Tailored courses – a road to learning for shipping companies

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Abstract

This study focuses on individual and organizational learning, and attempts to measure the individual and the organizational learning of a tailor-made Bridge and Engine Resource Management course in a short and long-term horizon. The tailor-made course is fitted to a specific shipping company. The research questions in the study are: *Does tailored Bridge and Engine Resource Management courses contribute to individual and organizational learning within the participating shipping company? If individual and/or organizational learning could be identified, what has been learned?*

By study the research questions, it is found that individual and organizational learning occurs during and after the course. What has been learned at the individual level is that the participants will keep the training in good memory, they will in a higher degree than before utilize their crew and their knowledge, and encourage them to speak up regardless of their position on board, in addition to delegating more.

Regarding the organizational learning, the key findings is the study is, increased use of crewmembers within the company, improved workflow and organizational climate, in addition to new procedures, such as in-line fuelling and manoeuvre and voyage planning This is all organizational learning that occurred as a consequence of the course.

This study has theoretical and practical implications as well as future research suggestions for further development of the study. The theoretical implications support the existing literature by measuring and identifying the individual and the organizational learning in the course.

Keywords: Individual learning, organizational learning, learning process, tailor-made courses

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CHAPTER 1. INTRODUCTION

Learning at different levels is essential in the development of any organization. Individual learning is: "the capacity to build knowledge through individual reflection about external stimuli and sources, and through the personal re-elaboration of individual knowledge and experience in light of interaction with other and the environment" (Sinitsa, 2000(1)).

Learning may happen as a part of the work, and can also be organized as particular activities, e.g. training. The purpose of training is usually to increase the competence and facilitate to individual learning among the participants (Salas & Kozlowski, 2012). Individual and organizational learning are linked together, and organizational learning can not occur, unless individual learning first arises among the employees (Crossan, Lane, & White, 1999). This makes individual learning to a key in developing organizational learning.

When employees acquire individual learning, the organizational aim is to integrate and institutionalize the knowledge into the organizations, and if possible, adapt it in a constantly changing environment (Castaneda & Fernandez, 2007). If this becomes successful, it will lead to new knowledge within the organization.

This study analyses the individual and organizational learning for a tailored training course for a specific shipping company. In the study, it will be of great interest for all parties to see the results of the tailored training course, whether or not the participants acquiring individual and organizational learning during the course. A tailor-made course, which means that the course is composed to adapt the organizational goals within the company. Through a tailored course, the organization can design a course in a way that fits them, and their company goals.

The frame of Crossan et al (1999) is found appropriate for this study. The 4I`s framework present a model of individual and organizational learning, where Intuiting, Interpreting, Integrating and institutionalizing represent the 4I`s. The 4I`s framework helps to analysing the individual and the organizational learning as a multilevel process across the four stages.

The study is divided into main chapters. Introduction comes first, then a theoretical part where all the relevant theory is presented. To better understand the course, you will find a case description in chapter 3. The methodology chapter is used to defend the methods in the study, and the findings are presented in the findings chapter. In the discussion chapter, the

findings are connected against the theory. The last chapter will be the chapter with my conclusion, which finished the study.

Background

Norwegian Maritime Authority (NMA) imposed Bridge Resource Management (BRM) and Engine-room Resource Management (ERM) course for people working as officers, or in the engine room on board vessels. The mandatory courses aims to ensure compliance with regulatory requirements for safeguard, and good governance on the bridge and in the engine. The BRM/ERM requirement was transferred into the maritime domain as a consequence of the Crew Resource Management (CRM), which was very successful in the airplane industry.

In the empirical case a shipping company and Buskerud and Vesfold University College (HBV) entered a long-term collaboration on personnel training, and developed a tailored course for the bridge and engine people within the company. The course is called RAS (Replenishment At Sea-Bridge) & BRM (Bridge Resource Management) /ERM (Engine Resource Management), hereafter referred to as "the course". The pedagogical methods in the course are a combination of theory lectures in classrooms, exercises, mostly in simulators, and group discussion.

The general purpose of the BRM/ERM course is to ensure compliance with regulatory requirements for safe guard and good governance on the bridge. The learning aim is that the participants shall be able to implement certain security, and further on practicing good management on the bridge and in the engine.

Through proper and adequate training of BRM/ERM this shall ensure compliance with regulatory requirements for safe watch keeping at the bridge, and good governance in the engine room. During the course the participants get the opportunity to have tailor-made training in communication and navigational skills in the simulators.

Communication between the supply and the mother vessels is very important. The company operates in a special boat industry, where two and two vessels, a mother and a supply vessel operate together. These operations include refuelling at sea, replenishment of crew, supplies, water etc. To avoid disasters, the cooperation between the vessels has to be done as smoothly as possible, and in a safe manner. The tailored course is uniquely suited for seismic operations within the company. The course includes BRM and ERM that correspond to the Standards of Training, Certification and Watch keeping (STCW 2010) Manila

Amendment. In addition, it is also approved by Det Norske Veritas GL (DNV GL) (ISO 9001: 2008) and by the Norwegian Maritime Directorate (NMD).

Why is this important to investigate?

Learning is important in most industries, and one way to increase the learning among the employees is training (Salas & Canoon-Bowers, 2001). Working at sea is associated with high risk. Optimally, learning by training can lead to a higher degree of safety on board the vessels, and optimize the communication between the vessels. The learning effect of maritime training courses is therefore of interest, both for the shipping company and for universities.

How much the individuals are able to learn during the course, and in what degree the organization successfully integrates and institutionalizing the individual learning into the organization is interesting.

Research questions

The main research questions developed for this study is:

Does tailored Bridge and Engine Resource Management courses contribute to individual and organizational learning within the participating shipping company? If individual and/or organizational learning could be identified, what has been learned?

CHAPTER 2. THEORETICAL REVIEW

The subsequent theoretical part is divided into three theory phases. The first part is about tailored courses, the second part is about individual learning and the third part is about organizational learning. All these phases are important aspects in relation to the study, and the theory is highly relevant to understand the three learning process between the individual, group and organizational learning. The theory chapter about individual and organizational learning, is mainly based on Crossan et al (1999), where Intuiting, Interpreting, Integrating and Institutionalizing represent the 4I's framework of how to adapt individual and organizational learning. The theory is a framework for my discussion chapter, and illuminates the applied concepts, and the relation between them.

Tailored Courses/Learning

Tailored course are closed, often made in collaboration with a working organization and specially adapted to the users. Tailored courses are largely flexible and customized in relation to learning activities and individual experiences (Hauge, 2011). To illustrate the main differences between traditional learning versus tailor-made approaches a table from Hauge (2011) is added with a general exploration.

Table 1 The difference between Tailor-made and traditional approach to continuing education

	"Tailor-made" approach to continuing education	**"Traditional" approach to continuing education**
Access	Closed, students enter on basis of being colleagues	Open to all who meets the learning institution`s admittance criteria
Perspective on competences	Complementary competencies learning institution and learners	Competencies residing predominantly with learning institution
Curriculum development	Collaborative effort	Learning institution
Place conducted	In work organization	At learning institution
Responsibilities	Learning institution for quality and integrity of course. Commissioning work organization for relevance of learning to on going work process	Learning institution for quality and integrity of course. No designated responsibility for relevance to on going work processes
Orientation	"Generalist" competencies for communication and organization skills	"Specialist" competencies for professional or disciplinary skills
Supervision	On interplay work and education	On curriculum requirements
Flexibility	Largely flexible and customized in terms of learning activities and individual experiences	In a small degree
Methodological tools	Tried out on going work processes	Lectured or simulated

Adapted from (Hauge, 2011, s. 199)

Characteristics of tailor-made learning

Tailor-made courses are usually closed. Through closed course, the client, which often is the employer, usually has the financial responsible. Both parties prepare the development of the course and what they entail, but usually it is the educational institution that determines it. Tailor-made learning is usually built up through mutual respect and curiosity on each other's competences (Ausland, Hauge, & Andvig, 2003).

There are different areas of responsibility in implementation of a tailored course. Usually it is the educational institution, which is responsible for satisfying the formal requirements in the training programs, this includes ensuring high quality of the education, and connects it to existing practice in an sufficient way (Ausland et al., 2003).

Reflection and sharing of experience are well known methods, and are widely used. In tailor-made courses, the both parties have the opportunity to do changes in line with how things degenerate underway. It is still the intention that the scheduled timetable is followed with minimal changes during the course (Ausland et al., 2003).

The methods used in a tailored course are not random selected, and is intended to stimulate the participants to take control over the processes of change they face in their daily work (Ausland et al., 2003).

Developing and working with tailor-made courses and learning, is an attempt to connect work and education closer to each other. This will enable the participants to be more conscious to clarify for themselves and each other. Interconnection of work and education can help to develop the organization, and assisting to further professional development (Ausland et al., 2003).

Training often starts by considering whom the trainee is. It is important to identify the individual characteristics, motivations, and skills the trainees brings to the training (Salas & Kozlowski, 2012). This makes it easier to know how to design and deliver the training, and how to motivate and teach the participants in an efficient way.

Traditional training is in general a "one size fits all" approach, which means that everyone will have the same training as everyone else, regardless of company and industry they belong to. Recent research, has shown that this may not be the best way to do it (Bell & Kozlowski, 2008).

More flexible, adjustable and individualized strategies designed to fit the workers may be a more effective approach (Salas & Cannon-Bowers, 2001). We know for sure that individual and organizational differences, like organizational goals, influence how the workers learn and approach training (Bell & Kozlowski, 2008). A tailored way in deliver training, will give every participants within the organization the opportunity to train in a well known environment. Tailored learning are often more motivated for the participants than the traditional "one size fits all" approach, because, the tailor-made course programs (Salas & Kozlowski, 2012).

The 4I`s framework of learning

The 4I framework of organizational learning contains of four related sub processes as described in figure 1: Intuiting, interpreting, integrating, and institutionalizing (Crossan et al., 1999). These processes occurs over three levels: individual, group, and organizational levels. In the framework, it is this process that forms the glue and binds the structure together (Crossan et al., 1999).

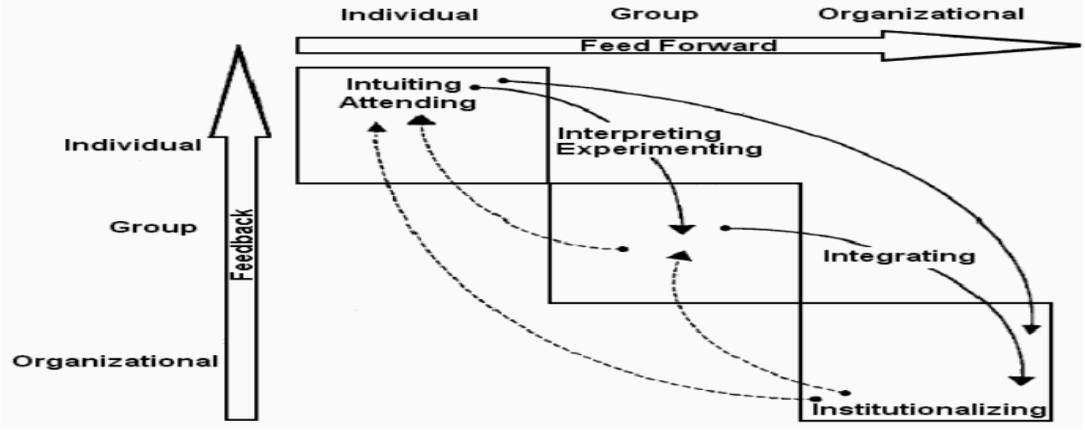

Figure 1 The learning process

Adapted from (Crossan et al., 1999, s. 532)

Intuiting and interpreting arises at an individual level, while interpreting and integrating occurs in the group level. Integrating and institutionalizing occurs at the organizational level, as illustrated in table 2.

Table 2 Renewals in Organizations: Four Processed Through Three Levels

Level	Process	Input/Outcomes
Individual	Intuiting	Experiences Images Metaphors
	Interpreting	Cognitive map
Group		Conversation/Dialogue
	Integrating	Mutual adjustments Interactive systems
Organizational		
	Institutionalizing	Routines Diagnostic systems Rules and procedures

Adapted from (Crossan et al., 1999, s. 525)

It is important to add that the processes and the levels shown in table 2 are dynamic, and it is difficult to say specifically where the distinction between the processes happening. Table 2 is supposed to show how it might look like, but no final answers. Humans are different, and not every process occurs at every level.

An example regarding the intuition is that this is a uniquely individual process. Intuiting may also happen within a group or in an organizational context, but the recognition comes from an individual (Crossan et al., 1999). Organizations are not able to intuiting, this is a unique individual process. The same applies for interpretation. Interpreting has to do with refining and developing intuitive insights, and is a individual and group process.

When it comes to the development of language, principally through a process, it will be a basic interpretive process. A sample is the "well-known" person on a deserted island that could have an intuitive insight and begin two make sense of it through an internal conversational process. Anyway, the interpretive process is going to be much more robust if the conversations and the interactions are done with others. This process may occur on individual and group level, and does not occurs in an organizational level (Crossan et al., 1999).

If the actions take place in a concert with members of a workgroup, then the interpreting process regularly blends into an integrating process. Integration reflects the development of the shared understandings when actions proves to be effective, these is repeated for creating integration (Crossan et al., 1999). If the process of institutionalizing occurs, something happens in an organizational level. Formal rules and/or procedures and routines become embedded, like other society institutions are also organizations socially

constructed. This means that the norms and rules that exist within an organization also exist independently of individuals.

Individual learning

Individual learning is "the capacity to build knowledge through individual reflection about external stimuli and sources, and through the personal re-elaboration of individual knowledge and experience in light of interaction with other and the environment" (Sinitsa, 2000 3(1)).

All learning takes place inside the individual human head. In which grade the organization will be able to learn, depends in a high degree of the individuals. Individuals have to acquire new knowledge and successfully integrate it into groups, before organizational learning can take place (Simon, 1991).

Intuiting

Intuition is the beginning of new learning, and your ability to understand what is going on out of your instinct (Crossan et al., 1999). Learning is, whether it is at individual, group or organizational level a conscious, analytical process. The process of intuiting is a largely subconscious process, and when people comprehend something new, the subconscious are a critical phase in how peoples understand it, and how they are able to learn from it.

There are several definitions of intuition, and most of them involve a sort of patterns and possibilities (Behling & Eckel, 1991), while other means that the expert view of intuiting is a process of (past) pattern recognition(Neisser, 1976).

To become an expert it takes up to ten years (Neisser, 1976), but the goal is not to be an expert, but the road against to be an expert. After enough training, over and over again, the unknown things, which required much deliberation and planning, after all now feels like the most obvious thing to do. New information, becomes over time and training tacit knowledge (Polanyi, 1967). When we have been in a similar situation earlier, we know at once how to react on that specific situation. We will then recognize the pattern and know what to do.

A good example: if you try to teach by words another person how to do cycling, it is almost impossible. To be an expert in cycling, it requires a lot of individual experiences and training. (Crossan et al., 1999)

Several scholars have recognized metaphors as a critical link in the connection between intuitive insights, to further sharing the interpreting. In this way, an individual can use metaphors or pictures to help explaining their intuition to themselves, and share them with other people. Metaphors can be used in transferring the information from a relatively known and familiar domain to a new and relatively unknown domain (Crossan et al., 1999). Such types of metaphors mark the beginning of the interpreting process.

To illustrate the theory above, (Tsoukas, 1991) has a good example from a boy who try to tell his mother for the first time that he`s foot is asleep. This child has no literal language to convey this strange feeling.

> "In frustration, he says to his mother: it feels like there are stars hitting my foot. Having no available literal terms, the child associates a new unfamiliar experience with one he understands. He has a sparkling, glittering, tingling sensation that seems to impact his foot from somewhere outside his body. At the age of four he is unable to say mother, there is a certain numbness in my foot which is a result of an inadequate supply of blood which I have inadvertently seemed to circumvent .The boy perceives he's feeling, but has no words for describing what he feels" (Tsoukas, 1991, s. 572)

On a basic level we can say that individual learning involves perceiving similarities, and differences, patterns and possibilities (Crossan et al., 1999).

Interpreting

The interpreting part in the 4I`s model is about the consciously elements within the individual learning process. The Intuiting is more about the subconscious process, while the interpreting is about the conscious (Huff, 1990). In the interpreting phase, individuals have the opportunity to develop cognitive maps in relation to which type of domain they are belonging/operate in. To develop such types of maps, the language is a decisive factor. Language will enable individuals to name and begin to explain about their feelings, e.g. experience.

The cognitive map will be affected in a way through the domain or the environment, but simultaneously it would also guide what is interpreted from the domain.

People are more likely to see something when they believe it rather than believe it when they see it (Weick, 1979). Every individual think and act differently, and they will also interpret information differently. How they act will in a big degree depends on how their cognitive map is.

The factum of that every individual's act differently has nothing to do with uncertainty about the stimulus. Uncertainty is more related to the quality of information. The quality of information can be equivocal for any group of people. Equivocality can be challenging, special in relation to development of the individual understanding as well as shared understanding. The equivocality plays an important role, and must be understood to make sense in a group interpretive process (Weick & Van Orden, 1990).

Interpreting should be a social activity, and people need to discuss their interpreting of a domain or an environment with each other. This creates and refines common language, and makes a clearer collective understanding, which is important in interpreting. When individuals have to deal with situations they faced alone, it will be much easier to interpret the situation wrong as an individual versus as a part of a team. In a team you can discuss the situation, and make a decision based on everyone's experience and opinions, to reduce equivocality (Daft & Huber, 1987). Eventually, when the interpretation process goes from interpretation of an individual to a group interpretation, it becomes gradually more and more integrative. When the process about interpretation is over and the group have a common understanding of the information, the integration process may start.

Organizational learning

"Organizational learning is a process based on individual learning, through private and public organizations engaged in creating and providing new knowledge. The aim is to institutionalize knowledge into the organization, and adapt it in a constantly changing environment" (Castaneda & Fernandez, 2007, s. 363).

An organization is able to learn in two ways: 1.st is the learning of it members (individual), 2.nd ingesting new members who have knowledge which not exist in the organization (Simon, 1991). To create learning at an organizational level, learning on individual and group level need to takes place. Shared understanding and mutual adjustment (group level) is cognitive. And is an important element in contributing new routines, rules and procedures (organizational learning) (Crossan et al., 1999).

Learning occurs constant and over time and through various types of levels. It also creates a kind of tension between new learning (feed forward), and what has already been learned earlier (feedback) like described in figure 1. The feed forward process (new learning) ensures that new ideas and actions flowing from level to level, and from individual to group and further to the organization. This will automatically be linked to what the organization already has learned to the group, and in an individual level (opposite process), and how this affects how the employees will act and think in relation to new learning.

Through the process illustrated in figure 1, we can see how learning (feedback and feed forward) creates tension between each other. This will helps ensuring new learning (feed forward) from individual and group, and into the organization. The organization will be affected through (feedback) and what has already been institutionalized at the individual and group level (Crossan et al., 1999).

Through the 4I`s framework, we can see the relation between learning in the various mode of living lean, and tension between feed forward (exploration) and feedback (exploitation). The 4I`s framework is about how we as human adapt learning from individuals, to group and organizational level (Crossan et al., 1999).

There are several factors, which can inhibit the learning process, like which information systems, strategic planning and structures used. Anyway, feature on 4I`s framework is that the ideas occurring among the individuals, and thereby the individuals have to share their ideas further through an integrating process. The extent to which it will contribute to organizational learning depends in a big degree of the group dynamics, and the social process can facilitate or inhibit the organizational learning when it is not sufficient.

Integrating

The process of integrating is about the change in the individual's understandings and actions (Crossan et al., 1999). Coherence between the members within the group is required to allow integrating to happened (Seely-Brown & Duguid, 1991). The language has a crucial role in relation to interpret information, and to interact between individuals, and language. The conversations and dialogues is all common factors to understand a domain (Daft & Weick, 1984, s. 285).

Conversations can be used in more ways than just to convey established meanings. Conversations can also be used to understand a domain in another and new way (Isaacs,

1993). Not all conversational styles are as effective to develop common opinions in a group. Dialogue is defined, as a sustained, collective inquiry, into the processes, assumptions, and certainties that compose everyday experience (Isaacs, 1993, s. 25). Isaacs (1993) believes that dialogue between individuals in a group is very suitable for learning. He believes dialogue will increase the quality of the process. Through dialogue, the members of the group will be able to gain a deeper mutual understanding. This may lead to participants being influenced to automatically and spontaneously make small adjustments in their everyday work.

It is claimed that stories, is a large and important part of the learning process (Weick & Roberts, 1993). The stories reflects a greater extent about the complexity of the real workplace situations, or employees that are faced, versus the abstract, which normally are used in standard classroom teaching (Crossan et al., 1999). Through stories, a deeper understanding of a phenomenon may be developed. The stories are repository of wisdom of the collective memory (Weick & Roberts, 1993) Stories can be a metaphor for supporting a common reflective process, while providing a powerful language repertoire (Potter & Wetherell, 1987). Language plays an important role when it comes to letting individuals develop their cognitive maps. In addition, the language is also a decisive factor when it comes to the individuals developing of shared understanding.

Institutionalizing

The process of institutionalizing separates the organizational learning from individual learning. The learning the individuals acquire should preferably be integrated and institutionalized in the organization, and not only some of their members. Basically, an individual is just a person who performs a job, and can quit anytime. If this is the case, and the learning is not shared with the organization, it will disappear. If the knowledge become institutionalized in the organization, it will increasingly be left in the company, whether or not the individuals quit (Crossan et al., 1999). Institutionalization are a remedy, and are the last process in the 4I`s framework. It shall affect the learning of every individual within the organization.

To transfer learning from individuals to a group, and further into the organization may be time consuming. Everything will depend on everything, i.e. gradually, if the web environment of the organization will change, the learning which already is institutionalized suddenly may no longer fit into their new environment. This means that it often can be a distance from what the organization needs to do, versus what the organization has learned to

do (Crossan et al., 1999). The environment of organizations is constantly changing and new learning is important for the organization to enlarge the progress and processes of intuiting, interpreting and integrating new learning (Crossan et al., 1999).

Simulation based training

A simulator is a training tool, which has to be integrated into a total training programme (Cross, 2011). Training simulations usually utilized several types of multimedia features to convey information through different sensory modes, like images and sounds. This contribute to create a more realistic and relevant context for the participants (Cannon-Bowers & Bowers, 2001) The validation of the realism and the quality of the software is of importance when training in simulators, this is to ensure quality learning and great transferability for the participants. The software has to be as equal as the reality as possible (Cross, 2011). Simulator based training can also be used to facilitate learning tasks, that lead to increased intrinsic motivation and engagement among the participants (Dalgarno & Lee, 2010).

The design and the delivery of the learning are crucial in relation to the learning effect among the participants (Salas & Kozlowski, 2012). Simulation allows us to improve our understanding of the way that experiences created by training interventions stimulate cognitive, motivational, and affective process pathways (Bell & Kozlowski, 2008). In this way, it is possible to create meaningful synthetic learning environments. Such types of technology can be used to create synthetic learning environments.

Tannenbaum and colleagues, means that the most of the learning occurs on the job, and therefore they mean that more attention should be given to informal approaches to learning (Tannenbaum & Yukl, 1992). Informal learning focus the attention on the trainees, and his or her characteristics forms what motivates them, to how they self regulate and how to acquire the skills (Tannenbaum & Yukl, 1992).

Training program criteria's

To ensure quality in the simulator-training program, some criteria's are more important than others are, and need to be taken serious.

Group size: The group size depends on several factors, such a participants, available instructors and which level the instructors holds. A general principle is that all participants should have adequate simulator hands-on opportunities to acquire the desired skills, transfer

and retain them in the operational environment. The recommended size of each simulator group is from three to six participants (Cross, 2011).

Instructor guide: Every instructor should have their own proper instructor guide, which is developed especially for the course and scenarios. This guide should contain information about the training program such as: strategy used, methodology, and timetable for each period of training, in addition to all materials used to enhancing the training process (Cross, 2011)

Debriefing: Debriefing is a part that has to be taken seriously, since types of sessions often provide valuable information. The time needed to a good debrief depends on how many participants are involved, and the complexity of the exercise and the simulator systems. Debriefing can be very valuable if the levels among the teachers are high. To give exact rules on how to do a debrief can be useless because the differences between the courses, the participants, course programs and teachers are never equal (Cross, 2011).

Humanware

Instructor requirements: A teaching tool is always as good as the instructors using it. The quality lies in the instructors, and the instructors have a great influence on the participants. To have teachers with sufficient experience is of great importance to ensure quality teaching during the course (Cross, 2011).

General Knowledge: It is important to never underestimate the influence the instructors have in training effectiveness. It is found that having correct types of instructors with experience and right attitude towards the participants is crucial to succeed (Cross, 2011).

Experience: The teachers should also have sufficient backgrounds or experience in teaching or/and instructional techniques. They have to be able to organize a lesson, and transfer their knowledge, as well as relate it to the participants during and after the simulator exercises (Cross, 2011).

Motivation: The enthusiasm among the teachers during the teaching are a crucial element in having success to acquiring the participants with as much knowledge as possible (Cross, 2011). Instructors who not believe in their own instruction will not be taken seriously by the participants (Beard & Hartley, 1984). Motivated teachers, will lead to motivated participants, which is more receptive to new learning (Cross, 2011).

CHAPTER 3. CASE DESCRIPTION

There are among others two characteristics of a case study, first, the attention is limited to the particular case, and second, a detailed description of the case study is important when conducting a case study. Examining the case study thoroughly to get as many details available about the specific case study as possible is recommended (Yin, 1984).

In this study, a case description is required to have a better understanding of the course. The course is the learning arena, and where the learning takes place. The course is therefore clearly explained in the following chapter.

The company

The company was established in Norway in 1991 by a merge between two other companies. The vision of the company is to provide the most efficient acquisition of 3D marine seismic data. Back in the 1991, the company had two special vessels operating as mother vessels, and some highly innovative ideas on how to reshape the industry. The vision is still applicable today, but the company has grown. Today it has 16 special vessels, 33 offices worldwide, and staff from 70 nationalities. The head office is located in Oslo, Norway with regional centres in London, Singapore and Houston. The company is listed on the Oslo Stock exchange.

In the seismic industry the vessels are operating two and two, and a supply vessel typically support the mother vessel. The main vessel is what we call a Ramform. This is a unique and unusually hull shape. The hull is characterized by a sharp bow, with a sinking stern body, where aft ends of straight cut. The vessel is considerably wider behind than the front. The communication between the vessels is of great importance to keep the job as safe as possible. The vessels in the company are sailing in open sea for up to six months nonstop before they return to land. This requires Replenishment At Sea, such as refill of crew, fuel, water, and supply's. Short summarized the supply vessel supporting the mother vessel in what is necessary for the mother vessel to carry out the operation in a safe and efficient way.

The course partner

Buskerud and Vestfold University College (HBV) is the second biggest university college in Norway with around 9500 students and 850 employees. HBV is one of the leading maritime schools in Norway, and offers several maritime educations, such as Shipping and

Logistics, Marin technical operation, Nautical Sciences and master in Maritime Management. The school offers skilled academic teachers, within maritime research.

HBV has four campuses, located in Drammen, Vestfold, Kongsberg and Ringerike. Campus Vestfold has a research park, which is called Oslofjord Research and Innovation Park (ORIP). ORIP was built as collaboration between HBV, the Norwegian Centres of Expertise Micro- and Nanotechnology (NCE Micro- and Nanotechnology) and the local industry. The ORIP is among others tailored to organize courses, with modern and nice facilities. The bridge and engine simulators are located inside the ORIP, and this is also where the courses take place.

Simulations are generally defined as artificial environments that are carefully created to mange individuals experiences of reality (Bell, Kanar, & Kozlowski, 2008b). During the course, three simulators are in use. Two of them are bridge simulators for officers, and one is an engine simulator, which is for the engineers. The simulators are 3-D based, and the environment shall capitalizes upon natural aspects of human perception by extending visual information in three spatial dimension (Dalgarno & Lee, 2010).

The simulators are used in several exercises during the course, to simulate relevant scenarios in a familiar environment. The software used in the bridge simulators is also tailored for the company as realistic Ramform vessels.

This allows the participants to train on Ramform vessels in seismic specific exercises, very close to the reality.

As we can see out of figure 2, the simulators are very realistic with a 3-D platform where you can see what's going on in front and abaft the vessel.

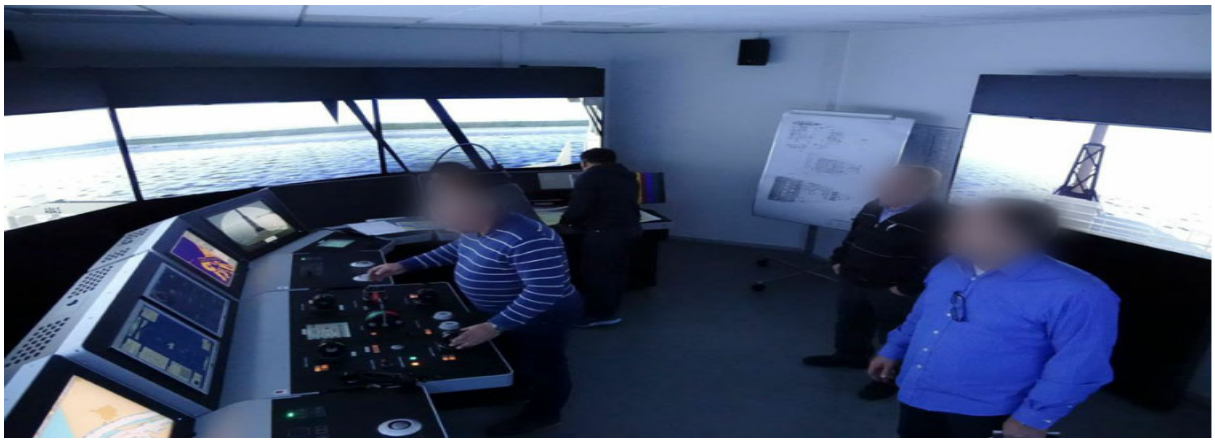

Figure 2 A Simulator Exercise In The Mother Vessel Simulator

The course

Previously the company sent several of their employees in different courses in communication, and manoeuvring overseas. The feedback was almost equal from every participant, “to much general learning”, it was not suitable for the seismic branch. The concept was usually “one size fits everybody”. Thereby the idea of starting with tailor-made courses came up. A clear benefit with the tailor-made course is that they have the opportunity to train by using own systems in familiar simulators, which is almost equal as their own vessels, the well-known Ramform Titan class.

There were several reasons why the Company chosen HBV as their partner in the implementation of their course. The main reason can be traced back to the after deck simulator the company already had installed at ORIP. The location of ORIP was well known, and the company knew what to expect from HBV when it comes to quality, and the people around the simulators. It was the Vice President Projects in the company who stood behind the decision about choose HBV as their course partner. The vice president is the top head of the projects within the company.

The company had a strong desire to link up against the academic community at HBV, and in this way ensure quality learning and pedagogical skills. HBV are also geographically placed central to Torp Airport and their head office in Oslo, made this to an obvious choice. The synergistic effect was good, and the company wanted to develop the concept further, together with the academic community at HBV.

Teachers

The teachers are a mix of internal and external employees. It is HBV as course coordinators who has determined and employed four of the teachers. Teacher 5 serves as a overseer from the company. There are five teachers, with different responsibilities. A brief description of the teachers and their expertise follows below.

Teacher 1: Is a university lecturer and has the professional responsibility for the courses. He holds a Master degree in Maritime Management and is a former bridge officer. Teacher 1 teaches in day 1 and day 5, in addition to organize the simulator exercises. Since teacher 1 has the professional responsibility, he follows the course every day.

Teacher 2: Is employed on HBV, and belongs to the Faculty of Engineering and Maritime Studies. Teacher 2 holds a PhD in business economics, and a master in strategy and knowledge management. In addition, teacher 2 is educated as a bioengineer. The teacher teaches in learning and incident awareness and leadership at day 1.

Teacher 3: Is hired by HBV as a teacher in the course. The teacher is a former captain in SAS Scandinavians Airlines and manager of Braathens and SAS Norway`s Human Factors Department. Teacher 3 has more than 20 years experience as a lecturer, and is also a Human Factor trainer. Moreover teacher 3 is an educated police officer, and has been an instructor in Crew Resource Management for several years. Teacher 3 is used in 6 simulator preparations, exercises and discussions in addition to a lot of the CRM theory.

Teacher 4: Has background from the Norwegian Coastal artillery, he is also educated pilot and having instructor education. Thereafter he works as a captain in Widerøe, Braathens and SAS. Teacher 3 has also several years as a second command in the pilot association and different workshops. Teacher 4 is external hired for this course through HBV.

Teacher 5: Is a former captain in the company, He is now retired, but still works as a representative of the company in connection with the follow-up of the courses. Teacher 5 has no responsibility for teaching, but is actively involved in the simulator exercise, and also used in the debrief sessions. Teacher 5 has a lot of experiences from the seismic industry after working as captain in 25 years in the company. Teacher 5 was one of the developers of the Ramform design, as the software in the simulators is based on.

Course progress & participants

The first course was conducted at the ORIP in week 9, 2014 and it is expected that the company will have the last course for all their bridge and engine officers by autumn 2016. As table 3 illustrates, there are several nationalities represented in the courses, and the language of instruction is therefor in English.

The status per 21.03.2015 is 8 finished courses, and 81 participants. Out of these it has been 67 bridge officers, and 14 engineers. The course is primarily for the company`s employees, but they also offer some of the officers from the collaborating supply vessels to conduct, paid by the company. The courses usually consist of 10-12 participants, where 6-8 is bridge officers, and 2-4 are engineers. The diversity of participants, are illustrated in table 3.

Table 3 Numbers of Nationality And Company Affiliation

Nationality	Number of	Company	Number of
Norwegian	32	PGS	65
Swedish	9	Thor	10
Polish	12	Groen	2
Flilipino	11	Nautica	3
Indonesia	1	Sanco	1
Faroese	11		
Russian	3		
Malaysia	1		
Bulgarian	1		

The company has together with HBV designed the course in a way that adapts their organizational goals. The course consists of theory and practice, with discussion and bidirectional communications as a common thread during the course. In the figure 3, we can see participants and course instructors in a discussion séance during a CRM theory lecture.

Figure 3 From a discussion in the CRM theory lectures

Ordinary classroom teaching is used for the theory lectures, but the communication is constantly two-ways, where the participants actively asked and encouraged to discuss the theoretical instruction in the course. In addition, the simulators are used during the simulator scenarios. The simulation will be very similar to the reality, specially for the bridge simulators

which has tailor made software. There are two different bridge simulators being used under the exercises, and also a separate machine simulator for the engine people.

Course description

To summarize the course, table 4 describes the different sessions in each course.

Table 4 Course description

•	**Adm info/Motivation** Start up session, with administrative and practical information about the course. This also including a motivation part where teacher 1 have the responsibility to explain the course, and the timetable for the next week.
•	**CRM Theory lectures** CRM Theory is a common term for the theory being conducted day 1,2,3 and 4 organized by the teacher 2, 3 and 4. The theory contains several concepts as described in the course description and are an important part of the theoretical part of the course.
•	**Incident awareness exercises** This is an exercise, which is used to identify the most serious incidents on board, the exercise also includes why they occur and how to prevent them. The method used is the Network individual, group, and plenary reflection (IGP).
•	**Recap** Every morning starts with a recap from the day before. This is to let the participants repeat and reflect about what they remember as the most important from the day before, and in this way also get the participants to reflect from the day before. Recap is done every day as the first thing in the morning.
•	**Simulator familiarization** The participants being familiar with the simulators. The simulators are used several times every day, and are a big part of the course.
•	**Simulator preparation** Before each scenario a toolbox meeting is done in the teams. The toolbox meeting is a normal procedure out on sea, and is done in accordance to keep good safety during the operations. During the session the individuals have the opportunity to ask questions if something is unclear. Important topics which is discussed under toolbox meeting is: Multiple factors, errors, defences, communication, coordination, planning, workload distribution, commercial and hidden pressure
•	**Simulator scenarios** During the course, seven scenarios are set up in the simulator. The participants have different roles in every scenario, and the course administrator administrates the teams before each toolbox meeting.
•	**Debrief** Debrief and the discussion part is done in two stages. Number one is a group debrief for each simulator directly after the exercises, and number two, is done in plenary with the teams and teachers. This is the arena where the discussion parts take place between the individuals and the groups.
•	**Personal Plan** The Personal Plan is something every participant makes, and writes down individually the last day of the course. In this plan, they write down what they would like to change when they return to their daily work. The task is done with individual reflection and last for 20 minutes. All the participants can choose to presents their plan in plenum for their groups with a time limit of 2 minutes.

Start up: The start up session is the participants first meeting with the course. This is a session where teacher 1 informs about the administrative and practical information regarding the course. The start up session also includes a motivational part, where teacher 1 explains the course, its contents, and the activities for the next five days. Moreover, distribution of

timetables and a presentation round where everybody has to say some words about them self in plenary.

CRM theory teaching session: The CRM theory session is a major part of the course. The CRM part of the course shall provide the participants with a greater understanding of human factors that influence our behaviour and the way we interact and communicate. The CRM theory shall also provide the participants to be better equipped to work in teams, and be involved in preventing misunderstandings, accidents and near-accidents to happen. The contents are described in the day-by-day description of the course in the appendix. The main topics in the CRM theory sessions are Human factors, incident awareness, safety, leadership, and situational awareness. The teaching methods are done mainly in the classroom, but also in groups like the incident awareness exercise.

Figure 4 CRM Theory Teaching Session

As shown in the figure 4, the participants are placed in a "horseshoe", this is done to establish sufficient contact between the participants and also to encourage discussion. In this way, everybody is able to see the person they are talking to, and it makes it easier for the course instructors to maintain the contact and the interest between the participants.

Incident awareness exercise: In this exercise the participants work with the main question about incident awareness. In the exercise, the participants are going to reflect individually about the most serious incidents on board, why they occur, and what can be done to prevent them? Individual- Group-Plenum (IGP) method is used to uncover tacit knowledge about these questions from the participants. Some aims of this exercise are to encouraging to transfer/sharing of knowledge between participants, and to learn the IGP method. IGP is an appropriate method in such settings, because it force each of the participants to attend in their

given time (Gausdal, 2013). IGP holds a combination of individual and collective reflections on a given topic, problem or question (Gausdal, 2013).

The séance starts with dividing the participants into two groups of four to six persons. Each group is provided with a teacher (1 and 2) as process managers. Thereafter a short preparing process where everybody telling their names, the company they work for, their positions on board, and how long they have worked in the company. The participants having shortest experience on board is the group secretary and responsible for presenting the result of the group works in the plenary afterwards. After finding secretary and group manager the process continuous with individual reflection about the given topic, after five minutes every participants of the group has to share their thoughts about the topic, and everybody gets maximum two minutes to present. During the presentation nobody is allowed to interrupt others, only ask clarifying questions, if necessary.

After everybody is finished presenting their thoughts, normal group discussion, reflection or prioritising of answers happens. In the end, the group together give their mutual answer about incident awareness. After all, every group represented by the group secretary present their common answer with the other participants in plenary (Gausdal, 2013).

Recap: As described in the course description, some of the teachers, starts every day with a recap session from the day before. The key point with the session is to repeat central topics from the day before, and to see what activities and theory the participants remember best. The session takes about 30 minutes. This is also an opportunity to discuss the topics from yesterday deeper, if something was unclear.

Simulator familiarization: The simulators are tools, used every day during the course. It is necessary to let the participants become familiar with the systems and its software before starting with the simulator scenarios in day 2.

*Simulator preparatio*n: In the preparation process, the participants are split into two groups of bridge officers, and one with engine people. The roles among the participants are being changed before every scenario, to let the participants train in several positions and in different simulators. The group composition and positions within the simulators is based on the criteria's in table 5.

Table 5 Distribution Of The Crew Between The Bridges

Criteria's	Explanation
▪ Participants rank / Position	May play a role in relation to what they can and what they can do and hence what they should be trained on. Fits the teams are divided so that expertise is spread among the teams
▪ Participants' individual experience / expertise	Who should be trained on what? If someone sits on experience others can benefit from this is taken into consideration
▪ The scenario	The scenario will always be crucial in the bottom of the composition of the crews are put together. The experience is spread so that all parties learn best possible
▪ Optionally (personal) knowledge / information to / about the participants	Whether there is specific information about individuals who special knowledge, this also taken into consideration. Another example would be if some of the participants have special needs or to a greater extent than others need better monitoring will take this into consideration in relation to the distribution.
▪ The training potential in permanent teams	An example here might be that some of the participants need training in how to work together (eg new team, new employees etc) in which case this will taken into account in relation to the distribution

Ahead of every simulator exercise, each crew following the company`s procedures and having a toolbox meeting to go through the exercise and prepare them self. The toolbox meeting led by the captain on bridge is a safety meeting, a part of the organizational procedures. During the toolbox meeting, the crew goes through the work tasks coming up, and the crew can ask questions if anything is unclear. They also sharing experiences and exchange information before they agree on how they will carry out the task in a safe and efficient way.

Simulator Exercises: During the course, the participants being trained in perform and secure RAS operations, according to the organization's security procedures, checklists and regulations. The simulation part of the course consists of seven scenarios where the participants will train together in teams.

The mother and supply vessel bridge simulators are connected up against each other to make it as realistic as possible. During the simulating, a course instructor is represented on each bridge, to observe the participants behaviour during the scenarios, and to give local debrief after the exercises.

Figure 5 A Simulator Exercise From The Supply Vessel

Figure 5 is from a simulation exercise, and shows how a team can work together and cover different tasks on the bridge.

Debrief: When the simulator scenarios is finish, sufficient of time to a local and plenary debrief is set off. First a local debrief for each simulator led by the course instructor in each simulator, where feedbacks and a review of the scenario is given. After on, a common debrief between the bridge and the engineers is done in the classroom. During the debrief sessions, every crewmember has the opportunity to discuss the outcomes of the scenario and why things carry out as they do. It will be important to encourage the participants to talk during the session. In such scenarios the course instructors can be perceived as slightly provocative, to facilitate and ensure a good discussion and learning arena. The teaching methods have great focus on coaching and assessment.

An example from a debrief session: A polish pilot enters the vessel, and after a while he calls the pier and talk polish. We see clearly that the crew becomes uncomfortable and the uncertainty spreads among the crew. Nobody dare to ask him to talk English. In the discussion part later on, the teachers ask the specific crew about why anybody dare to say anything, when the captain during the exercises answered *"We become uncertain, because this was not regular routine"* and the discussion continuous. This is a typically communication conflicts which being discussed during the debrief session.

Personal Plan: The last session of the course is the personal plan. Personal plans being delivered out to every participant on the course. The personal plan is a group session, and the groups consist of the same participants as the incident awareness exercise. During the session the participants are developing their own plan for the changes they want to do when they

return to work. The changes are about how they will implement the new learning to change attitude and actions, and what they will do to prevent incidents on board.

The questions asked in the personal plan are 1. How will I change my attitude and actions when I come back to work? 2.What will I do during the next four months to prevent serious incidents on board?

The participants shall reflect individually quiet thinking, and make their individual personal plan, by writing down their answers to the questions. They have a time limit on 30 minutes, which is sufficient. After on, the participants are invited to share their personal plan with the group. Almost every participant decides to share his or her personal plan, and the time limit to share it is 3 minutes. They are also invited to sign their own personal plan as an agreement with themselves. The intention is to get the participants to bring the plan back to work, and following it, by transfer the new knowledge into their work situations. Each course has the same scenarios, course plans and teachers. This contributes to continuity, and every participant independence of which course they participate will have approximated the same assumptions to achieve desired learning.

CHAPTER 4. METHODOLOGY

Research methods are associated with different kinds of research design (Bell & Bryman, 2011, s. 41). A research method is the process used for collecting the data needed to conduct a study (Punch, 2009). The research method contains specific instruments used in the study. In general, we can say that research method is a "umbrella term" for several issues that need to be outlined (Bell & Bryman, 2011). It will be of importance that the theory in a scientific context has a certain generality level, and be possible to transfer it to other situations (Johannessen, Tufte, & Kristoffersen, 2006).

Research is essentially about achieving certain knowledge (Lund & Haugen, 2006) . It includes various purposes, such as, testing whether existing knowledge is still valid to describe or identify a topic area. We distinguish between basic research, where the intention is to establish exertion knowledge without being obliged to show how knowledge is used in practice and applied research where direct practical application of research results is the purpose (Lund & Haugen, 2006).

A traditional definition of science is that knowledge is legitimized, true perception. With perception means that we believe in what is being alleged, with true means that the statement is correct and documented (Lund & Haugen, 2006).

When we are going to conduct a study, we have to do a lot of deliberations and choices. We have to determine what we want to study, and how we will conduct the study. This process is called research design. The implementation of studies can be classified in some general categories, cross-sectional studies, longitudinal, experiments, quasi experiments, evaluations, simulations, phenomenology, ethnography and grounded theory and case studies (Johannessen, Christoffersen, & Tufte, 2010).

In a study, the researcher has to start with the research problem, and formulate a research question, and then consider methods of how to conduct the study from start to finish. A central topic in relation to research is the time aspect. A study can be done within a specific time, to long periods, like several years. Cross-sectional study refers to the first example, and a longitudinal study is done over a longer period. Different choices have to be taken during the research process, and whether the research will consist of a variety or a population must be considered, either if it is necessary to conduct an experiment. In the end, the researcher has to consider what is appropriate by hard or soft data. All these questions depends on the

research question. There is a wealth of opportunities when conducting a study (Johannessen et al., 2010).

Qualitative methods are used in research where you want to find words rather than numbers (Punch, 2009), while quantitative methods emphasize the extent and numbers (Thagaard, 2009). Through quantitative methods, the researcher can obtain an overview of the phenomenon to investigate, while using qualitative methods will give the opportunity to study the phenomenon in depth, through for example an interview, where you can still questions about the results from the quantitative method (Johannessen, Christoffersen, & Tufte, 2011).

A specific research question is often more suited to be illuminated by a qualitative method, rather than a quantitative (Buciek, 1996, s. 15). Quality research can be construed as a research strategy that usually emphasizes words rather than quantification in collection and analysis of data. The qualitative method has several strengths. As opposed to quantitative methods were you receive hard data, you can in qualitative method have deeper answers, and you have the opportunity to go much deeper into a single specific case. It will allow you to not only have a snap shot of what or how many, but about how and why things happens as they do (Miles, Huberman, & Saldana, 2014).

An important objective of qualitative approaches is to achieve an understanding of social phenomena. Interpretations have therefore a great significance within the qualitative research (Thagaard, 2009)

Quantitative data in raw form, usually don't give any meaning, or at least is hard to understand before it is processed and analysed. To make the data from a quantitative method useful it is necessary to analysing them, and set them into a chart, statistic, tables or graphs to allow a reader to understand them (Jacobsen, 2015).

The individual learning part is measured with two questionnaires short term and long-term, personal plan, and observations in several forms. The questions about organizational learning, and to what extent the company achieves organizational learning from the course is measured by a long-term questionnaire, Personal Plans and through a in-depth interviews with the fleet manager in the company.

Research design

When fieldwork is planned, it must be based on the intent, issues and perspectives of the research question. It has to be determined which method is the most appropriate to collect, and process the data empirically (Fangen & Sellerberg, 2011).

The purpose of this study is to gather information and conceptualize and describe the course, and study in which grade the course contributes to individual and organizational learning. On background of the research questions and study, a case study is an appropriate methodology.

A case study are in depth investigations of one single person, group, event or community (McLeod, 2008). The data gathered are typically done from observations, interviews, questionnaires, and so on. A case study can involve different techniques, like a simple observation, to reconstructing "the case history" of one single participant or group of individuals, such as a school class, social group, a course, and so on (McLeod, 2008). The advantages with a case study is that you as a researchers can use the methods, techniques and data you found appropriate (Punch, 2009). The different cases is usually not equal, and there could be a variety of specific purposes and different research questions, but the general objective with a case study is to develop a good understanding as possible for the specific case.

"The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result" (Schramm, 1971, s. 349).

The tactic is to use multiple sources, such as Interviews, observations, questionnaires and what you find sufficient to use. To have as rich and deep data as possible, several data techniques have to be used.

On the other side, a case study can potentially be a time consuming process, and the answers can be massive and unreadable documents. This underlines the importance of organising the data systematically (Yin, 1984). Case study investigators is often to sloppy, and allowed equivocal evidence to influenced the direction of the findings and conclusions (Yin, 1984) .

A case study distinguishes from other research designs through focus on a bounded situation or systems, and entity with a purpose and functioning parts (Bell & Bryman, 2011) A very common criticism of the case study is the question about the generalizability (Punch, 2009). Nevertheless, a case study can rarely be scientific generalized because they use a small

number of subjects. The question normally being raised is: How can you generalize from a single case? (Yin, 2003). Say it in another way, how can we generalize from a single experiment? In fact scientific facts are rarely based on single experiments (Punch, 2009).

A case study aims to provide an analytical rather than a statistical generalization, and in this way to develop theory that can help researchers understand other similar cases. This is a common criticism of case study as a method, because its dependency in a single case exploration, and this makes it difficult to reach a generalising conclusion (Tellis, 1997).

Case studies are not based on statistical inference. Quite the contrary, the features between the links among the case studies are more important (Mitchell, 1983). The generalisation process is more about the theoretical propositions, and not about the populations (Maxwell, 1992).

Case study's can be distinguished among three types, intrinsic, instrumental and collective (Stake, 1995). In the intrinsic, the researcher do the research for its own sake, this could be to check why a student, age ten, fail to read English, when most people at age ten can do it. In an instrumental case study, the researcher pick out a small group of subjects, to study a certain pattern of behaviour, an example could be, how course participant acquire learning. In a collective case study the researcher have to collect data from different types of sources, examples could be university`s. In intrinsic case studies, where the researcher solves a specific problem of an individual case generalization cannot be done. Instrumental and collective case studies may allow for generalization of the findings, to a bigger population (Stake, 1995).

This study is a instrumental case study, with multiple analysis devices, where the researcher obtain information from multiple devices (Johannessen et al., 2010). A case study is very often use to study a workplace or organizations (Bell & Bryman, 2011).

This underlines the importance of having rich information and several ways of collecting data. In this case, several sources are used: two different questionnaires, the participant's personnel plan, interviews, and observations during the courses. All sources mentioned were necessary to have sufficient and detailed descriptions of the case (Johannessen et al., 2010). The different data, which is used in my instrumental case study, is presented below.

The advantages in using a case study is that it provides detailed information (rich quality), and it provides deep insight, also for further research because of several sources used (Yin, 1984). The limitation is that it can be hard to generalize the results to a wider

population, in my case, other courses, and it could be time consuming and hard if not impossible to replicate the study (McLeod, 2008).

Observation

*"*Observation has a long tradition in social sciences*"* (Foster, 1996, s. 153) Like the interviews observations can in a varying degree be unstructured or structured. In this study, unstructured observation is used. "When the observational strategy is unstructured, the process of observation typically evolves through a series of different activities" (Punch, 2009, s. 154). It typically begins with selecting a setting and gaining access to it, and then start the process with observing (Punch, 2009).

Through participation and observation in the course in week 40, 2014 and in week 4, 2015 the opportunity to become familiar with the course, the participants and how they organized the course was given. In week 40, the purpose was to become familiar with the course contents, learning program and the teachers. In week 4, the focus was more directed towards the participants, and how they react in relation to the course contents. Week 4 was in addition used to write field notes every day, and the breaks were used to communicate with the participants. This makes it easier to find out more about every individual, their motivation, and their general perception of the course. The observing part lasted in total 80 hours. The main part of the observations was used to make the case description and conceptualized the course.

In-Depth Interview

A in-depth interview allows the researcher to deepen the questions, and get an idea of what the organization has done in relation to integrate and institutionalize the individual learning from the course, and into their organization (Jacobsen, 2005).

"The advantages of an in-depth interviews is that they will give the researcher a much more detailed information, than what is available through other way of collecting data`s, such as surveys. In addition people, may feel more relaxed when having a conversation than answering a questionnaire" (Boyce & Neale, 2006, s. 3).

On the other hand, an in-depth interview can be very time consuming. To create a good interview guide to further transcribing the interview can be a long process. If you have little training in conducting interviews, you may struggle to provide rich and good data, and if you as an interviewer do not make your informant comfortable, your result may be affected. In the end, the generalizability question is of importance, and in relation to in-depth

interviews it is a limitation. We can usually not generalizing our results from the in-depth interview, because the samples often is to small, and random sampling methods are usually not used (Boyce & Neale, 2006).

In this study, an in-depth interview is found necessary to support and having a greater understanding of the quantifiable results. To use the management in the company, addition to the employees, gives the researcher an opportunity to have meanings from both sides, which will give the study a greater validity.

The purpose with a qualitative in-depth interview in form of a focused/semi-structured interview in this study was to collect relevant information about the grade of the organizational learning. The interview took place in the company`s head office in Oslo. The fleet manager have been involved in the particular case, and knows a lot about the organizational changes over the last years. For a deeper understanding of the degree of the organizational learning before, during and after the course process, an in-depth interview with the fleet manager in the company was necessary to have rich and deep answers.

It will be a benefit to structure the interview, and the interview guide is made with respect to table 2. Through use of the inputs and outcomes from table 2, the questions/answers can be directly linked against the organizational learning within the company.

The questions asked during the interview took around one hour, and the answers from the fleet manager were taped, and notes were taken during the in-depth interview. Recording the interview allows the researcher to have more focus on the informants (Kvale, 1997).

A interview guide is your own guidelines related to the questions you want to ask the informant about (Miles et al., 2014). The questions used in a interview should be short and concise (Kvale & Brinkmann, 2012). This leads to more specific answers.

The interview guide from the study is presented in table 6.

Table 6 The Interview guide

Nr	Questions
1	What was the reason for that the company choose to use HBV and the simulators here for your type of course?
2	Did the company have a clear objective/goal when you start up the Bridge and Engine Resource Management Course?
3	Can you mention the most important things in your eyes the company as an organization sitting back with, after the course?
4	Is it any new routines/procedures, which have come as consequence from the course?
5	Is it other procedures or routines which PGS working on now? Or will start to work on in a near future?
6	Is it any routines, which goes on the training and repetition after the course? Refreshing of training in any way?
7	Since the Bride and Engine Resource Management suddenly was not required any more in the autumn 2014, why did you still choose to keep the courses, it is expensive, and not more required?
8	What is the most relevant and not so relevant with the course from the org side

As described in the data analysis, the interviews with teacher 1 and 2 of varying length is carried out during the process. In addition smaller unstructured interviews with the participants during both the courses have also been done.

Questionnaires

A questionnaire is usually associated with a deductive approach. A questionnaire is frequently used to answer who, what, where, how much and how many questions (Saunders, Lewis, & Thornhill, 2007) A questionnaire is most used in relation to exploratory and descriptive research.

A questionnaire is an efficient and appropriate way to have valid and honest answers in short time (Saunders et al., 2007). A questionnaire will allow the researcher to have the objectivism answers which will be of importance to ensure great validity (Bell & Bryman, 2011). In this study two different questionnaires are used, one at the course end in day 5, and another one sent out through survey monkey 8 weeks after the course end.

It is several advantages and disadvantages with a questionnaire. First of all a questionnaire is cheap to produce and time effective. It allows the researcher to distribute it, if necessary to countless individuals at the same time (Saunders et al., 2007). A questionnaire can be anonymous, this allows the participants to be more honest, and more sensitive

questions can be asked, because of the anonymity. Through a questionnaire, it is easier to quantify, and have more specific answers, which is related to your unique research. The informants answering the questionnaires reflects the population accurately and is a microcosm of the population within the company, which gives a representative sample within the specific company (Bell & Bryman, 2011).

The disadvantages are the probability for misunderstanding of the questions. A second challenge is participation; it can be challenging to get the participants to respond the survey. In some cases it may also be a risk that participants answer what they think is "right", and not necessarily their own opinion of the question. In the questionnaires used in this study, all of the participants being well briefed about the survey at the course, but misunderstandings can still occur and be misleading.

Both the questionnaires are self-administered, but not equal. At the course end a typically "deliver and collection questionnaire" technique is used, and after 8 weeks an internet-mediated questionnaire is sent out through Survey monkey. The questionnaires is designed and developed by the course administrators from HBV, and are secondary data.

Table 7 illustrates the questions from the short and long-term questionnaires, and how they are dived into individual and organizational learning. Furthermore some of the question is linked to table 2, in order to connect the individual and the organizational learning against the inputs and outcomes in table 2. Questions 2,3 and 4 in the short-term questionnaire are more about how useful the training is, and cannot directly be linked to individual learning.

Table 7 Overview of The questions, and their connections with individual and organizational learning.

Questionnaire 1	**Ind. Lea**	**Inputs/Outcomes**
1. Short term		
1. I will keep the training in good memory.	X	Cognitive maps
2. I enjoyed the training very much.	-	
3. The training is very beneficial to my work.	-	
4. Participation in this kind of training is very useful for my job.	-	
5. After the training, I know substantially more about the training contents than before.	X	Experiences
6. I learned a lot of new things in the training.	X	Experiences and Cognitive maps

Questionnaire 2	Ind. Lea	Org. Lea	Inputs/Outcomes
2. Long-term			
1. In my everyday work, I often use the knowledge I gained at the training.	X	-	Cognitive maps
2. I successfully manage to apply the training contents in my everyday work	X	-	Experiences
3. Since the training, I have been more content with my everyday work.	X	-	Experiences and cognitive maps
4. My job performance has improved through the application of the training contents	X	-	Experiences and cognitive maps
5. Overall, it seems to me that the application of the training contents has facilitated the workflow in my company	-	X	Mutual adjustments and conversations/Dialogue
6. Overall, it seems to me that the organizational climate has improved due to the training	-	X	Mutual adjustments, Routines, Rules and procedures

Secondary data

Secondary data is a term, which is used for re-analysis of previously collected and analysed data (Punch, 2009). There are definitely several advantages in use of secondary data, this includes cost effectiveness, time saving, and that secondary data often contains quality data because of it is usually analysed data. Nevertheless a disadvantage with secondary data, is lack of familiarity with data (Bell & Bryman, 2011). When you collect your own data, you can tailor the techniques to fits your specific study. This will makes you more familiar with the data, than if you use data collected by other people (Johannessen et al., 2011).

Personal plan: Ahead of the first course in this study, which was in week 40, 2014 personal plans become available for the study. These documents were provided by teacher 1 and 2, and given out to the participants. When the participants had finished and present them, a request was made to use their answers in the study, and the participants gave their permission to use anonymous copies in the study.

Table 8 shows an overview of the data used in accordance to the study.

Table 8 Overview Of The Data Used.

Data			
Observations	**Interviews**	**Questionnaires**	**Sec data**
2 courses **Week Year Participants** 40 2014 10 **Week Year Participants** 04 2015 15 Total: 25 **In Total: 80 Hours**	In-depth interview with the fleet manager. Length: 1 hour Shorter interviews with course participants. Informal interviews With Teacher 1 and 2.	**Questionnaire 1 (Short-term)** Day 5 Participants: Week 40: ERM=3 BRM=7 Week 4: ERM =3 BRM=12 N=25 Answers= 25/25 = 100% **Questionnaire nr 2 (Long-term)** 8 weeks later N=23 Answers= 11/25 = 44%	Personal Plan Course plan Questionnaires Lecture notes STCW Regulations Results from incident awareness The company`s web site

To summarize the design of this study, a longitudinal case study is used. The data gathering is done in a period of 8 weeks for both courses. The questionnaires are divided into a short and a long-term questionnaire, in addition to observations, interviews, and secondary data.

Samples

Sampling is an important factor in relation to quantitative research methodology (Punch, 2009). Every study includes some sample in one or another way, this is because no study, whether it is quantitative or qualitative can includes everyone (Punch, 2009). “You cannot study everyone everywhere doing everything” (Miles & Huber, 1994, s. 31) When we talking about sampling in quantitative research, it is often associated to people. Population is referred to as the total target group, who in the ideal world should give their answers, while the sample is the actual group, which is included, by giving their answers to the study (Miles & Huber, 1994).

To collect data to this study, two separate courses were selected as samples. The first course was in week 40, 2014, and also when the data gathering started. The second course was conducted in week 4, 2015.

The sample when it comes to in-depth interview was chosen on background of experience about the course. The fleet manager was chosen as a key informant regarding to the in-depth interview.

Interviews of varying length are also done with teacher 1 and teacher 2. To better understand the structure of the course, and the case description, several smaller interviews was carried out, in addition, to shorter interviews with teacher 1 and 2. This was done to have complementary answers about the education and the course contents. Shorter interviews with random participants were done during the two courses.

Data Analysis

The questions from the short and long-term questionnaires were analysed and dived into individual and organizational learning.

Person*al plan:* The answers were anonymous and copied from each of the participants. Thereafter, inductively coded in four main categories. In the end of the process with personal plans, the answers were dived into individual and organizational learning, to link it up against the research question.

Interviews. The in-depth interview was transcribed immediately after the interview and then coded, first deductively to search for organizational learning, then inductively to search for other result. Findings of the in-depth interview are coded inductively into 3 key findings of organizational learning.

Observation: Table 4, where the course is explained, is a result of my observation. All of the field notes are conceptualized out of my perception of the course. The observations notes and secondary data about the course were coded to conceptualize the course. The result is presented in table 4. Moreover these data were analysed and structured to write the case description.

Quality

The quality of a study is always of great importance, and the quality depends primarily on the degree of the validity and reliability. The validity is referred to as the study measures what it is intended to measure, while the reliability says something about if the study can be repeated, and still got the same results. If the study not measures what it supposed to do, the validity will be low, and the survey may not be valid. (Punch, 2009).

To have access to empery, the researcher has to break into other people's life, environment or situations (Jacobsen, 2015). This has to be done, to ensure good and valid data, which reflect the reality. The findings and the conclusions of empirical research are only as good as the data they are based on (Punch, 2009, s. 312).

Validity

A important criterion of the quality in research is validity (Bell & Bryman, 2011). Validity refers to accuracy and precision of the collected data. The most important when it comes to validity is whether or not the collected data is appropriate to examine your problem (Denscombe, 2010, s. 298).

The internal validity refers in this case to the internal logic and consistency of the research. With internal means this specific sample. When choosing a research question or a study, you usually have to choose what`s important for your study about internal or external validity. The external validity is about in which grade the research can be transmitted to other situations. Internal and External validity are contrary to each other, and it will be impossible to get a high degree of both internal and external validity (Punch, 2009). The external validity is also about in which grade the findings of this study can be generalized (Punch, 2009). My case is a single case study, and this type of methodology is not indented to test theories or generalize findings, but to create an overall understanding of the specific case.

In this study the internal reliability measure about the study is conducted in a satisfactory manner, and whether it measure what it is assumed to do.

Reliability

Reliability focuses on whether the process of the study is consistent and reasonably stable over time, and across researchers and methods (Miles and Huberman 1994). Reliability, is related to whether the survey represents the real situation (Sander, 2004). If the reliability is good, there is a high probability to have equal results if the study was repeated (Jacobsen, 2000). The assessment and valuation of the study has to be credible, reliable and does not contain obvious errors that impair performance and credibility (Johannessen et al., 2011).

It will still be impossible to replicate the study exactly, "Because human behavior is never static, no study can be replicated exactly, regardless of the methods and design employed" (LeCompte & Goetz, 1982, s. 35). This is important when you considering the reliability in a study.

A case study using a wide range of data and this strengthen reliability because of several sources will proved more and richer data to the study.

The results from the short and long-term questionnaire were relatively similar on some questions, while other was quite variable as illustrated in table 11, 14 and 15.

Nevertheless, there is a connection between the results of the questionnaire and the learning/changes in the personal plans from week 40, 2014. In addition an interview guide is available, and illustrated in table 9, which increases the reliability. In addition, each course consists of same teachers and the course is located at the same place every time. This enhances the ability to recreate identical results if the study was repeated, which ensure a high grade of reliability.

By having the short, and long-term questionnaires, and personal plans anonymously makes the data more reliable. This allows the participants to increasingly express what they really mean, and the answers are more credible than if they were not anonymous. This helps to strengthen the reliability of the study.

CHAPTER 5. FINDINGS

The findings in this study are based on different sources according to the variables, which is presented in table 10.

Table 10 Sources and Variables

FINDINGS					
Individual Learning	**Short. Term**	**Long. Term**	**Organizational learning**	**Short. Term**	**Long. Term**
Questionnaire Nr.1	X		Personal plan	X	
Personal Plan	X		In-depth Interview		X
Observations	X		Questionnaire Nr. 2		X
Questionnaire Nr. 2	X	X			

Individual learning

The findings show individual learning of different kinds on a short and on a long-term. As showed in table 11, the average value of the individual learning in a *short term* horizon, measured by questionnaire 1, is 7,7 on a scale from 1-10, where 1 are no or less learning, and 10 are a high degree of learning acquired.

Table 11 Individual Learning (short term)

Week/Year	Items of Learning Short term	N=	Response Rate %	Average	Max	Min	Mode
Week 40. 2014	1. I will keep the training in good memory	10	100	7,7	10	5	8
Week 4, 2015	------ " ------	15	100	7,1	10	6	9
Week 40. 2014	2. After the training, I know substantially more about the training contents than before	10	100	7,5	9	6	8
Week 4, 2015	------ " ------	15	100	8,2	10	5	9
Week 40. 2014	3. I learned a lot of new things in the training	10	100	8,2	10	7	8
Week 4, 2015	------ " ------	15	100	7,9	10	5	7
Total		25	100	**7,7**	10	5	

The questions answered in the personal plan are: 1. How will I change my attitude and actions when I come back to work? 2. What will I do during the next four months to prevent serious incidents on board? The quotations of the personal plans are coded inductively into 4 main categories: 1) Use of crewmembers knowledge 2) Delegate 3) Encourage crewmembers to speak, and 4) Self-behaviour changes. Afterwards, the findings are interpreted in relation to

individual and organizational learning. Table 12 present quotations from personal plans per category and level of learning.

Table 12 Categories and Quotations of Learning from Personal Plans

Category	Quotation	Ind. Lea	Org Lea	Quotations	Ind. Lea	Org Lea	Quotations	Ind. Lea	Org. Lea
1. Use of crewmembers knowledge	*"Better Communication with crewmembers during toolbox meetings"*	X	-	*"Engaging in troubleshooting, and provide the crew with appropriate info at the toolbox and*	X	-	*"Speak up, and ask for suggestions among the crewmembers"*	X	-
	"Ask for suggestions to avoid incidents"	-	-	*have focus on more quality"*			*"More focus in communication and involving the crew in a*	X	-
	"Involve the crew in decisions about awareness, communication and control"	X	-	*"Listen to the crewmembers and be a clear and distinct leader"*	X	-	*higher degree than today"*		
				"Double check that people understood the task before it starts"	X	-	*"Be more including and give the crew more information"*	X	-
2. Delegate	*Delegate in a higher degree, and improve the communication skills among the crew*	X	-						
3. Encourage crew members to speak	*"Encourage the crewmembers to speak up, independent of grade/authority"*	X	-	*"Change to a more open work culture, where people are Allowed to say what they mean regardless of position"*	-	X	*"Be more open mind and listen to others and encourage them to give their point of view"*	X	-
4. Self-behaviour changes	Decrease the stress among the crew, speak up, and give them more info.	X	-	*Optimized work tasks and effort*	X	-	*Be more involving, and devote more time to quality planning*	X	-

The results from the personal plans show what the participants plan to have increased focus on when they return to their daily work. All four main categories are interpreted to represent signs of individual learning.

Individual learning is also measured by observations, in particular observation from the recap session. The findings of week 4 and 40 are coded inductively and presented in table 13.

Table 13 Recap From participants

Tuesday (From Monday)	Wednesday (From Tuesday)	Thursday (From Wednesday)
1. **Incident causation** 2. Talking/Teamwork 3. Familiarization with the Simulator 4. Communication 5. Learning areas 6. Human factor 7. Motivation 8. Speak up	1. **The importance of the toolbox** meetings 2. Communication/Procedures, and see the big picture 3. Follow the procedures 4. Not assume, but verify 5. Motivate your crew 6. Mind set, listen to everyone regardless on who they are and title on board	1. **Quality toolbox meetings** 2.The dialogue between the captain and he's crew in the simulator on Wednesday. Not be afraid of ask for advices – Try see the hole picture 3. Stress influence 4. Communication/ verbal - non verbal - body language 5. Lack of knowledge/ utilized the knowledge among the crews 6. Obtain feedback 7. Teamwork prevents stress

As shown in table 13, during the recap, the participants from both courses were most concerned about what they learned about quality of toolbox meetings. Toolbox meeting includes communication, speak up, and don't be afraid to ask for suggestions from your crew. Try seeing the whole picture before taking a decision is a topic several of the participants remember as very central.

The findings of individual learning in a *long-term* horizon 8 weeks after the course shows an average of 6,9 in a scale from 1-10. This is a sign of *that the capacity to build, re-elaborate and experience individual knowledge* occurs, also in the long-term. This indicates that the participants in a long-term horizon seem to experience the effects of their knowledge *in light of interaction with other and the environment*, and that individual learning, according to the definition (Sinitsa, 2000) is identified. The long-term findings, measured by questionnaire 2, are presented in table 15.

Table 14 Individual Learning

	Items of Learning (Long-term)	N=	Response Rate %	Average	Max	Min	Mode
			50				
Week 40. 2014	1. In my everyday work, I often use the knowledge I gained in the training	5		6,0	8	3	7
		5	33,33	7,8	10	7	7
Week 4. 2015	------ " ------						
Week 40, 2014	2. I successfully manage to apply the training contents in my everyday work		50	6,4	9	4	7
		5					
		5	33,33	7,8	9	7	7
Week 4. 2015	------ " ------						
Week 40, 2014	3. Since the training, I have been more content with my everyday work		50	5,4	7	1	7
		5					
		5	33,33	8,0	9	7	8
Week 04. 2015	------ " ------						
Week 40, 2014	4. My job performance has improved through the application of the training contents		50	5,8	7	2	7
		5					
Week 04, 2015	------ " ------	5	33,33	8,2	10	7	7
Total		**10**	**41,66**	**6,92**	**10**	**1**	

Organizational learning

The findings show organizational learning of different kinds.

Increased use of crewmembers knowledge: Increased use of crewmember knowledge is a repeating point, from all the courses. During the course the participants discovers in how low grade they utilized their crewmembers during their work tasks on the bridge. Several participants from different courses have a higher focus on increased use of crewmembers knowledge, which may lead to organizational changes and learning within the company.

Workflow: The application of the training contents in the course is supposed to affect the workflow in the company in the long-term. As described in table 15, the average result in measuring the application of the training contents is 5,8 in a scale from 1-10. This is a sign of that organizational climate has been improved in a degree due the training in the course.

Organizational climate: The question about the organizational climates has improved due training on the course or not, it achieved an average score on 5,95. In a scale from 1-10, where 1 is no or less organizational improvements, and 10 are a high degree of organizational

improvements, 5,95 is a sign of sufficient organizational learning in an overall perspective. Category *3*) Encourage crewmembers to speak in the personal plans, is a sign of individual learning. Furthermore, one of the quotations mentioned a change of the work culture, which can also be interpreted a sign on planning organizational learning The participants plan to a higher degree to encourage their crewmembers to speak independent of grade and authority on board. During the course, the participants become aware of this by suggestions from their colleagues, especially during the simulation preparation and the simulator exercises. More open work culture, where the crew are free to speak up independent of grade and position, represents organizational learning.

Training on organizational safety procedures in a simulation-based Ramform: The company as an organization have definitely several advantages in conduction the course. According to the fleet manager, they had several big advantages in the course, but the major advantage is like he said "the opportunity to train on their own safety management systems, with tailor-made scenarios, in a well-known environment". Afterwards he continued and told "This usually affects the motivation and the employee's attitude in the simulation part of the course, and lead to a higher degree of learning among the participants, which also increasing the organizational learning".

New procedures for manoeuvring: During the in-depth interview with the fleet manager in the company he say "After the success with the in-line procedures according to the course, we also want to make changes in the company's manoeuvring procedures". The company has over the last years, and in according to the course understood the importance of having simple checklists and procedures. Like the fleet manager said during the interview "readily and visible checklist is the key to success".

New Routines in-line fuelling: the company had over a period considered changes in their procedures. The idea started because of several incidents, and some of the crew had complained about the in-line fuelling procedures. The management agreed, because the procedures were not sufficient. This happens in line with the course start, and the management came up with the idea of using the course as a test arena to test the old procedures. After the management saw the old procedures in action, they understood they had to do something. As the fleet manager told during the in-depth interview "The old procedures was too complicated and had too much text". The company decided to simplify, split it up, and place the most important very visible at the top. The new procedures where tested and checked in the course in week 04, 2015. Through simulator testing, and tailor-

made software as their own Ramform, the testing could take place in a safe environment. After on, during the discussion session the participants could give feedback, and suggest improvements and changes. The procedure is now in use, this includes out on sea, and also during the simulator exercises during the courses. The interaction between the company, the course and the tailor-made software increased the organizational learning in the company.

Table 15 Organizational learning (long-term)

Week/Year	Items of Learning Long-term	N=	Response rate %	Average	Max	Min	Mode
Week 40. 2014	1. Overall it seems to me that the application of the training contents has facilitated the workflow in my company	5	50	4,8	9	1	5
Week 4, 2015	------ " ------	5	33,33	6,8	9	5	6
Week 40. 2014	2. Overall, it seems to me that the organizational climates has improved due training	5	50	5,0	7	2	6
Week 4, 2015	------ " ------	5	33,33	7,20	10	4	7
Total		**10**	**41,66**	**5,95**	**10**	**1**	

CHAPTER 6. DISCUSSION

The research question is: *Does tailored Bridge and Engine Resource Management courses contribute to individual and organizational learning within the participating shipping company? If individual and/or organizational learning could be identified, what has been learned?*

This question contains three main phenomena or variables, individual learning, organizational learning and the tailored course. The discussion therefore deals with each of these variables.

According to Crossan et. al. (1999) learning at individual, group and organizational level happens by four processes Intuiting, Interpreting, Integrating and Institutionalizing. Intuiting happen at the individual level, interpreting at the individual and group level, integrating at the group and organizational level, and institutionalizing at the organizational level. Each process also has their respective outcomes. The learning effects will be discussed mainly according to this framework.

Individual learning:

The key findings of individual learning are summarized in table 16.

Table 16 The Individual Learning Key Findings

Key findings of individual learning
Short term
• I will keep the training in good memory
• After the training, I know substantially more about the training contents than before
• I learned a lot of new things in the training
• Use of crewmembers knowledge
• Delegate
• Encourage crewmembers to speak
• Self-behaviour changes
• Quality of toolbox meetings
• Try seeing the whole picture before taking a decision
Long-term
• In my everyday work, I often use the knowledge I gained in the training
• I successfully manage to apply the training contents in my everyday work
• Since the training, I have been more content with my everyday work
• My job performance has improved through the application of the training contents

Intuiting is to understand what's going on out from your instinct. Interpreting is a social activity, and people need to discuss their interpreting of a domain or an environment with each other, this creates and refines common language, and makes a clearer collective

understanding. Experiences, images, metaphors represent input and outcomes of the intuiting process, and language, cognitive map and conversation and dialogue input and outcomes of the interpreting process. All these may, according to Crossan et. al. (1999), constitute input and outcomes of individual learning. Individual learning is defined as the capacity to build knowledge *(Sinitsa, 2000 3(1).)*

All the key findings in table 16 represent signs on building of new knowledge, which according to the definition, indicates that individual learning has occurred. It is, moreover, visible that the experiences during the course, e.g. the use of crewmembers knowledge, delegating, encouraging crewmembers to speak and quality of toolbox meetings, have influenced the building of new knowledge. Self-behaviour changes are also interpreted as an intuiting process. Furthermore, when the participants tell that they know more, have learned something, use the knowledge, apply what they have learned, this is interpreted as signs of changes in their cognitive maps.

In accordance to table 16, which symbols that learning also occurring in a long time perspective. The participants often use the knowledge they gained in the training, and successfully manage to apply the training contents in their everyday work is a sign on new cognitive maps, and capacity to build new knowledge. The training has also affect the participants to be more content with their everyday work, and improved job performance indicates the interpretive process has moved beyond the individual and becomes embedded within the workgroup, and becomes integrative.

Organizational learning

The key findings of organizational learning are summarized in table 17.

Table 17 The Organizational Learning Key Findings

Key findings of organizational learning
• Increased use of crewmembers knowledge • Improved workflow • Improved organizational climate • Training on organizational safety procedures in a realistic Ramform simulator • New procedures for in-line fuelling • New procedures for manoeuvring

The focus of integrating is about the change in the individual's understandings and actions, and is a coherent, collective action. It`s through conversation between groups and

shared practice that integrating can be developed in a group or/and organizational level. It is the process with institutionalizing which sets organizational learning apart from individual learning. Shared understandings, mutual adjustments and interactive systems represent inputs and outcome in the integrating process, while routines, diagnostic systems and rules and procedures input and outcomes of the institutionalizing. All this may in accordance to Crossan et. al. (1999) constitute input and outcomes of organizational learning. Organizational learning is defined as a process based on individual learning, through private and public organizations engaged in creating and providing new knowledge, and adapt it into the organization in a constant changing environment (Castaneda & Fernandez, 2007).

Increased use of crewmembers knowledge: The focus of interpreting is about the change in individuals understanding and actions (Crossan et al., 1999). Like illustrated in table 10, increased use of crewmembers knowledge was the most mentioned topic among the participants in the personal plan session, and is also a recurring from other courses. The course puts the participants in scenarios where they being trained in conducting various modes of procedures. An outcome of this is a higher focus on increased use of crewmembers knowledge. During the debrief session the teachers using conversation/dialogue as tools to bring up the different meanings among the participants. Conversations can effectively be used to let the participants understand a domain in a new way (Isaacs, 1993). This may lead to integrating and institutionalizing of new routines, rules and procedures.

Improved workflow: During the course, the teachers have a high focus on discussion and dialogue between the participants. As a consequence of dialogue and interaction, the group can evolve new and deeper shared understandings. The fact that the participants talking about improved workflow in a long-term horizon, testifies that shared understandings and mutual adjustments during the course have contributed to improved workflow within the company.

Improved organizational climate: In accordance to table 15, the organizational climate has been improved after the training, and as a consequence of the course, the employees has acquired new knowledge. Institutionalizing routines like encourage crewmembers to speak up independent of grade and position, testifies that mutual adjustment and shared understandings has lead to new rules and routines, in addition to a more open work culture on board. When participants on a group level achieves shared understandings in exercises during the course, this may lead to new routines, rules and procedures within the company, which together affect the organizational climate and creates input and outcome on an organizational level.

Train on organizational Safety procedures in a realistic Ramform simulator: The training in organizational safety in simulators has several benefits, both for the participants and the organization. The simulator allows the company to train against specific scenarios, and practical use of their own routines, in addition it don't endangering the environment and allow the participants to train on scenarios which is impossible to do out on sea.

Training in simulators with sound, and images, creates a more realistic way of training, and the context will help the participants to have a more realistic picture of the training sessions (Cannon-Bowers & Bowers, 2001). The integrative process of the realistic training may lead to coherent, collective actions. To have success with simulation training, good quality of the software is crucial, and the quality of learning will depends on in which grade the simulation can be transferred to the participants. To achieve organizational learning, and outcomes as new routines, diagnostic systems, rules and procedures, it is important that the simulator has to be integrated into a total training program (Cross, 2011).

New Routines in-line fuelling: A new routine in form of in-line fuelling is established within the company. The in-line fuelling is tested, and changed to be as functional as possible. The company use the course as test arena for new procedure, and the old in-line fuelling procedures was found to complex. In this way the course was used as a platform for feedback and feed forward process, where participants and management together could developed new and user-friendly procedures as a part of the course (Crossan et al., 1999).

When participants acquire individual learning, the aim should be to institutionalize and integrate the knowledge into the organization in a feed forward process (Crossan et al., 1999). If possible, also adapt it in a constantly changing environment (Castaneda & Fernandez, 2007). To change a process like in-line fuelling may take time, because it includes a whole organization in an integrating process. The extent to which it will contribute to organizational learning, or not depends in a big degree of the group dynamics, and the social process that can facilitate or inhibit the organizational learning (Crossan et al., 1999).

New Routines in manoeuvring: The company has during the last courses seen a potential for simplifying other routines as well, because of the success with new in-line fuelling procedures. The company has now started to renews and changing the existing procedures in manoeuvring, with new procedures for manoeuvring and voyage planning. The company has as consequence of the course understood the importance of having simple checklists and procedures where the principal is as short and precise as possible. The new manoeuvring/voyage planning procedures is also being tried out in simulator scenarios during

the next course. In this way the course will be an arena for mutual adjustments of new procedures, where the management can have feedback directly from the users.

After enough training of new procedures, over and over again, the earlier things, which required much deliberation and planning, after all now feels like the most obvious thing to do. What has been learnt, becomes over time and training tacit knowledge (Polanyi, 1967).

Self-behaviour changes can be associated with individual learning, but self-behaviour changes can leads to organizational learning as well. Decreasing the stress among the crew, speak up and give more information certify that the participants has achieved individual learning which can be transmitted to organizational learning. Be more involving and devote more time to quality planning is a sign on integrating of new routines, which can be seen as individual as well as organizational learning within the company.

The Tailor made course: A tailor-made course gives the organization advantages compared with traditional courses. A tailor-made course are directly fitted against the users, which may lead to more motivated participants (Dalgarno & Lee, 2010). In traditional courses, it is more "one size fits all" approach, and the software is not fitted for every individual, which can affect the learning process. The validation of the realism, and the quality of the software is an important factor in simulating exercises, because it has to be as equal as possible to ensure high quality, and great transferability (Cross, 2011). In the course, those criteria's being met in a high degree with tailor-made software, specially designed to be a realistic Ramform.

The tailored course: According to table 1, Hauge (2011) argue about simulating and lecturing is used as methodological tools in traditional approach to continuing education. While tailor-made approach is tried out on going work processes a more common form for methodological tools. In the course, simulating is a well-used methodological tool, and a major part of the course builds upon the simulators and the exercises. Using simulating with tailor-made software may lead to a benefit in tailor-made training, which is not possible in traditional courses.

A tailor-made coursed knows exactly who the participants are, and the course is made out to fit the trainees work situations. Through identify individual characteristics, their motivations and skills, the course is more able to deliver training which encourage to individual learning through focusing on the inputs and outcomes in table 2 (Salas &

Kozlowski, 2012). On the other hand, the tailor-made course prevents the participants to exchange experiences with people from other companies because of the course are tailor-made to the specific company. Nevertheless, recent research shows that a traditional training is often a “one size fits all” approach, and may not be the best way to conduct training and facilitating for individual and organizational learning (Bell, Kanar, & Kozlowski, 2008a; Bell & Kozlowski, 2008)

To which degree the participants achieve individual and organizational learning, depends in a high degree on the pedagogical methods and the teachers. The course is largely based on reflection and discussion. The teachers encourage and sometimes provoke the participants to speak, share experiences, and discuss why things went out as they did during the different exercises. This is a well known strategy in tailor-made courses, where reflection and sharing of experience are important to stimulate the participants to take control over the process of change they facing in their daily work (Hauge, 2011).

CHAPTER 7. CONCLUSION

The study deals with individual and organizational learning of a tailor made course in a short and long-term horizon. The study has conceptualized the course into, Adm. info/Motivation, CRM Theory lectures, Incident awareness exercises, Recap, Simulator familiarization, Simulator preparation, Simulator scenarios, Debrief and Personal Plan.

The research question of the study is: *Does tailored Bridge and Engine Resource Management courses contribute to individual and organizational learning within the participating shipping company? If individual and/or organizational learning could be identified, what has been learned?* The answers on these questions are that the course contributes to individual and organizational learning, and in different ways.

The study shows that the participants keep the training in good memory, and will in a higher degree utilize their crew and their knowledge, and encourage them to speak up regardless of position on board. In addition to more delegating of work, and more quality during the toolbox meetings. The results show that the participants actually have the capacity to build knowledge in a short and long-term horizon.

Organizational learning has definitely occurred within the shipping company. Increased use of crewmembers, improved workflow and organizational climate, in addition, to that the company use the course as a learning arena to develop, test and give feedbacks on new and existing procedures, rules, routines and systems. This has led to integrating and institutionalizing of new procedures into the organization like in-line fuelling, and manoeuvring and voyage planning which going to be the next organizational change within the company.

This study has theoretical and practical implications. The theoretical implications are that it supports the existing literature by measuring and identifying of individual and organizational learning in the course.

Because of a small sampling size within this specific course and shipping company, and in the fact of that a case study aims to provide an analytical, rather than a statistical generalization, this case study cannot be generalized.

The study has further developed Hauge (2011) table, where he compare tailor-made and traditional approaches. He argues for that simulating not is used as a methodological tool in tailor-made course, but in traditional courses. In this tailor made course, simulation is a big part, and used in several scenarios to increase the motivation and deliver tailor made software to encourage to a higher degree of learning among the participants. The good results being

reflect in the short and long-term questionnaire, in addition to how the participants react and behave during the course.

The study also has significant practical implications for the individual and organizational learning process. The outcome of the tailor made courses with simulation testifies that this way of organizing courses has a potential when it comes to learning on an individual and organizational level. The feed forward and feedback process testifies a learning loop within the organization, which means that the organization learning to learn. The degree of the individual learning is of high interest, not only for the shipping company, but also for the university as the course administrator.

Limitations and further research

Despite its important contribution, the study has some limitations, which can be taken into account in further research. First all of my data are collected from a single shipping company, and the sampling size in the individual and organizational learning is small, which not allows generalizing the study. In the qualitative method, between others, an in-depth interview with the key informant was done. A weakness about the in-depth interview for this study is the sampling size, which is relatively small, and may affect the result about organizational learning, because of it is one person's opinion about the organizational learning and changes. Second is the sampling size of personal plans, which was carried out during week 40, 2014, and not for the second course in week 4, 2015. Personal plan gives the study a lot of quotations, which should have been used to underpin the results also in week 4,2015. Third, the short and long-term questionnaire was secondary data, and was developed to measure the satisfaction among participants. It was not fitted directly against this study about individual and organizational learning, which was a weakness because of other questions, may be more sufficient. Inappropriate questions in the questionnaires may affect the validity. An interesting discovery in my theory is that simulation is not a part of traditional approaches, while in this study simulations is used in tailor made approaches. Further research about tailored courses and how to best tailoring the course together is therefore needed.

References

Ausland, H. L., Hauge, H. A., & Andvig, E. (2003). *Helsefremmende arbeid i en brytningstid*.

Beard, R., & Hartley, R. B. (1984). *Teaching and learning in higher education*. LOndon: Harper & Row Publishers.

Behling, O., & Eckel, H. (1991). Making sense out of intuition. *Academy of Management Executive, 5(1)*, 46-54.

Bell, B. S., Kanar, A. M., & Kozlowski, J. W. S. (2008a). Current issues and future directions in simulation-based traning in North America. *International journal of Human Resource Management, 19*, 1416-1434

Bell, B. S., & Kozlowski, J. W. S. (2008). Active learning: Effects of core training designs elements on self-regulatory process, learning, and adaptability. . *journal of Applied Psychology, 93*, 296-316.

Bell, E., & Bryman, A. (2011). *Business Research Methods*. New York Oxford Univeristy Press

Bell, S. B., Kanar, A. M., & Kozlowski, J. W. S. (2008b). Current ISsues and Future Directions in Simulation-Based Training. 6.

Boyce, M. A., & Neale, P. (2006). CONDUCTING IN-DEPTH INTERVIEWS:
A Guide for Designing and Conducting In-Depth Interviews for Evaluation Input. *Pathfinder International Tool Series*, 4.

Buciek, K. (1996). *Fra problem til metode [From a problem to a method]* Fredriksberg C Roskilde iniveritetsforlag

Cannon-Bowers, J. A., & Bowers, C. A. (2001). Synthetic learning environments: On developing a science of simulation, games and virtual world for training. *Center for Advanced Human Resource Studies*.

Castaneda, D., & Fernandez, M. (2007). Validación de una escala de niveles y condiciones de aprendizaje
organizacional *Revista Univeritas Psychologica*, 245,254.

Cross, J. S. (2011). Quality MET through Quality Simulator Applications *International Confernace IMLA 19 Opatija 2011*.

Crossan, M. M., Lane, H. W., & White, R. E. (1999). An Organizational learning framwork: From intuition to institution. *Academy of Management Review*, 522-537.

Daft, R., L, & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review, 9*, 284-295.

Daft, R. L., & Huber, G. (1987). Toward a model of organizations as interpretation systems. *Academy of Management Review, 9*, 284-295.

Dalgarno, B., & Lee, M. J. W. (2010). What are the learning affordances of 3-D virtual environments? . *British Journal of Educational Technology*

Denscombe, M. (2010). *The Good Research Guide* Berkshire Open University Press.

Fangen, K., & Sellerberg, A. M. (2011). *Mange ulike metoder [Many different methods]*. Oslo: Gyldendal Akademisk.

Foster, P. (1996). *Observing Schools: A methodological Guide*. London: Paul Chapman.

Gausdal, A. (2013). Methods for Developing Innovative SME Networks *Springer*

Hauge, H. A. (2011). How can employee empowerment be made conducive to both employee health and organisation performance?

Huff, A. S. (1990). Mapping strategic thought. *New York: Wiley*.

Isaacs, W. H. (1993). Dialogue, collective thinking and organizational learning. *Organizational Dynamics, 22*, 24-39.

Jacobsen, D. I. (2000). *Hvordan gjennomføre undersøkelser? [how to conduct research]*. Oslo: Cappelen Damm AS.
Jacobsen, D. I. (2005). *Hvordan gjennomføre undersøkelser |how to do research]*. Norway Høyskoleforlaget
Jacobsen, D. I. (2015). *Hvordan gjennomføre undersøkelser?*
Johannessen, A., Christoffersen, L., & Tufte, P. A. (2010). *Introduksjon til samfunnsvitenskapelig metode [Introduction to social scientific method]*. Oslo: Abstrakt forlag.
Johannessen, A., Christoffersen, L., & Tufte, P. A. (2011). *Forksningsmetode [Research Methods]*. Oslo: Abstrakt forlag
Johannessen, A., Tufte, P. A., & Kristoffersen, L. (2006). *Introduksjon til samfunsvitenskapelig metode [Introduction to social scientific method]*. Oslo: Abstrakt forlag.
Kvale, S. (1997). *Det kvalitative forskningsintervju [The qualitative research interview]*.
Kvale, S., & Brinkmann, S. (2012). *Det kvalitative forksningsintervju [The qualitative research interview]* Oslo: Gyldendal akademiske.
LeCompte, M. D., & Goetz, P. J. (1982). Problems of Reliability and Validity in Ethnographic Research. *Review of Educational Research 52*, 31-60.
Lund, T., & Haugen, R. (2006). *Forskningsprosessen [The Research Process]*.
Maxwell, J. A. (1992). *Understanding and validity in qualitative research. Harvard Educational Review 62 (3):* : Harvard Educational Review 62 (3):.
McLeod, S. (2008). *Case Study Method*. fra http://www.simplypsychology.org/case-study.html
Miles, B. M., & Huber, A. G. (1994). *Qualitative Data Analysis*. London: SAGE Publications, Inc.
Miles, B. M., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis, A Methods Sourcebook* SAGE Publications, Inc.
Mitchell, J. C. (1983). Case and situation analysis. Sociology Review 51 (2):. 187–211.
Neisser, U. (1976). Cognition and reality. *San Fransico: Freeman*
Polanyi, M. (1967). The Tacit dimension. *London: Routledge*.
Potter, J., & Wetherell, M. (1987). Discourse and Social Psychology. *London:Sage*
Punch, F. K. (2009). *Introduction to Research Methods in Education*. London: SAGE Publications Ltd.
Salas, E., & Cannon-Bowers, J. A. (2001). The science of training: A decade of progress. *Annual Review of Psychology, 52*, 471-499.
Salas, E., & Canoon-Bowers. (2001). The science of training: a decade of progress. *Annu.Rev.Psychol.* , 471-499.
Salas, E., & Kozlowski, J. W. S. (2012). *Learning, Training and Development in Organizations: Much Progress and a Peek Over the Horizon* New York: Routledge Taylor & Francis Group.
Sander, K. (2004). *Reliabilitetsfeil [Realiability fail]*. fra http://www.kunnskapssenteret.com/articles/2684/1/Reliabilitetsfeil/Reliabilitetsfeil.html
Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students*
Schramm, W. (1971). Notes on case studies of instructional media projects.
Seely-Brown, I., & Duguid, P. (1991). Organizational learning and communities of practice: Toward a unified view of working, learning and innovation. *Organization Science,2*, 40-57.
Simon, H. A. (1991). Bounded rationality and organizational learning. 125-133.

Sinitsa, K. (2000). Learning individually: a life long perspective. *Educational Technology & Society* 3(1).
Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, California: Sage.
Tannenbaum, S. I., & Yukl, G. (1992). Training and development in work organizations. *Annual Review of Psychology, 43*, 399-441.
Tellis, W. (1997). Introduction to Case Study. The qualitative report, Volume 3, Number 2, July.
Thagaard, T. (2009). *Systematikk og innlevelse, en innføring i kvalitativ metode [Systematics and empathize, an introduction to qualitative methods]*.
Tsoukas, H. (1991). The missing link: A tranformational view of metaphors in organizational science. *Academy of Management review, 16:*, 566-585.
Weick, K. (1979). The social psychology of organizing. *Reading, MA: Addison-Wesley*.
Weick, K., & Roberts, K. (1993). Collective mind and organizational reliability: The case of flight operations in an aircraft carrier deck. . *Administrative Science Quarterly,38*, 357-381.
Weick, K., & Van Orden, P. W. (1990). Organizing on a global scale: A research and teaching agenda. . *Human Resource Management, 29*, 49-61.
Yin, K. R. (2003). *Case study research : design and methods*. London: SAGE Publications
Yin, R. K. (1984). *Case Study Research: Design and methods*. Beverly Hills, Calif: Sage Publications.

APPENDIX

Day 1			
Teachers	**Theory**	**Exercise**	**Familiarization simulator**
1 & 2	Topics this day are: • Learning theory • Incident Awareness • Motivation • Leadership • Roles and teams • Conflicts • Cultural differences	Individual, group and plenary Reflections discussion between the participants after every scenarios in the simulator. Is a method used to individual and collective reflection on a given topic, problem or question. The Method is described in the thesis The IGP method is used to set up an overview over the most serious incidents which can occur on board, why they occurs, and how to prevent them. When the session is over, the group manager or secretary is responsible to share the results with the other group, and discuss them together.	The next days the simulators are often in use, and the participants need to be familiar with them, before the scenarios starts up next day. This a sequence which takes about one and a half hour, with instruction of Nikolai

Day 2			
Teachers	**Theory**	**Scenario #1 Manoeuvring in port**	**Scenario #2 Bunkering**
3 & 4	• Safety • Accidents • Accident- causation • Human error • Human-behavior • System safety • Contributing factors • Safety barriers	A more or less exercise for further development of the familiarization which was done on monday. The exercise in arrival and manoeuvring in the Rotterdam port. (Including separate/local debrief)	Bunkering operation alongside. Controlled disconnection (Including separate/local debrief)'

Day 3			
Teachers	**Theory**	**Scenario #3 Fuelling**	**Scenario #4 Gyro failure**
3,4 & 5	• Human factors in individual and teams • Perception • Values • Attitudes and norms • The human as a safety barriers • Communication • Stress and workload distribution • Fatigue	Inline fuelling hook up and disconnections between the vessels. Support vessel loss of one engine (Including separate/local debrief	During bunkering seismic vessel blackout- emergency towing (Including separate/local debrief)

Day 4			
Teachers	**Theory**	**Scenario #5 Close pass**	**Scenario #6 Collision**
3,4 & 5	• Cultural impact and roles/hierarchy • Situational awareness • Decisions	With engine problem/failure and fire in engine room. (Including separate/local debrief	Between vessels during inline bunkering (Including separate/local

Day 5				
Teachers	**Theory**	**Scenario #7 Search and Rescue (SAR)**	**Personal plan**	**Break up**
1,2 & 5	• Incident Awareness • Safety • Communication • Resource management	The last scenario is a Search and Rescue exercise. It is a really messy exercise, where the participants shall use all their enable knowledge to serach and find people in the sea, in addition to communicate between the vessels and navigating in a safe and efficient way.	The last thing the participants do at the course is to make their own personal plan. Here they are going to write down, how they will change their attitude and actions when they return on work. What are they going to do the next four months to prevent serious incidents on board, both Process and Task oriented. (Individual reflection) In the end they are going to share their plan with the other group participants. During the Personal Plan the IGP method is used.	The course certificate is given out, and the course is finished.

Personal plan

Process Oriented:	Task Oriented:	How will the workers change their attitude and action when they come back to work
-Try to have good communication with crewmembers at the toolbox -Try decreasing the level of stress among the crew by giving them more info and speak up. Culture/Philosophy/attitude -Better communication, and encourage the crew to give feedback. Try to stress down and have the oversight -When it is possible try to invole the crew in decisions to a greater extent than today. - Try to plan better, Sharing the plan with every crewmembers - Be better to inform and teamwork -Ask for suggestions to avoid serious incidents on board. - Make people to be more involved in awareness, communication and control.	-Optimized the work tasks and my effort - Engage myself in trouble shooting in different departments and provide them with appropriate info at the toolbox. -Delegate in a higher degree and improve the communication skills - Focus on better quality on toolbox meetings. - Be a better leader through listening on crewmembers and speak up under toolbox meetings. - Teamwork and communication between the crewmembers. Encourage the crewmembers to speak up. Double check that people understood task before it starts.	- Try to take the learning the learning and the new knowledge back to work. Specially learned something in the inline bunkering in the simulator. Speak up and ask about suggestions. - Be even better to asking about suggestions under the toolbox meeting -Involve the people around me, and making suggestions. Be better to plan - More focus on communication among the crews and try to encourage more in their daily operations (involving the crew, and give suggestions) -Be more open mind, and open for suggestions. Listen to others, encourage them to give me their point of view. Try to always see the “big” picture when doing hard and risky operations. - More including - Be more open, and ask for support. Try to change the work culture on board in a open way. - Try to utilize my resources around me in a better way and more efficient way. Hear if it is some suggestions. Improve teamwork by delegate if appropriate. - Improve the communication skills and be more clear, take a step “back” when it is needed and delegate/prioritize to prevent stress. Ask for suggestions from my crew members.