduction in the training material involves general information of what Advantage is. The first chapters demonstrate how to get started, where to go to find specific parts of the program, etc. The participants were guided through these basic sections to be able to operate in the program. The instructors' pc was connected via a projector to give the trainees guidance so they could follow the instructors screen along with their own computers. The first level, command-based level, gives the participants syntactic and semantic knowledge

aspects of the tool. They are told from the instructor and the manuals where to click in the menu to start the program, how to do basic operations in the program, etc. this is general information on the functions of the program and most end-user training cover this level. Further they learn how to combine these commands to do a task, which is the tool procedural level. Part of Advantage involves a logging-system where the different business units (MWD, SLS and DD) log their information so that the other units can use it to do their part of the job. The next level, business procedural, is meant to connect the basic operations to the tasks in work situation. In the Advantage courses, functions such as how to create and save a new log are presented for the participants so they are able to use the tool offshore. All these first three levels of knowledge emphasize on the tool itself. It includes traditional training aspect and generally every end-user training cover these levels of knowledge.

The new focus regarding training outcomes integrates a more overall understanding of the meaning of the program. The next levels in the framework involves a motivational element which is meant to provide the trainees with knowledge about what the tool means to them in their work and for their company. To gain this understanding it is crucial that the trainees are given a complete picture of the system or program they receive training in. They need to know the concepts of the program referring to the next level; Tool Conceptual.

In the Advantage training at BHI the course material involves an introduction with an overview of the schedule/ timetable of the course, practical exercises and explanation of what the program is; "What is Advantage?" (Observations of the course material in Advantage for SLS and MWD). The description of Advantage included the concept, vision and release and general information about the system. In addition the next chapter gives a more in-depth description of Advantage with models demonstrating the basic operations in the program. As a supplement to the training material the instructors lead the trainees through the program step-by-step. These operations relate to the concepts of Advantage and the next level strives towards the business conceptual level, i.e., concepts of the business. It is important that the participants receive training in how to use the

program in offshore operations. In Advantage it is crucial that the employees have enough knowledge to operate the program offshore after having participated in a course. The main reason for running courses is to give the trainees an introduction so they can go offshore and practice on the program. The training is not meant to make them experts but to make sure that their actions are no threat to themselves and others. Therefore the aim of the courses is to give the trainees an overall picture of the program and what their business operations are. The fact that Advantage is a common program platform for the different business units requires the employees to know how much they relate on each others information. If one unit does not do their job then it will suffer the work/ tasks of the others. The following quotes from employees taking the course illustrate this: *"…we cooperate all the time. We depend on each others data"* (s), *"…we interact all the time, and if you don't you will fell it slows down the operation totally, if one of the links in the chain is lazy and not doing his job, it doesn't take long, and you will pick the person out…You need a strong team"* (u). The instructors and the training material use real job situations in the training to give an understanding of these principles. But the content of the training material is restricted to contain information about that specific business unit. The training sessions in Advantage for the MWD unit do not involve detailed information about the operation to the other units in Advantage but they do receive short descriptions. The employees knowledge of the other unit's tasks in the system is mainly based on practice and experience, where they run into each others work processes. As two employees participating on Advantage course for DD put it: *"...I am always in contact with SLS, so I am watching all the time what they are doing. It is actually teamwork, so everybody has to look and ask, and automatically you pick up something from SLS, and SLS pick up something from DD…"* (o), *"…Yes, we often get pointed out that this task is here, you can do this, but it will be done by the MWD guys, or this will be done by SLS. So we don't particularly need to know about it. But we get explanation on it"* (m). According to an instructor: *"…it is not much pointed out. By the fact that we are using the same program we have to talk a bit about who does what and stuff…But other than that we keep to the things that is going to be learnt"* (r) (Quotations from interviews).

These knowledge levels serve as basis for the motivational aspect of the framework. The next level business motivational, require that the trainees have an overall understanding of the basic commands in the program, how they relate to the different business operations, etc. It is important that the participants have enough information to be able to see the benefits of the system; what the program can do for them and for the organization. In BHI this element is included indirectly to the training in form of requirements to the employees. They use INFACTS to provide with an overview of each employers participation and practice. This system forms the basis for who the company decides to send offshore on assignments. Every employer knows the importance of being updated in new implemented systems. In addition it is known to them what the system can do for their job and their organization. Advantage brings along a lot more easier way for working, and it reduces the amount of work they need to do. As one trainee put it: *"…Baker delivers data-operator services, well surveillance, we have directional drilling and we have MWD. These three services fill out much of the same data and pick up data from each other. Instead we integrate all together, in each other, so it is/ makes less paperwork and reporting on each…"* (t) (Quotation from interview).

The knowledge level framework is based on providing the trainees with different levels of learning. The training outcomes are closely connected to the business focus in the Learning Strategy model (see 5.3.1.1 Mission statement). The business processes are included in the training sessions through the examples which are used in the training manuals and by the instructors. In addition BHI uses business personnel as local instructors who provide the training with an experienced field worker familiar with the operations offshore. All these factors help BHI to attain focus on the business objectives regarding training. Through the training the organization is supposed to motivate the employees to use the technology to gain common organizational goals, and not to look upon training as a means of achieving only technical skills (Bostrom et al. 1999).

The last level in the framework is related to the employee's ability to learn how to learn, meta-cognition. This level is difficult to cover and it is not yet seen as a requirement for how to gain successful training.

The mechanisms connected to the training outcome component are shown in Figure 5.23. It illustrates that BHI operates in accordance with what the theoretical framework define as best practice. BHI gain higher level of knowledge among their workforce through training (See Appendix E).

Component	Best Practice mechanisms	BHI's mechanisms
▪Knowledge levels/ training outcome	▪Use functional area personnel as trainers ▪Use specific business process examples during training ▪Include business process training in materials	➢BHI use business personnel as local instructors in addition to the international trainer stab ➢The business processes are included in the training through examples in the training material ➢The content of the manuals used in training emphasize on giving knowledge in how to operate the system offshore

Figure 5.23: BHI's mechanisms regarding the trainee's knowledge level

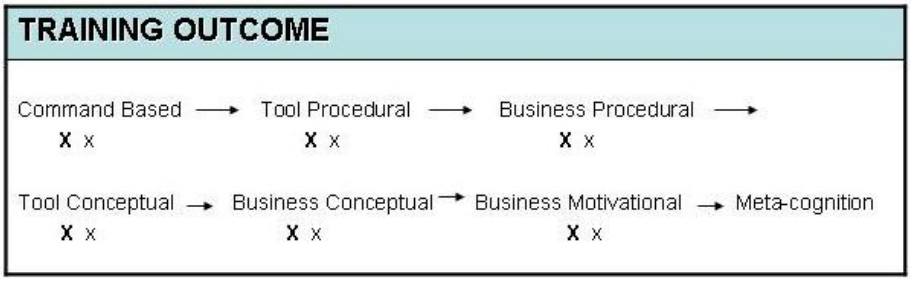


Figure 5.24: Training outcome dimension's summary model

To be able to gain a certain level of knowledge it is necessary for an organization to find out how they should offer the training. The Training Strategy model addresses this through the next dimension, Training Method and Delivery Mode.

5.4.2 Training Method and Delivery Mode

The dimension, Training Method and Delivery Mode, relates to the organizations offerings regarding training; how the training is delivered and by whom. The dimensions components are shown in Figure 5.25. They are closely linked to the Training Conceptualization in the Learning Strategy model, where the training is addressed as

continuous or discrete (see 5.3.2.1 Conceptualization of the training and Figure 5.2). Best Practice relates to the continuous end of the continuum. This practice in continuous training requires a multi-method, multi-mode approach. A natural consequence is therefore to have a mix of both instructor-led and self-based training with different delivery methods (traditional and online) involved to gain successful training (See best practice mechanisms in Figure 5.26).

Figure 5.25: Training methods & Delivery mode dimension with components

The continuum in each of the two components is closely linked to one other. It is based on training either being traditional at one end or offered online at the opposite side. The next component is made up by instructor-led and self-based. The outcome in one component will affect the other. Thus it is natural to include the discussion regarding BHI in relation to these components together. The next section outlines BHI's outcome regarding training methods and delivery mode.

5.4.2.1 Traditional Instructor-led versus Online Self-based Training

In BHI the training appears to have a discrete training mode which means that they use traditional training. They offer classroom training where instructors lead the participants through a fixed training material. In the Advantage courses that where observed, each class had 7-9 employees participating and the instructors were local offshore workers doing part-time teaching. One of the courses observed was led by an international instructor, whose job in the organization was to run courses. The training session lasted from 2 to 8 days depending on the type of Advantage course.

Regarding the training mode no methods other than the traditional classroom training was used. As mentioned earlier in the chapter BHI is required to run training where they can be sure that every participant receives the right knowledge. In relation to Advantage and the involved tasks offshore it is not sufficient to offer training where the trainees are left on his/her own. Self-based training is not a choice in this setting and BHI has to be in charge of the training. Thus BHI has no online offer for the participants where they can run their own training session. But as the technological world develop rapidly there in need for new ways of doing training. BHI has started working on a future training plan involving a new e-learning system which is part of a LMS.

Because of the close linkage between this dimension and the conceptualization dimension the same arguments can be used in this section. In relation to BHI's training in form of instructor-led classroom sessions see section 5.3.2.1.

Component	Best Practice mechanisms	BHI's mechanisms
▪Traditional instructor-led ▪Online self-based	▪Traditional training is conducted through primarily fixed time and place. By an instructor in real or virtual classroom ▪Online training delivered at any time, anyplace via Internet or Intranett	➢BHI provide trainees with a traditional classroom training led by instructors ➢Plan to supplement the training with online material through a new e-learning system

Figure 5.26: BHI's mechanisms regarding training methods and delivery mode

Figure 5.26 outlines BHI's mechanisms regarding what training methods they offer and in what delivery mode. The comparison between best practice and BHI's training practice in Figure 5.27 illustrates that BHI does not operate in accordance with what the framework requires.

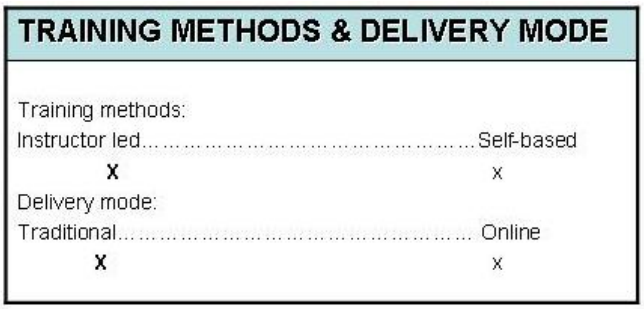


Figure 5.27: Methods & Delivery mode dimension's summary model

The training methods and the delivery mode are closely linked to the content of training. The next section represents the third dimension in the Training Strategy model, the learning content. It discusses how the content of the training sessions at BHI should be.

5.4.3 The Learning Content

The Learning Content dimension in the Training Strategy model address the issues involved with the training material. The components are connected to the size of the material and the ability to combine training material to different sessions/ courses (see Figure 5.28). The dimension is linked to the Positioning dimension in the Learning Strategy model (See Figure 5.2). It is based on the fact that it is more manageable for an organization to create, distribute and deliver training material which is small reusable chunks. Best Practice is related to the end of the continuum where the training content is in small chunks (See best practice mechanisms in Figure 5.29). This form makes it easier to combine the material for other classes and users.

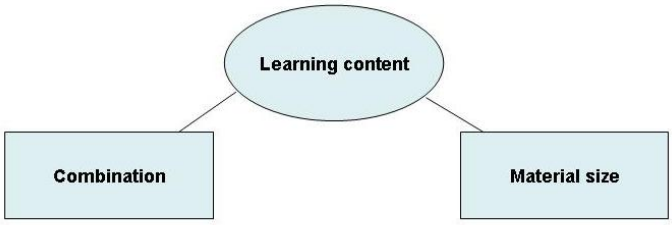


Figure 5.28: Learning Content dimension with components

5.4.3.1 The Size and Combination of Training Material

Best Practice is related to training material which is of a small chunk size. The aim is to have different small training objects which together make up the training material (Bostrom et al. 1999). They could easily be separated and put together to form new training courses. Thus the ability to combine will simplify the content of the training and it will increase its usefulness.

Advantage is a common platform for all the business units at BHI working offshore. The system provides all kinds of services to the oil companies thus it is a very large system involving a lot of different functions and programs. In relation to the courses studied in this project, it appeared natural that the training in Advantage consisted of a big-sized training amount to present to the trainees. As mentioned earlier, it is important that the training manuals given in the courses provide the employees with guidance on how to perform the operations. The training material is therefore naturally very complete, offering the trainees with an overall introduction to the system. All the courses being observed operated with either one or two manuals. They where put together by different training objects, and thus is should have been possible to combine them with others to develop new sessions. But the fact that the manuals covered the whole business operations offshore, taking the participants through the tasks bit by bit indicate dependence among the training objects (From observations).

The business units (MWD, SLS, and DD) use different part of the Advantage system. It makes the training material even harder to combine and reuse. It is sufficient for the employees from a business unit to have a general understanding of what the other units do in their operations. They are familiar with one another's operations but the Advantage courses do not include any specific information about it. The discussion mentioned in section 5.4.1.1 emphasizes this. As one of the instructors replayed to question of whether the other unit's tasks were mentioned on the course: *"…No, that's very little. It is not gone so much into the others tasks actually. But they know it, because they do work as*

directional drillers and work closely with both SLS and MWD, so they are very good know to the whole plan…" (q) (Quotation from interview). The findings indicate that the training material is not meant to function as separate sections but rather as a complete material. To take some training objects from the MWD's Advantage course and make a new session is not possible and is not in the interest of BHI. The organization is faced with constantly new developments and they need to provide the employees with complete training sessions rather than general instructions in Advantage. They might use some of the elements from one specific course, Advantage MWD, to create a smaller session but it would require them to do a lot of editing to make it complete and good training material. BHI has intended that the training material which is put together is supposed to operate as a whole and not as small objects. The aim of their training is to give the trainees knowledge and understanding to be able to use them offshore on the new systems.

Figure 5.29 compare the mechanisms in BHI with what the theoretical framework emphasizes as best practice regarding the content of the learning. The mechanisms show that BHI does not use best practice in this issue. Their profile is summed up in Figure 5.30 where they are placed at the other end of the continuum in relation to best practice.

Component	Best Practice mechanisms	BHI's mechanisms
▪The size and combination of training material	▪Have small chunks of training material; several training objects form a training course material ▪Easy to combine different training objects to new courses	➢Advantage courses are made up by big chunks of training material covering the whole business processes ➢The training material for one course is complex and are developed for one specific unit ➢Not possible to divide training objects from training course manuals to provide new course material for a new session

Figure 5.29: BHI's mechanisms regarding the training material's size and combination

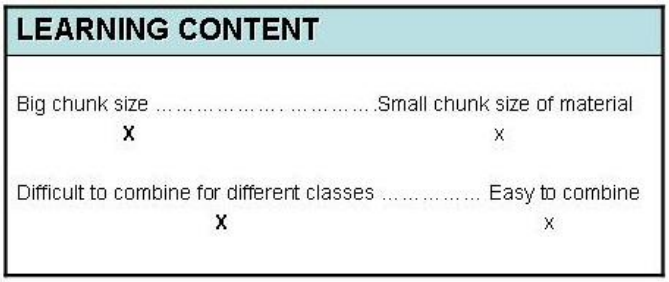


Figure 5.30: The Learning Content dimension's summary model

To be able to assess the training strategy in an organization it is important to have knowledge about the participants in the training, the users. Next section discusses BHI's users.

5.4.4 Users

The last dimension, Users, in the Training Strategy model is based on finding out who the users are. The components which make up the dimension are connected to the trainee's role and where they are placed in the organization regarding job class. In addition the dimension brings focus on the trainee's individual learning styles (see Figure 5.31). The decisions in this dimension are closely linked to the Conceptualization dimension in the Learning Strategy model (See Figure 5.2).

The concept of Best Practice regarding end-user training is to make it continuous. By providing with a learning process that is ongoing it requires the organization to offer different training offerings to be able to cover the trainees' different learning styles. To be able to find out what training methods is correct to use, there is a need for classifying the users and the framework suggests basing it on job class and learning style (See Figure 5.31) (Olfman et al. 2002, Bostrom et al. 1999).

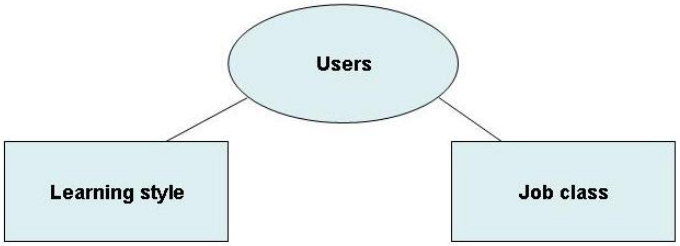


Figure 5.31: Users dimension with components

5.4.4.1 The Job Class and the learning style

The components in this dimension are related to finding information about the trainees and their specifications in relation to the training sessions. It is natural to look at their roles in the organizations and what job class they belong to. These facts will give an overview of what learning styles the different participants should be matched to. Best Practice is to offer different training according to what methods the workforce being trained fit, based on the job class and their individual learning style (See best practice mechanisms in Figure 5.33).

BHI does not attach importance to the fact that their employees may have different ways that suit them best regarding how they acquire knowledge. They run the same type of methods for all without consideration to the employees' individual learning styles. The purpose with the training sessions in Advantage is to give the employees an introduction to the functions in the new system. Enough knowledge will help them to be able to operate the programs offshore without doing damage to the operations they perform (See discussion in section 5.3.2.1, Conceptualization of the training). To be able to give an overview of the system, it is important that the courses cover the main elements and supply with sufficient knowledge about specific things. The different Advantage courses are divided between the different business units, Advantage for MWD, Advantage for SLS and Advantage for DD. The courses are based on profession; meaning specified based on the different business units (From meetings with Bengt Hope). The fact that Advantage is a common platform for the different business units where their tasks in the

system are clearly divided into separate parts makes it natural to train the users by their profession, what business unit they belong to. The individual differences that might appear among the participants are not mediated by offering of any alternative training. The instructors who were interviewed address individual differences by providing extra attention to the ones having difficulties (see quotations in section 5.3.2.3).

BHI's mechanisms within this dimension show that they do not classify the course participants by what learning style they have (See Figure 5.32). BHI offer the same type of training for their employees based on what business unit they belong to, the MWD unit participate on the Advantage course for MWD, etc. They do not use what is defined as best practice in the framework and the conflicts are shown in Figure 5.33.

Component	Best Practice mechanisms	BHI's mechanisms
•The job class and the learning style	•Match users to training methods by job class and learning style	➢BHI run the same type of methods for all participants; classroom training ➢The Advantage courses are formed by the different business units; training courses are based on profession

Figure 5.32: BHI's mechanisms regarding the job class and the learning style

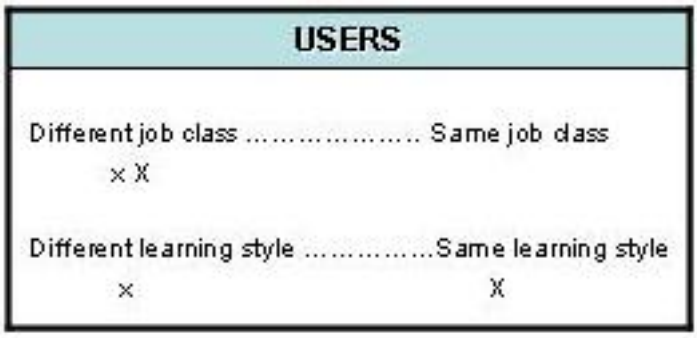


Figure 5.33: The Users dimension's summary model

5.5 Summary

The conceptual framework which is made up by the Learning Strategy model and the Training Strategy model is used as basis for the evaluation for BHI's training unit. The

content of this chapter gave a comparison between the best practice defined in the framework and the practice of BHI.

In relation to the requirements outlined in the theoretical framework there is found several mechanisms in BHI's training that does not place them in line with best practice. The arguments in the evaluation of BHI give them a training strategy that is business focused, with close cooperation between the training unit and the different business units in the organization. But they does not seem to include the workforce regarding offering them the right training setting. BHI should try to supply their training offerings with alternative learning modes to give the trainees possibility to choose the training method that suits them best. The theoretical framework emphasizes the trainees' ability to have self-based training and be more in control of their own training experience. The following two models, Figure 5.34 and 5.35, demonstrate how BHI's profile is compared to best practice defined in the theoretical framework.

The next chapter uses the findings from this evaluation to assess the content in the Learning and Training Strategy models. The evaluation is based on the conflicts which arise between the framework and BHI's practice.

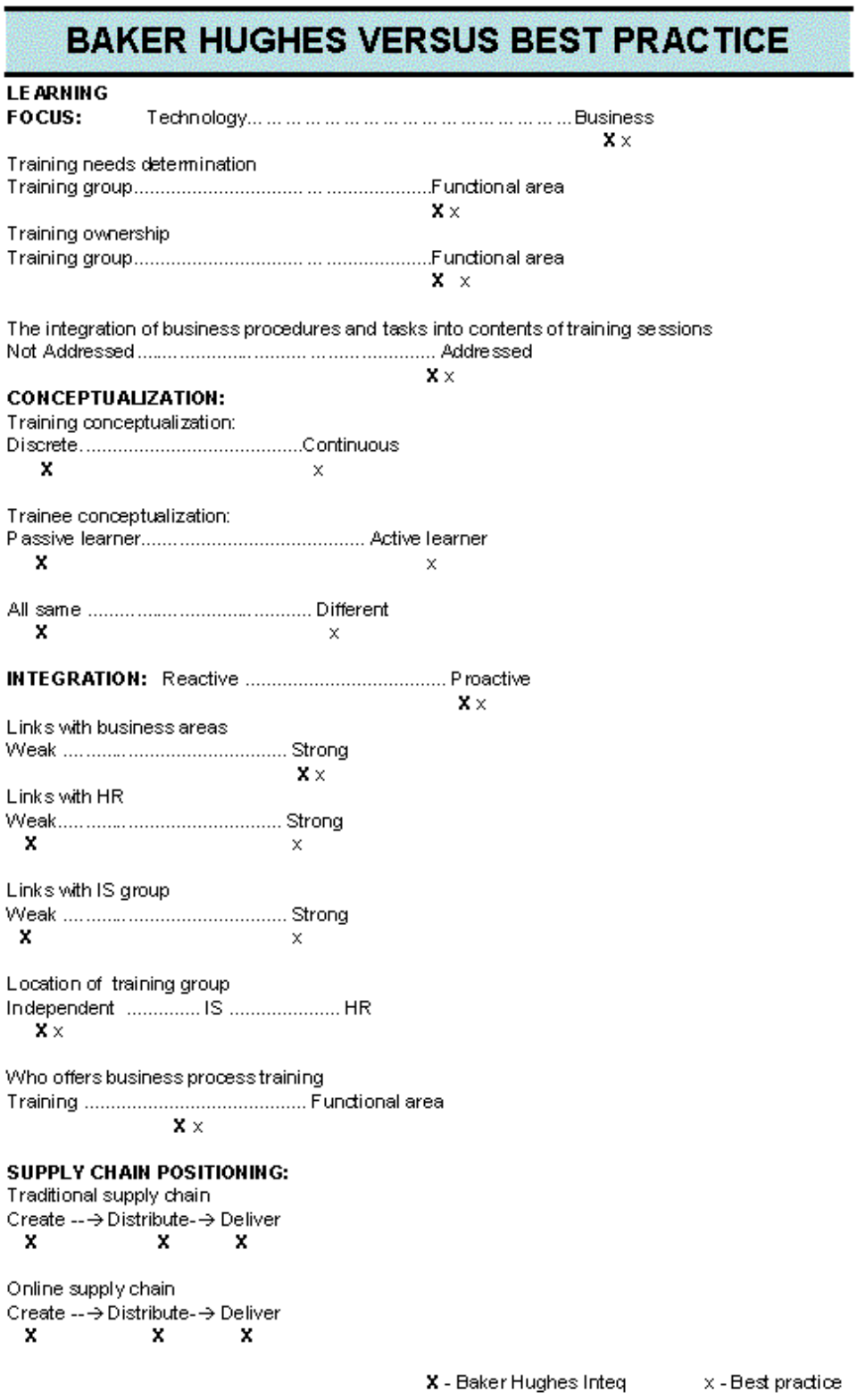


Figure 5.34: BHI's Learning Strategy versus Best Practice

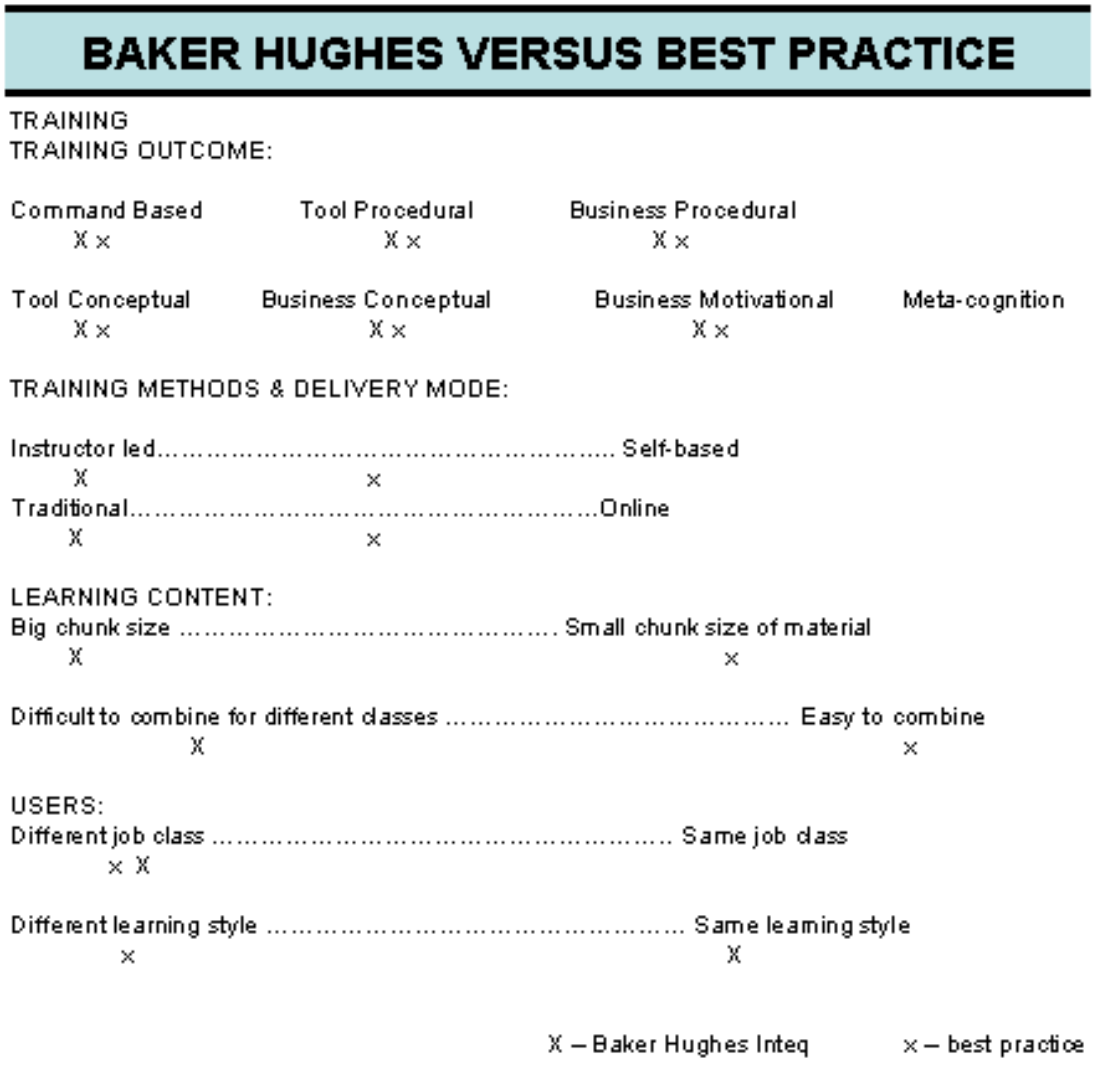


Figure 5.35: BHI's Training Strategy versus Best Practice

Evaluation of the Learning and Training Strategy models

6

The framework which is used in this study forms a strategy on how an organization should structure its training. It consists of a Learning Strategy and a Training Strategy model (Olfman et al. 2002). The requirements proposed by these strategies make up standards to which the CDD at BHI is compared (chapter 5).

The findings from the BHI evaluation form the basis for the content in this chapter. It outlines an evaluation of the conceptual framework based on the practice of end-user training in BHI. The first section presents the research question which frames the evaluation.

6.1 The research question

The purpose in this part of the project is to look at the theoretical framework and evaluate its usefulness in practice. Figure 6.1 shows how the project is divided into two main evaluative studies. One based on BHI as an organization running internal end-user training where their training strategy is measured based on the conceptual framework that Olfman et al. (2002) have developed. In situations where BHI does not follow the models on how things should be done it puts the framework in another perspective. The next evaluation is based on these conflicts; what the models in the framework state as effective training compared to what BHI carries into effect by practice and seems to be effective

training for them. The conflicts which arise form a critique of the components in the framework.

The evaluation has a formative character. The purpose of the evaluation is to provide feedback for the further development so the Learning and Training Strategies can be improved. A more detailed description of the principles in formative research can be found in chapter 4, Research Design. The research question connected to this part of the study is made up by the gap between the framework's present state and desired state; the elements in the Learning and Training Strategies are not fully developed and complete and thus strive towards a fully developed theoretical framework (See Figure 6.1). They form a normative model on how the structure of training should be. A normative model is based on descriptions of how something should be. It gives a definition of what is seen as right and it involves judgment to be able to prove its usefulness.

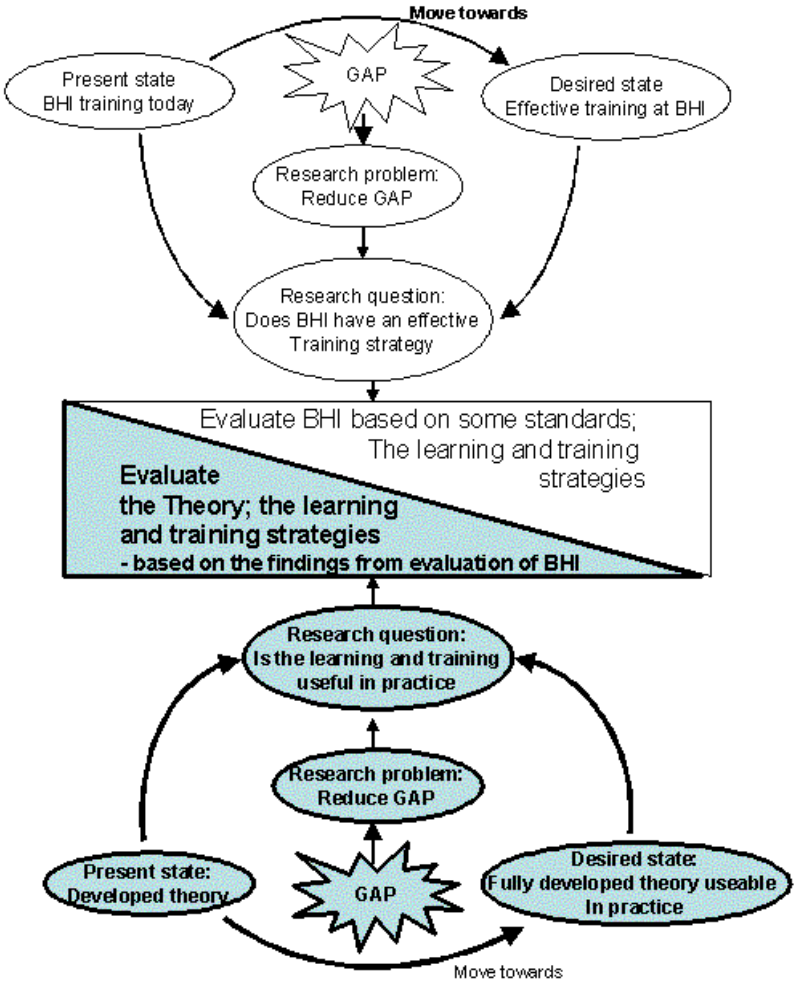


Figure 6.1: The Evaluation Design in this study

The fact that the Learning and Training Strategy models have never been tested fully and in their entirety, stresses the importance of this evaluation. Their basis is mainly taken from actual Best Practices, with supplement elements from literature and experiences of the authors. The real contribution to research is represented by the content of the discussions in this chapter. It gives an explanation of the conflict between BHI's practice and the components in the framework; and addresses why there are lacks in the requirements on how to operate with Best Practice. The discussion is based on the model's definitions where some of their formulations may give the wrong picture of how BHI's training is (see Figure 6.2).

Figure 6.2: Overview of the evaluation of the theoretical framework

The next sections discuss the differences between BHI and the conceptual framework. The close relations between the components which conflict make up a natural classification of this evaluation. The first section gives a description of the models relations.

6.2 The theoretical framework in practice

During the evaluation of BHI's training department, several differences and disagreements came up on what the framework argued to be Best Practice and what BHI practiced as best for them. The tight relationship between the dimensions in the Learning and Training Strategies resulted in conflicts with components from both models. Figure 6.3 demonstrates how the different dimensions are linked and are dependent on each other, and which components are in conflict with BHI's practice (shown in bold and underlined). The definitions which are related in content will be included in the same discussion. The evaluation in this chapter will go back and forth between these components to try to make sense of the conflicts of what Best Practice is.

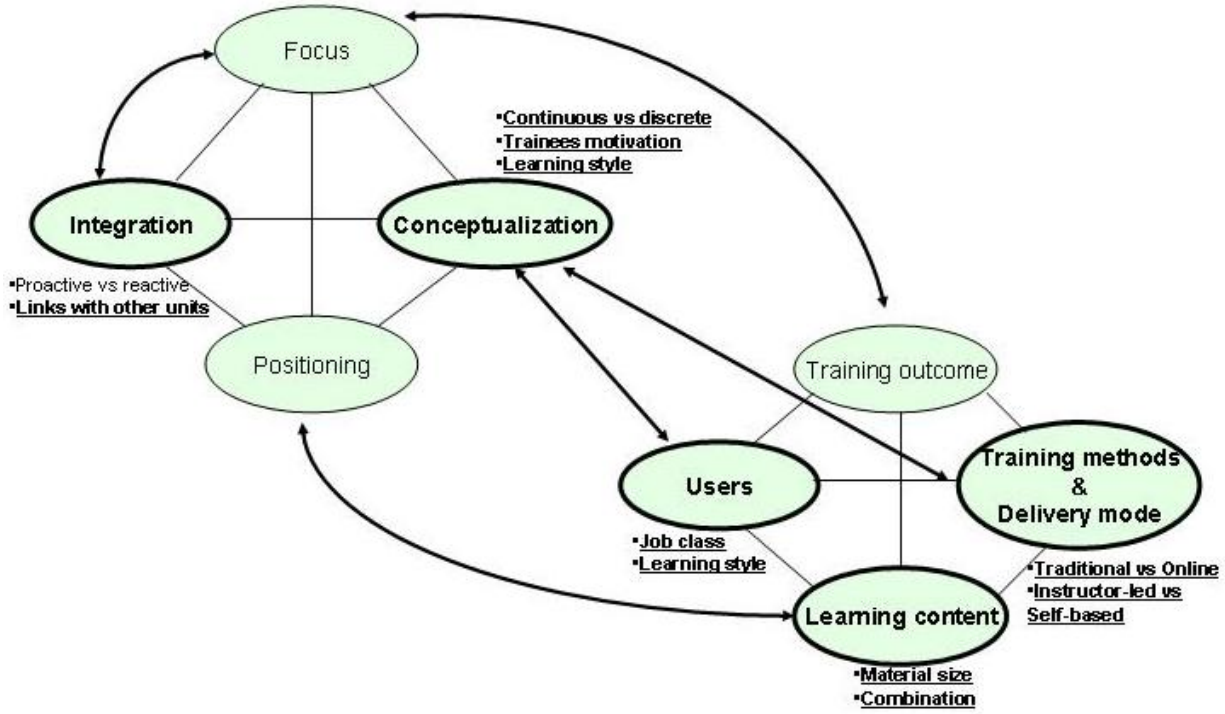


Figure 6.3: The conflicts between the framework and BHI

One of the main differences is related to how BHI views the training process and their trainees. The issues are found in the Conceptualization dimension in the Learning Strategy model and in three of the dimensions in the Training Strategy model; the Users, the Training Methods and Delivery Mode and the Learning content. In addition the findings from the evaluation of BHI question the framework's requirements regarding the training unit's linkage with HR.

These conflicts will be discussed in three separate sections. The first emphasize on continuous learning and BHI, followed by discussion of the requirements for active learners and how the findings conflict and in the latter section an argument of how BHI's training unit are linked with HR and the IS group.

6.2.1 Continuous Learning Process and BHI

The main disagreements between the framework and BHI emphasize on how the learning process in an organization should be. The conflicts which are related to this issue will be discussed in this section.

The main feature in the models on how an organization should accomplish continuous training is to make it ongoing. The framework defines a structure based on different requirements for what an organization should provide to gain continuous learning: *"…a variety of training offerings, training offerings in small chunks, and a delivery mechanism to provide these offerings on a just-in-time and when-needed basis (24x7x365) and a support staff to provide help and tutorials…"* (Olfman et al. 2002:9). Based on these requirements BHI appears to have a discrete learning process.

Regarding the variation in the training methods which is required, the Conceptualization dimension is closely linked to the components in the Users, the Training Methods & Delivery Mode and the Learning Content dimensions (see Figure 6.3). The requirements which make up the main content of these dimensions are based on how the organization should match their trainees to the right learning style and offer a variation in training methods to satisfy the individual differences. The theoretical framework found several organizations moving towards a continuous training mode, thus a continuous learning process is believed to be best practice in the near future.

There are different aspects in the theoretical frameworks' definitions and requirements on how an organization can have a continuous learning process that BHI's practice seems to conflict with. These issues are discussed in three separate categories, learning style, training offerings and ongoing training. The first section describes the differences between the theoretical frameworks' requirements regarding learning style and BHI's way of dealing with the trainee's individual differences.

6.2.1.1 Learning style

The arguments that BHI has a discrete training are based on the fact that they run traditional classroom training. The Advantage course which where observed was run based on what business unit the trainees come from; Advantage for MWD, Advantage for SLS or DD. The courses were formed after profession, but covering the frameworks' requirements for measuring the trainees to see what training mode fits them. One of the aims in the models is to provide a mix of several different offers to satisfy every type of learning style that might be among the employees. BHI does not seem to match their trainees to appropriate training methods based on how they acquire knowledge.

The conflict between the models and BHI is based on the fact that the model requires measurement in a pre-training phase. The definition is connected to mapping the trainees before they participate in the training and the framework do not seem to state that these measurements can be done directly in the training. The fact that several of the instructors at BHI pointed out that they used to measure their trainees indicated that they paid attention to possible individual differences regarding learning style. This may seem as compensation in relation to the frameworks' requirements. As two of the instructors put it: *"…There are always big differences. We have to make sure not to go so fast forward that the last one doesn't keep up. It is regular classroom teaching where we help those who need help. No different methods beyond this…"* (q), *"…If there is someone who needs help during the breaks then they sit behind and ask. But the training is meant to be the same for everybody, and so does the exam…"* (j).

In addition to the instructors' regard for the individual differences that might appear BHI supplement the classroom training with demonstrations and practice on the system in the workshop. When the nature of the course requires it the trainees participate on a simulation of the system to see how to operate it. For example when a course includes programming of a drilling tool this is demonstrated in the workshop. As one instructor put it: *"…We also run simulations of the things we can simulate, where the tool is programmed on the surface while the tool is down in the well/ hole…"* (ø). The

simulation can contribute to a more complete understanding for the trainees and the variation in the training might satisfy the individual differences regarding how to acquire the knowledge.

Despite the fact that the theoretical framework emphasizes on offering variation in training methods to satisfy the learning style differences they have found in their workforce, practice shows that the individual differences can be taken into consideration during the training session. Figure 6.4 shows how BHI seems to see their trainees with the same learning style as a result of the requirements in the theoretical framework. The practice of BHI is basis for a new perspective on the models; where the possibility to measure trainees during the sessions appears to be a good compensation.

The Framework	BHI's profile based on the framwork	BHI in practice	Critique of the framework
•Learning style; measure trainees before training to match them to appropriate training mode, see the trainees as different	•Do not measure their trainees, see them as the same, with the same learning style	➢Instructors take consideration to the differences they might have among their course participants ➢Supply the classroom training with simulations in the workshop	➢Definition/ description on how the trainees can be measured; might include that it can be done during training

Figure 6.4: Learning style

The next section discusses how BHI's situation requires them to execute training the way they do and how the conflict with the theoretical framework seem to be lack in their definitions and requirements.

6.2.1.2 Training offerings

The requirements in the theoretical framework regarding training offerings are connected to different mechanisms; the training should be provided through variation, in small chunks, just-in-time and when needed. The framework emphasizes forming a type of training which summarize these elements. The observations done at BHI give an indication that the model's requirements appears to be from a narrow conceptualization.

Advantage is a complex software system and it is meant to operate as a common platform for the different business units. The main reason for not providing choices within training methods regarding the Advantage course was because of its size. The influence the system has on the business operations offshore is too big to let the trainees take own responsibility for training through online, self-based sessions. It is required that the workforce at BHI be able to exhibit a good performance on assignments offshore without making any mistakes. Their knowledge and operation with the system is crucial for the organization's survival (meetings with Bengt Hope) (See quotation from interview with international instructor section 5.3.2.1).

Though BHI plans to supplement the classroom training with online sessions these are not meant to be a self-based training alternative. The traditional training is BHI's assurance that the participants have acquired the right amount of knowledge. The complexity of the system is a natural consequence to the training session's large amount of material to present to the participants. It is therefore in BHI's interest that they offer training where they can be in control of the participant's knowledge level and make sure that the training gives the right results. The requirements in the framework do not appear to give the organization's the ability to offer training which last over a long period with a large amount of training material. They require the training to be put together by small training objects, which are easy to split and combine to form new sessions. The conflict addresses the fact that in some training processes this is not feasible. Advantage is too complex and big to meet these requirements. If the study was based on observations of smaller and less complicated software the findings might have been that the BHI's training offerings where insufficient. But the project focused on Advantage because of its big influence on the business processes in BHI and its outcome put another view on the theoretical models.

Figure 6.5 shows how the theoretical framework appears to have lack in its definition regarding training offerings. The practice at BHI regarding the Advantage courses may indicate that the models should include descriptions on how to operate with best practice in these situations; where the software is extremely complex and comprehensive.

The Framework	BHI's profile based on the framwork	BHI in practice	Critique of the framework
•Training offerings; variety, small chunks, just-in-time/when needed	•Large amount of training material in one-size fits all training; traditional classroom training	➢Advantage courses to complex and big system to make it feasible to offer variety in training and in small chunks, require the training unit and the business unit's to be in control	➢Definition/ description should include alternative requirements for training in complex systems

Figure 6.5: Training offerings

The elements, the learning style and the training offerings, mentioned above is connected to the conceptualization of the training dimension which aim is to have a continuous learning process. The next section discusses how BHI's practice seems to satisfy the objective of having ongoing training process based on lack in the theoretical framework.

6.2.1.3 Ongoing training

The goal of a continuous learning process is to have ongoing training. The theoretical framework requires different aspects to be in place to be able to say that an organization has ongoing training. But the main purpose is to prevent the training from being finished when the training sessions end. Based on this issue BHI's practice reveals that the framework does not explicitly includes what seems to make their training continuous; on-the-job training.

Based on the components in the framework BHI's training is assessed as having a start to finish structure. The models do not explicitly state the possibility to provide continuous training based on practice in the field, through on-the-job training. The aim for BHI is to give the employees an introduction to new software through classroom training. It is when they use the system in practice they really learn how it works. According to an instructor: *"…It is an introduction. You learn by working with it on your own, one course does not make you an expert…"* (k). In addition to the training sessions the training manuals are handed out to arrange for them to be able to operate the new system. Thus it is not a definite start and finish as the framework defines it. As one instructor put it:

"…Our aim is to make it ongoing… to make the organization what they call as a learning organization…" (i). The fact that the training process is not looked upon as finished when the course session is over, indicates that BHI has an ongoing learning process; they do not see the participants as experts after attending a course but rather as employers with enough knowledge to start off and learn more on the job.

In situations where the employees practice the new technical knowledge offshore BHI provides them with Technical Support (TS) in cases where they need help. TS is based on the frameworks' requirements to offer help during the training sessions. When they work with Advantage or any other system offshore they can at any time call TS to receive back up. The fact that TS is available for the workforce operating on new systems indicates that BHI offer support in their on-the-job training.

The fact that BHI emphasizes practicing as an important part of their training indicates that they use best practice regarding how it is best for them. The descriptions in the theoretical framework do not seem to include practice as a criterion for continuous learning. Figure 6.6 demonstrates how this may appear as a lack of broad definition in the Learning Strategy model.

The Framework	BHI's profile based on the framwork	BHI in practice	Critique of the framework
•Continuous learning; training is part of the ongoing learning process	•Discrete training; start-to-finish through classroom training	➢Continuous; continue the training in practice through on-the-job training	➢Definition should be broader and include practice as part of the training

Figure 6.6: Ongoing training

In relation to continuous training the conceptual framework includes the importance of having active learners. The next section looks at how the requirements from the models fit the practice at BHI.

6.2.2 Active learners and BHI

The conceptualization of the trainees as active means that they are able to operate as active learners in an ongoing learning process. It is required of them to actively seek out training experience. The framework's definition of a continuous learning requires a motivated trainee. To gain a learner's motivation, there has to be a responsibility throughout the workforce to achieve new knowledge and understanding. The choices of training offerings are factors making it possible. The fact that BHI has a discrete training mode does not automatically mean that their trainees are passive, but the setting does not require active learners. BHI's employees are not actively seeking out new courses to attend, but rather assigned on by their manager and the competence groups. Based on what the theoretical framework requires these findings indicate that BHI does not appear to use best practice. But the discussion regarding BHI using on-the-job training as a part of their training puts the view of what to define as an active learner in another perspective.

The training at BHI is not looked upon as over when the course is finished. BHI leads it up to each employees to have own responsibility to practice what they have learnt on the courses. They are supposed to operate on the systems in accordance with the instructions on the course. It is their own responsibility to be able to perform the tasks offshore in a satisfying way. The fact that BHI emphasizes a large amount of the training on-the-job indicates that their employees have to be active to accomplish the sufficient knowledge and understanding. The following quotes from instructors illustrates this: *"…I don't think after any training course they'll be experts. But they know enough to start off and they know enough then to ask questions and be able to build on their own knowledge…"* (i), *"…You learn by working with it on your own. One doesn't become an expert by taking courses…"* (k). The trainees at BHI give expression of engagement regarding their own knowledge. It proves of an active learner during the practice; on-the-job training.

Another aspect regarding how active the trainees are is related to their actual participation on the courses. In several courses BHI uses local instructors to run the sessions. The aim

with the classroom sessions is to operate with active participation from the trainees. They are supposed to share their knowledge and experience with the others. The level of experience might vary in the different training groups, and the instructor does not have to be the one with most experience. Thus it is important that the courses are of such a nature that the participants can share their knowledge and experience (From meetings with Bengt Hope and observations of the courses). The fact that the participants contribute in the courses making them active learners also reflects the overall objectives in the organization where Baker Hughes' core values is related to the importance of sharing resources and working in as a team (See section 5.3.1.1) (See Appendix C).

Figure 6.7 shows the differences between the theoretical framework and BHI and it illustrates how their practice puts the definition of what an active learner are in a new perspective. BHI demonstrates that the requirements in the model should include the learner's possibility to be active in the actual training setting.

The Framework	BHI's profile based on the framwork	BHI in practice	Critique of the framework
•Active learners; actively seek out training experience	•Passive learners; the employees get assign on by their leader and the business unit	➢Learners active in the practice; on-the-job training by having own responsibility to seek knowledge and get the right understanding ➢Active participants in the training courses; share their knowledge and experience	➢Lack in definition; active learners should include learners in the actual training setting

Figure 6.7: Active learners

The conflicts between the theoretical framework and BHI's practice have so far involved the models lack of broad definitions. The next section involves conflict with BHI based on their structural context. It is connected to the training units linkage with the Human Resources and the IS group.

6.2.3 Linkage and BHI

The framework emphasizes forming of cross-functional teams between the training unit and other functional units in the organization. The aim is to use HR and a reward system

to maintain the trainee's motivation and help them actively seek training sessions. The IS group is supposed to make sure that the training is included in planning of new software systems. In relation to the model's definition on how to operate with a continuous learning process and a proactive stance it is crucial to have these linkages among the different business units and the training department. These requirements conflict with BHI's overall organizational structure. The findings from this study put the frameworks' view on the training unit's linkage with other units in a new perspective.

The training unit at BHI does not operate with cross-functional teams where every business unit and functional unit is involved with the administration of the training. The structure of the training department connects the different business units through the competence groups (See chapter 3 and section 5.3.3.1). Their relationship with HR is evident through a career advancement system for their offshore workforce called INFACTS. It is a competence register for each employee who contains the grade for all employees (From observation and meetings with Bengt Hope). The system is based on how much training an employee has. After a number of courses, the employees climb the advancement career system and eventually receive a new job title. The development of INFACTS was done by INTEQ's technical training unit in Houston. The processes regarding placement and advancement of titles and profession in the workforce is owned by the business units together with HR.

The training unit's link to the HR department is provided through INFACTS, which reflects that the training builds on HR policies. INFACTS is evidence that HR interests regarding advancement among the workforce are accomplished. These findings conflict with what the models require as best practice. Figure 6.8 demonstrates that the theoretical frameworks' requirements regarding teamwork within the training administration appears unnatural for BHI regarding their structural context.

In addition BHI's organizational structure may seem as an important factor regarding the training units linkage with the IS group. The aim in the framework is to accomplish a strong link to IS to maintain focus on training in an early stage of new developments and

implementations. The fact that it is the different business units at BHI which is in charge of new developments prove that the best practice objectives are accomplished by the cooperation between the training unit and the competence groups (See section 3.4.3 End-user training at BHI). Baker Hughes operates with a product and development management process which includes the planning of training at an early stage (See Appendix D). The involvement of the IS group, BHBSS, is mainly related to the implementation and operating of the software. As the head of the training unit puts it: *"…it is usually the different business units (MWD, SLS, DD) which runs the development. When it is talk about development of software usually the IS personnel around the world are involved with the implementation and operation, and some times development…"* (From Bengt Hope). In relation to the local BHBSS unit the training unit depends on them to deliver the right equipment they need to run the classroom courses.

The organizational structure in BHI is the main reason for their practice to conflict with the theoretical framework. Strong linkage with HR and the IS group is emphasized as important components in the administration of an organization's training. BHI seems to operate with what is best for them and in accordance with what the models emphasize but with another structure. Figure 6.7 shows how the framework seems to have lack in alternatives for different structural contexts based on the fact that BHI uses best practice in their administrational setting.

The Framework	BHI's profile based on the framwork	BHI in practice	Critique of the framework
•Strong linkage between training unit and HR and the IS group; cross-functional teams	•Weak linkage; no cross-functional teams	➢The structural context in BHI demonstrates why there is not a strong linkage with HR and the IS group	➢The frameworks' requirements of best practice regarding cooperation and linkage should be defined with consideration of how the structural context in the organization is

Figure 6.8: The linkage with HR and IS group

The sections above make up the conflicts that appeared between the theoretical framework and BHI's practice (See Figure 6.3). The dependence between the components in the two models, the Learning and Training Strategies, made a natural classification of this evaluation. The next section gives a summary of the discussions.

6.3 Summary

There are several elements found in this study that provide feedback to both the practice at BHI and the theoretical framework used. The importance of evaluations is connected to help achieve their respective objectives to be improved.

The evaluation of the Learning and Training Strategy models are based on how their content could be used in practice. The findings in this study show that there are several requirements that seem to have a narrow definition in relation to BHI's training units practice. The frameworks' structure is mainly based on other companies' practice and how their organization of the training seemed as best practice. It is therefore not accurate to use the findings in this study to say that the models definitions and descriptions are wrong. The models' content is shown to work for organizations to maintain effective training based on best practice. This study reveals some of the parts in the models which might appear to have lacks.

Discussion and Conclusion 7

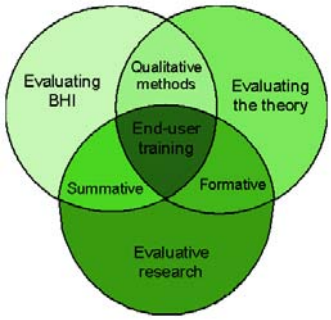
The two pervious chapters have presented an evaluation of the strategy of end-user training in Baker Hughes INTEQ (BHI), and given an evaluation of the conceptual framework (Olfman et al. 2002) which was used to assess the organization. The content of this chapter outlines a discussion and conclusion based on the findings from the two evaluations. Recommendations for future research work in relation to the framework and future plans for BHI's training strategy are discussed at the end of the chapter.

The first sections give a short description of the research questions which frame the two evaluations and of the research methods which were used to answer these questions.

7.1 The research questions

The aim of this research project was to find out whether BHI operated with effective end-user training. The purpose was to use a theoretical framework, which consists of Learning and Training Strategy models (Olfman et al. 2002), to have some standards with which to compare BHI. In addition the findings from the evaluation were used to assess whether it was possible to use the conceptual framework in practice. The questions were:

- *Does Baker Hughes INTEQ have an effective learning and training strategy?*
- *Are the Learning and Training Strategy models practicable?*



The research questions formed two separate evaluations. The evaluation of BHI's training strategy was a summative evaluation, which emphasizes on giving an overall judgment of its effectiveness. The evaluation of the Learning and

Training Strategy models was based on improving the framework and the study had a formative character.

The next section outlines the research methods that were used in the evaluations. It gives an explanation of how the findings were conducted and what kind of information they gave.

7.2 The research methods in the study

The basis for this study was to bring an overall understanding of how BHI operated regarding their training and how the framework worked in practice. The findings depended on giving insight and understanding on how both elements worked based on each other. The purpose was to perform evaluative research. The study formed requirement to use research methods that would provide with a "thick description" where the findings would *"…illuminate the people behind the numbers and put faces on the statistics, not to make hearts bleed, though that may occur, but to deepen understanding"* (Patton 2002:10). The quotation is used by Patton to illustrate what qualitative findings in evaluation are supposed to do. The data collection in this study was based upon three basic methods within qualitative approach; interviews, observation and document analysis (For more details see chapter 4, Research Design).

The interviews and the observations were done in connection with courses on a software called Advantage that were run at BHI's training department in Tananger called Competence Development Department (CDD). The aim was to get an insight of what the training sessions was like, their content and what the participants felt about the training. The outcomes from the interviews and the observations were used in both evaluations to underline aspects which were involved. The more important data collection method was based on the meetings with the head of the training unit, Bengt Hope and documents which were available on BHI's Intranet. These sources gave overview of the organization and administration of the CDD. The components in the framework formed the basis for

things to emphasize on and look after in the data collection phase. The framework contributed to the high quality of the data by being actively used during the collection.
The next section outlines the content of the evaluative research studies that were done in this project; the assessment of the effectiveness of the training strategy at BHI with basis in a conceptual framework and the framework's practicability.

7.3 The findings in the study

The evaluation of BHI was based on the content of the two strategy models. Their dimensions and components made up a natural classification of the assessment, where BHI's outcomes regarding these aspects were outlined. The following section makes a sum up of how the training unit at BHI did regarding the requirements in the conceptual framework. In addition it outlines what elements in the framework that should be improved. Based on these elements a conclusion will be drawn.

Based on the requirements in the framework BHI has business focused training. They emphasize on providing training which is in line with business objectives. The training unit works independently of the other functional units in the organization, but has close cooperation with the business units (MWD, SLS and DD) through their representation in the competence groups. Other functional units, such as HR and the IS group have weak linkage with the BHI's training department. Regarding the execution of the training they appear to have a discrete training mode with a definite start and finish in a traditional context, i.e., classroom sessions. Some of the classroom courses are supplemented with online material but it is not a normal procedure. Baker Hughes (BH) and BHI have full responsibility for creating, distributing and delivering the training material and the training. Based on the requirements in the models BHI has got passive learners where they are seen as the same regarding learning style and therefore BHI provides them with the same training methods without consideration of the individual differences. The courses are formed based on profession; they provide training courses adopted for each business unit, Advantage for MWD, SLS or DD. The trainee's knowledge level satisfies

what the framework requires; the trainees gain an overall understanding of the system and learn how to use it to solve business operations.

This summary is literally and strictly based on the requirements explicitly stated in the framework. The evaluation of the models are based on the elements where BHI's practice turned out to have a somewhat different outcome than what the definitions in the models suggested. The evaluation of BHI gives a new perspective on the framework based on the shortcomings in the models.

The Learning and Training Strategy models do not adequately define a continuous learning process. BHI appears to have ongoing training in spite of what the framework says, with on-the-job training. In addition to this type of training in practice, BHI requires that the trainees ensure that they have the right knowledge. It is the trainees' own responsibility to practice on the software until they are confident of operating on it. The control of own knowledge level makes them active in the training process to achieve the right level. In addition, the classroom sessions are based on sharing knowledge and experience, where the trainees are supposed to participate on a same level as the instructor. These issues have relation to the theoretical frameworks' definitions on how to operate in accordance with best practice.

Further the theoretical framework does not address the different structural context that might exist in organizations. Findings from the evaluation of BHI show that their organizational structure appears to qualify for best practice despite the fact that the requirements in the models place BHI's practice on the opposite end. BHI has demonstrated that relation with both HR and the IS group can be strong based on informal cooperation. The frameworks' focus on forming cross-functional teams with the IS group is related to the interests of including training at an early stage of the development. The CDD's administration emphasizes strong linkage with the business unit which is in charge of new developments and in control of the training needs in the company. BHI's organizational structure demonstrates that they do satisfy this issue. In addition their training is coordinated with reward system, a career advancement system

(INFACTS) to gain involvement from the employees regarding their own knowledge level. HR has indirect involvement in the CDD.

The next section outlines the summary of the two evaluations with a conclusion based on the research questions.

7.4 Conclusions

This study emphasized BHI's training and its effectiveness and the framework's usefulness in BHI's situation. Based on the evaluations a conclusion can be drawn in relation to the questions asked. This section gives a short description of the results.

Based on the findings in this study, BHI seems to have several issues they need to consider to be able to have best practice in accordance with the definitions in the framework. If they want to operate with effective training they need to offer choices to the trainees regarding training method. It is obvious that the organization is aware of the workforce's individual differences and they should try to meet these differences and match their trainees to the right learning style. In relation to complex training sessions like Advantage, BHI should emphasize on including a pre-training stage to make the trainees prepared. Their practice within supplementing the classroom sessions with online material should be further developed and formed as a standard part of the training.

In relation to the conceptual framework the study demonstrated that it is possible to use it as basis for assessing an organization's structuring of the training. But the findings from evaluation of BHI unearthed deficiencies in the definitions of model concepts and its guidelines on how to operate with Best Practice. It is important to note that the rapid changes in the technological development also influences the training structure; what might be best practice today can lead to death of a company tomorrow. It refers to the importance of constant improvement to find out what best practice is in relation to end-user training. It requires research.

When the conclusion is made it might form the basis for new perspectives on the study. The next section discusses how the study can be taken to another level based on other assumptions.

7.5 Limitations of the study

After a research study the researcher might find new aspects within the project that should have been included or that others might continue to work on. This study provides feedback to both BHI as a practicing end-user training organization and to the theoretical framework which was developed to help organizations formulate the right strategies in relation to training. The basis for this study is the complex software called Advantage.

The observations and interviews with course participants and instructors were taken from the same type of training sessions. The courses represented training in Advantage based on the different business units; Advantage for MWD, Advantage for SLS or DD. Advantage forms a common platform of programs for the units. To be able to form a stronger critique of the models it will require studies of other types of software and organizations. It is thus clear that the main limitation of the study is connected to this issue, the specific setting of the software and the organization.

7.6 Implications for BHI

When the project started, BHI had already made plans for how they were going to develop their training to gain better training offerings for their workforce. These thoughts were in the initiation phase and the actual changes were not included in their plans before 2005 and thus were not taken into account in this project. The plans involved a new learning management system, LMS, which incorporated e-learning into their training.

This issue relates to the conclusion made in the study that BHI should offer a variety of training methods to their employees. It is recommended that BHI continue to develop their training structure. Studies from American Society for Training and Development,

ASTD, confirms the importance of including training in the technological development. They need to see how training is a big part of the success of a new implemented information system.

7.7 Implications for research

Regarding future research based on this study it would be interesting to use the framework in a new evaluation to form a more in-depth overview of the training outcome. In BHI, it would have been interesting to include a more detailed study of the participants and to see whether their knowledge level is in accordance with the opinion of the training department. A natural extension would be to replicate the study for a different type of software and in an organization with a different structure than BHI, for example; a smaller and less complex system maybe more suitable for smaller chunk sizing which is considered best practices in the framework.

Research within best practice in end-user training should emphasize the fact that there are rapid technological changes which might influence what is seen as best solution regarding how to gain effective training. The development might involve structural reorganizations, thus future research should follow and be constantly updated on what to define as best practice.

Hopefully, this research study has contributed to further development of the conceptual framework, the Learning and Training Strategy models (Olfman et al. 2002) and for the future training at BHI. The findings from the study of BHI's training strategy might help them to plan for further effective end-user training and that the findings regarding the framework might help the developers to make adjustments so it might be more complete.

It is also to be hoped that this evaluative study has given the reader an understanding and insight into the importance of training in organizations. Finally, it is hoped that the

experiences regarding the theoretical framework can be of interest to possible future new theory developments within end-user training.

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APPENDIXES

A. Baker Hughes' Business divisions
B. Interview guide
C. Baker Hughes' Core Values and Keys to Success
D. Product Development Management (PDM)
E. Advantage's placement in the Knowledge Level model

APPENDIX A

Baker Hughes’ Business divisions

Best-in-Class Technology for Breakthrough Results

Baker Atlas | **Baker Oil Tools** | **Baker Petrolite** | **Centrilift** | **Hughes Christensen** | **INTEQ**

Best-in-Class Technology for Breakthrough Results

Centrilift

Rotating artificial lift technologies including electrical sub-mersible pump systems and progressing cavity pumps

Baker Atlas

Wireline- conveyed well and data analysis for formation evaluation, production, and reservoir management

Baker Petrolite

Chemical solutions for the production, transportation, refinery and petrochemical industries

Chemical technology solutions for the hydrocarbon, transportation, and process industries

Hughes Christensen

Tricone® and PDC drill bits and drilling optimization services

INTEQ

Directional drilling, measurement-while-drilling, logging-while-drilling, drilling fluids, and well-site information management services

Baker Oil Tools

Completion, workover, and fishing technologies and services

APPENDIX B

Interview guide

Interview guide

Questions for the trainees

- What are your title/ job?
  Hvilken tittel/ stilling har du?

- Can you tell me about this new Software? How is it? How do you use it?
  Kan du fortelle litt om det nye verktøyet? Hvordan er det? Hvordan brukes det?
  - When do you need this SW in your job? What are you going to use this SW for?
    Når trenger du det nye verktøyet? Hva skal du bruke verktøyet til i din jobb?
  - What do you think of the new Software?
    Hva synes du om det nye verktøyet?
  - What influence will the new SW have on your job?
    Hvilken innvirkning vil det nye verktøyet ha på din jobb?

- Can you tell me something about the course material for this course?
  Kan du fortelle litt om pensumet I dette kurset?

- Why do you take this course? What is your motivation for it?
  Hvorfor deltar du på dette kurset? Hva er din motivasjon?

- What do you know about the other units, MWD, SLS, etc, and how they use Advantage? Do you learn anything about them on the course?
  Hva vet du om de andre avdelingene, MWD, SLS etc. og hvordan de bruker Advantage? Lærer dere noe om dette på kurset?

- Can you tell me something about how BHI's product is developed? The process? What are your tasks in the process?
  Kan du fortelle litt om hvordan BHI's produkt skapes? Prosessen? Hva er dine oppgaver i prosessen?
  - Do you know something about the other units regarding this process? What do they do, what do they deliver?
    Vet du noe om de andre avdelingene, MWD, SLS, etc. mht denne prosessen? Hva gjør de, hva leverer de?
  - How is the interaction with the other units?
    Hvordan er interaksjonen med de andre avdelingene?

- What do you think of the training? Something done different? Relevant for your job?
  Hva synes du om opplæringen? Ting gjort annerledes? Relevant for din jobb?
  - What do you think of the follow ups? Are there any?
    Hva synes du om oppfølgingen? Er den noen?

- How do you judge your own knowledge after this course?
  Hvordan bedømmer du din egen kunnskap etter dette kurset?

Questions for the international instructor

- What is your title?

- What kind of training do you do?
  All kinds or specific ones?

- How do you prepare for the training?
  How do you receive training in the Software?

- How is your relationship to the use of the Software as an instructor?
  Do you have any experience using the Software in work situations?

- What do you think of the Software (DrillByte)?

- What, in your opinion as an instructor, are the objectives of the training?

- How do the students prepare for the training?

- What kind of training methods do you use?

- Do you think the methods are appropriate for the students?

- Do you think there are differences between the students?
  Individual differences? What can these be?
  How do you deal with these differences?

- What kind of evaluation do you use?
  To measure the training results?

- Are there any follow-ups after the training?

- How do you think the students feel about the training?
  What motivation do they have?
  What do they think of the training? Benefits, etc.

- What do you think is the main goal for the company/ BH regarding training?

- What do you think of the organization of this training centre?

- How do you view the training process in this organization?
  - In general, start - end, or ongoing?

Questions for the local instructor

- What is your job?
  Hvilken stilling har du?

- What title do the participants on this course have?
  Hvilken stilling har kursdeltakerne på kurset?

- How have you received training in this Software?
  Hvordan har du mottatt opplæring i dette verktøyet?

- What do you think of the Software?
  Hva synes du om verktøyet?

- What type of course is this? What are you going through?
  Hvilken type kurs er dette? Hva skal gjennomgås?

- What, in your opinion as an instructor, do you think is the objectives of the training?
  Hva, etter din mening som instruktør, er målet for opplæringen?

- Can you tell something about the content of the course material? Theory or theory/ exercises etc? Are the other units' tasks in Advantage mentioned in the material?
  Kan du fortelle litt om innholdet i pensumet til dette kurset? Teori el teori/ oppgaver etc? Nevnes de andre avdelingenes arbeidsoppgaver i Advantage i pensumet?

- How much knowledge do you have on the other units' tasks in Advantage?
  Hvor mye kunnskap har du om de andre avdelingenes arbeidsoppgaver i Advantage?
  - How much knowledge do you think the students have on the other units' tasks in Advantage?
    Hvor mye kunnskap tror du kursdeltakerne har om de andres arbeidsoppgaver i Advantage?
  - Is there any interaction between the different units? How? (Describe with use of use case etc.)
    Er det noen form for interaksjon mellom de ulike avdelingene, mwd, ddx, sls…? Hvordan? (Beskriv i form av use case el.l.)

- How do you measure the result after the training? What kind of evaluation?
  Hvordan måles resultatet av opplæringen? Form for evaluering?

- Is there any follow ups after the course?
  Blir det lagt opp til oppfølging av kursdeltakerne etter kurset?

- How do you look upon the students, are there any individual differences? How do you deal with those?
  Hvordan ser du på studentene, er de like eller forskjellige? Hvordan løser dere disse individuelle forskjellene?

Questions for the head of CDD at Tananger, Bengt Hope

First meeting

- Hvordan ble det bestemt å holde disse kursene på denne tiden?
  How was it decided to hold these courses at this time?

- Er det en rutine, eller er det på grunn av en hendelse i BHI?
  Was it routine, or was it driven by some event or other happenings in BHI?

- Hvem betaler kostnadene for kursene?
  Who pays the cost of the training?

- Hvordan blir studentene plukket ut til å delta på kursene?
  How were these specific students picked to attend the training?

- Foretar dere noen form for evaluering av studentene?
  Do you have a kind of evaluation on your students?

Second meeting

- Hva er hovedpådriver for opplæringen? Teknisk eller business?

- Hvordan oppfattes studentene? Med hensyn til motivasjon?
  Aktive eller passive?
  Mht stil? One size fits all? Eller riktig opplæring til riktig student?

- Hvordan opplæringsorganisasjonen ser på sin rolle og det konsekvente behovet for å linke med andre nøkkel områder av organisasjonen?
  Områder som IS, HR og funksjonelle avdelinger…
  Holdning? Er avdelingene proaktive eller reaktive?
  Integrering? Svak eller sterk? Mht link til avdelingene?

- Hvor i læringsprosessen organisasjonen plasserer seg selv?
  Skape, distribuere og/eller levere?
  (både i tradisjonell klasserom læring og ved online læring)

Third meeting

- Hvordan er organisasjonsstrukturen i denne bedriften?
  Hvordan vil du plassere opplæringssenteret? Hvem er din sjef/ leder? Hvordan er linken til Human Relations, og til IT avdelingen, etc?

- Hvordan bestemmes budsjettene til senteret til neste år?
  Hvordan bestemmes budsjettene til produksjonslinjene mht opplæring?

- Har dere en plan for neste år?

- Hvilken rolle har senteret? Inntektskilde? Tjener dere penger på dette?

- Organiseringen av opplæringen er business orientert/ business drevet!
  Behov fra linjene som setter i gang kursene
  Enig # Uenig?

- Hvordan lagrer dere spørreskjemaene/ evalueringsskjemaene?
  Hvordan går dere igjennom skjemaene? Kvantitet # kvalitet?

- BHI prosessen: hvordan skapes "produktet" dere leverer?
  Hvordan ser produktlinjen ut? Enkel beskrivelse/ tegning på dette?
  # eller har avdelingene hver sin produktlinje?

- Hvordan evaluerer dere dere selv?
  Evaluering av hele strategien, ikke bare evaluering av hvert enkelt kurs

- Hvordan er forholdet til Aberdeen og Houston?

- Online testing i framtiden, hvem skal foreta den?

- Er kursene stillingsorientert?
  Kategoriserer dere studentene mht roller og stillinger? Er senior MWD-ere på et kurs eller miks?

- Er det en link mellom avdelingene når de har kurs?
  Er flere avdelinger representert på et kurs eller er det kun MWD-ere på MWD kurs?

- Hvor mange antall ansatte er det på hver avdeling? MWD-ere, SLS-ere, DDx-ere?
  Hvor mange jobber offshore og hvor mange onshore?

- Hvem foretar organiseringen og kjøringen av tradisjonell opplæring, som office produktene?

Fourth meeting

- Hvordan velger dere instruktørene? Hvilke metoder bruker dere?

- På hvilken måte evaluerer dere instruktørene?

- Hvordan ser dere på opplæringen? Ongoing # discrete?
  Hvilken type støtte gir dere for den fortsettende opplæringen?
  Hvis ikke: finnes det en plan for å gjøre dette i framtiden?

- Har dere tenkt på å dele opplæringen inn i mindre deler?
  Dvs trene de ansatte i små moduler om gangen, en halv dag, istedenfor en stor treningsmodul over flere dager/ uker.

APPENDIX C

Baker Hughes' Core Values and Keys to Success

About Baker Hughes

Core Values and Keys to Success

"Building a culture is not just words – it's a legacy," --Mike Wiley, *Chairman, President, & Chief Executive Officer*

The Baker Hughes Core Values and Keys to Success are the basis for establishing a common culture for Baker Hughes. Our Core Values are: *Integrity, Teamwork, Performance, and Learning*. Our Keys to Success are four priorities that should guide decision-making in Baker Hughes: *Engage People, Deliver Value, Be Cost Efficient, Resource Effectively*.

Core Values

Integrity:
We believe integrity is *the* foundation of our individual and corporate actions that drives an organization of which we are proud.

- We are a responsible corporate citizen committed to the health and safety of people, protection of the environment, and compliance with laws, regulations, and company policies.
- We are honest, trustworthy, respectful and ethical in our actions.
- We honor our commitments.
- We are accountable for our actions, successes and failures.

Teamwork:
We believe teamwork leverages our individual strengths.

- We are committed to common goals.
- We expect everyone to actively participate on the BHI team.
- We openly communicate up, down, and across the organization.
- We value the diversity of our workforce.
- We willingly share our resources.

Performance:
We believe performance excellence will drive the results that differentiate us from our competitors.

- We focus on what is important.
- We establish and communicate clear expectations.
- We relentlessly pursue success.
- We strive for flawless execution.
- We work hard, celebrate our successes and learn from our failures.
- We continuously look for new ways to improve our products, services and processes.

Learning:
We believe a learning environment is the way to achieve the full potential of each individual and the company.

- We expect development throughout each individual's career by a combination of individual and company commitment.
- We learn from sharing past decisions and actions, both good and bad, to continuously improve performance.
- We improve by benchmarking and adopting best practices.

Keys to Success

People contributing at their full potential.
Everyone can make a difference.

- We understand our priorities and performance goals.
- We drive to do our part every day.
- We support new ideas and take appropriate risks.
- We take action to find and correct problems.
- We commend each other on a job well done.

Delivering unmatched value to our customers.

- We make it easy for customers to do business with us.
- We listen to our customers and understand their needs
- We plan ahead to deliver innovative, cost-effective solutions.
- We are dedicated to safe, flawless execution and top quality results.

Being cost efficient in everything we do.

- We maintain a competitive cost structure for the long-term.
- We utilize shared services to control cost for the enterprise.
- We seek the best value for Baker Hughes in our relationships with suppliers.
- We ruthlessly eliminate waste without compromising safety or quality.

Employing our resources effectively.

- We assign our people where they can make the biggest contribution.
- We allocate our investments to leverage the best opportunities for Baker Hughes.
- We handle company assets as if they were our own.
- We manage our balance sheet to enhance return on investment.

APPENDIX D

Product Development & Management Process (PDM)

APPENDIX E

Advantage’s placement in the Knowledge Level model

Knowledge Level	**Advantage** (Integrative Application Software Example)
1. Command-Based Syntax and semantics	How to start the program, click menu, choose program, etc Command-based manuals in all courses, with print screen of the basic things Mouse click on a button to enter a log
2. Tool Procedural *Combining commands to do generic tasks*	Create a log in Advantage
3. Business Procedural *Application of tool procedures to a task*	Task based knowledge Put in the right parameters in the log, query the program for data output (receive info from the program), give the information to the client, etc.
4. Tool conceptual *The big picture of what to do with the tool*	Ex from the manual in Advantage, introduction: "What is Advantage? (concept, vision, etc)"
5. Business conceptual *The big picture of where the specific business process fits in the organization*	Use real life business examples and exercises in the training
6. Business Motivational *What can the tool do for the trainee and the organization*	Instructor led, with local instructors explaining how the new Software is to be used offshore, how the job is going to be done with the new Software
7. Meta-cognition Learning to learn	Not covered (Teach learners to use the learning cycle in exercises)