Innovative Safety Management at the Maritime Training Institutions

Report and Conclusions

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1. Introduction

Over the years it has been an on-going challenge for shipping companies to manage the task of remoulding and improving the safety awareness and understanding of their newly graduated seafarers. This development need has been motivated by many factors and has been pushed by the wish to improve the safety competencies and culture.

Among many shipping companies there is a general perception that the task of improving seafarer safety and risk awareness is a competence development activity that could have been dealt with more efficiently at an earlier stage. Many seafarer safety competencies should, in other words, have been embedded earlier. In this respect the safety training at the maritime training institutions play an important role.

To improve the timing and quality of the seafarer safety and risk awareness training this project aims at driving a process securing the integration of innovative safety training activities at the maritime training institutions. In this respect there are two overriding competence development goals: 1) To improve the safety competencies of the newly graduated seafarers 2) To help newly graduate seafarers challenge the perceptions on board within the same field of work.

In order to achieve these goals and to provide an adequate starting point for a development process it is of paramount importance to investigate how the safety training at the maritime training institutions is presently carried out and to evaluate this against what can be defined and believed as best practice for this type of training.

Facilitating this process the intellectual output of the project aims at defining and describing how the maritime schools potentially can develop their training activities and overall safety culture performance in a positive way. In extension hereof this report describes tools, competencies, facilities etc. needed to be developed that will support the process forward in the desired direction.
2. Background Information

2.1 Schools

The following Schools have been invited to participate in the project:

**AMET University**
135, East Coast Road,
Kanathur - 603112,
India

AMET was visited on 29th and 30th September 2009

**Philippine Merchant Marine Academy - PMMA**
San Narciso, 2205 Zambales
Philippines

PMMA was visited on 17th and 18th September 2009

**Shanghai Maritime University - SMU**
1550 Pudong Dadao,
Shanghai 200135,
P.R.China

SMU was visited on 15th and 16th September 2009

**SIMAC**
Graaesvej 27
5700 Svendborg

SIMAC was visited on 19th August and 7th September 2009

2.2 Danish Delegation and Project Group

The Danish delegation visiting the 4 schools were:

**Finn Brodersen, A.P. Moller Maersk**

Finn P. Brodersen graduated in 1975 and holds a degree of Master of Science in civil engineering. After a period working as hydraulic research engineer at the Danish Hydraulic Institute, he joined the A.P. Moller-Maersk Group in 1983 as a safety and environment engineer. Here he was exposed to the Oil and Gas Industry's new effort in improving safety management as well as accident prevention and participated in the implementation of the related HSE processes in Maersk Oil. From 1989 to 1991 he was educated to drilling engineer and work as such until 2001, where he became head of the Maersk Oil's safety and environment department. Later he moved to the shipping part of the A.P. Moller-Maersk Group in order to build up a new HSE department for the Maersk fleet as Senior Director in Technical Organisation, bringing the concepts and thinking of safety and environment from Oil and Gas into shipping. He introduced in this capacity a number of new HSE initiatives and developed tool like Safety Culture Workshops, Safety Management Seminars and HSE action plans.
Erik Green, Green-Jakobsen

Erik Green graduated as a Naval Architect in 1990 and has since then been the project manager of numerous shipping related development projects. In 1993 he joined the Danish Shipowners Association of 1895 where his main responsibility was to be the speaking tube for the members in relation to ship technical matters, safety & health and environment. During his employment at the shipowner association he was also approved as a safety and health instructor by the Danish Maritime Authority. In 2000 he graduated from the University of Aalborg with a master degree in HR and labour market relations. Since 1998 he has been managing safety and health development projects in countries such as Vietnam, Philippines, India, and China, among others. He has several years of experience in development projects, consultancy, teaching, and project management with specialization in organizational development, leadership training, safety and health, organizational learning, and culture. In 2001 he and his Partner Bjarke Jakobsen founded Green-Jakobsen.

Niels Kristian Haastrup, SIMAC

Assistant Professor at Svendborg International Maritime Academy. Niels graduated as maritime officer with dual competencies from SIMAC in 2006 following cadetship with A. P. Møller-Mærsk. Following graduation Niels has gained experience as chief officer in various domestic ferries in Denmark and dealt with various ISM and ISPS matters. Since 2007 Niels has been employed at SIMAC as assistant professor dealing with various subjects including marine engineering, colreg and safety and environmental management and simulator training.

2.3 Project Steering Committee

Finn P. Brodersen, A.P. Møller Maersk – Chairman
Torben Jessen, SIMAC
3. **Project Conclusions**

The project goal has been to assess to what degree it is possible to develop, improve and integrate safety training and risk awareness at the above mentioned maritime training institutions. In short, the project task has been to carry out a gap analysis between the existing training activities and what is perceived to be the optimum training processes and to identify why, what, how and where to implement improvements.

Based on the gap analysis it is clear that a number of potential development areas have been identified. In short these areas of development range from the overall development of the training institutions’ safety culture, hereunder establishing of visions, missions and goal settings, as well as a safety policy, top management engagement, educational principles applied during safety training, instructor competencies, the training materials used during training activities, student safety competence evaluation, etc., etc.

In order to support the development processes the project group suggests the development of the following 3 Tool Boxes:

- Top Management Tool Box (See Annex 6)
- Instructor Tool Box (See Annex 7)
- Behavioural Role Simulation Tool (See Annex 4)

Based on the feedback and interviews all 4 training institutions have shown a very sincere and encouraging interest in the project. There is high motivation to participate in the development and integration of the suggested improvements. All training institutions see the project as a useful and important development process and tool to improve the student risk awareness and safety competencies to the benefits of the shipping industry.

\[\text{We are missing the horizontal approach. We need to integrate safety management training in all activities. Process descriptions – Our students need to understand the whole work process.}\]

\[\text{Management, SMU}\]
4 The theory behind the report suggestions and conclusions

In order to put forward sustainable arguments describing why, where, how and what parts of the safety training and culture of the maritime training institutions can be developed it is important to make use of theories, factual knowledge and experiences gained. Section 4 of this report forms the theoretical starting point and will be exploited in the process of underlining the arguments behind the project group’s suggested onward actions.

4.1 Safety Culture

Why discuss safety culture?

The overriding goal of any safety related initiative is to improve the overall safety culture at the maritime training institutions and to ensure that the students within this field of work develop the appropriate safety and risk management competencies. The development of the students’ safety competencies (Competence definition see section 4.9) is in other words highly dependent on the school’s own safety culture, and the project idea is therefore clear.

Another important prerequisite in the process of developing/ implementing appropriate training conditions is the implementation and embedment of an appropriate safety culture that to the highest degree possible is a mirror of what is perceived to be a best practice safety culture on board merchant marine vessels.

Providing the students with a clear vision and experience of how a safety culture should be is the perfect student stepping stone. The schools’ safety culture will mould the students’ safety behaviour, capabilities and risk awareness. In short, a best practice safety culture and awareness at the schools will improve the student risk awareness and safety competence moulding process.

As it can be seen from the definition below, a safety culture consists of many components, processes, behaviours, values, tools, habits, attitudes and methods. A good safety culture embeds a number of best practice principles ranging from application and implementation of safety related components such as Top Management commitment (Signed safety policy, vision, mission and goals), professional understanding of safety in general, process understanding, behavioural aspects, organizational safety management activities, employee awareness on the importance of safety etc.

What does the term ‘culture’ mean?

Not withstanding the fact that lengthy and properly more precise definition’s of culture have been made the term can in short be defined as “the way of doing things in a particular society”. As to the term ‘safety culture’, which first emerged from the 1986 Chernobyl disaster report, where the errors and violations on operating procedures, which contributed to the accident, were seen as evidence of a poor safety culture at the plant.
The Advisory Committee for Safety in Nuclear Installations describes safety culture as “the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine commitment to, and the style and proficiency of an organisation’s health and safety management”.

According to Edgar Schein (Organizational Culture and Leadership, 2004) who studied cultures in organizations, there are 3 layers of culture, which can be compared to an onion. These layers are great value when discussing safety culture. When you peel off the layers, you will gradually get to the core of a culture.

- 1st layer – Artefacts
- 2nd layer - Norms and values
- 3rd layer - Basic Assumptions

Artefacts and Behaviour – 1st Layer

Explicit culture – Artefacts – is the observable reality of safety culture. These are the things you notice first the moment you step on board a vessel or enter the office of any shipping company.

The visible products are: language (e.g. “When I’m busy, I sometimes make short cuts” versus “No matter what happens, I never make short cuts”), technology (e.g. technical facilities to ensure the control of safety hazards), products (e.g. safety posters), creations, clothing (e.g. personal protective equipment), stories (e.g. “The top management doesn’t walk the talk” versus “The top management definitely walks the talk”).

Artefacts are, in other words, visible evidence of a deeper level of culture and are easy to observe, but can be difficult to decipher. Artefacts are the things, which puzzle newcomers in an organisation. These and many artefacts will – when applied properly - have a positive and supportive impact on the safety culture of any organisation.
**Norms and Values – 2nd Layer**

Norms refer to the group’s idea of what is right or wrong. Safety norms can be expressed through written safety policies, rules, procedures, and regulations. Values, on the other hand, determine what is “good or bad”. These are closely-related to the ideals shared by a group. Our perception of right and wrong is based on our values.

“A culture is relatively stable when the norms reflect the values of the group. When this is not the case, there will most likely be a destabilizing tension. In Eastern Europe, we observe for years how the norms of communism failed to match the values of society. Disintegration is a logical result.”

Norms consciously or subconsciously determine how an individual aspires or desires to behave while values serve as criterion in determining a choice from available alternatives. For instance, in one culture, people agree with the value: ‘Safety is essential to ensure a prosperous business’. Yet, the behavioural norm approved by the group could be: ‘Safety is important, but if the ship is docked, we tend to forget about safety’. In such case the norm (what is said) differs from the value (what is done).

In companies, the espoused norms are initially setup by top management. They set standards for what they believe is right and wrong, and how these should be implemented on board. The crew members then adapt these espoused norms and integrate them in their conduct. Example: Top Management says that it is important to wear a hard hat while on deck. Then the platform manager will implement this on board. The crew members will eventually perceive this as the right way to protect themselves against falling objects.

**Basic Assumptions – 3rd Layer**

Basic assumptions constitute the core element in all cultures and are often referred to as “the walk”. A basic assumption is the core of any culture. They are the organization’s unspoken and subconscious rules on how to act, think, and behave. The way they communicate safety, their perception of time, human relations, and actions are strongly influenced by our basic assumptions.

Basic assumptions influence how we see or interpret things, how we react emotionally, and what deserves careful attention, among other things.

Culture influences how we perceive the actions, thoughts, and behaviour of other people. Two different safety cultures have two different interpretations. Using a safety harness when setting the pilot ladder may seem over-protective in one safety culture whereas in another safety culture, it is just a normal thing.

As it can be seen from the safety maturity tables the basic assumptions towards communication, risk assessment, safety training etc. will differ from company to company. However, whatever action the organization believes is correct expresses a basic assumption of how an appropriate safety culture shall be managed.
4.2 Safety Maturity

In extension of the term safety culture, the term safety culture maturity is a conceptual cornerstone of any safety culture. Safety culture maturity refers to an organisation’s safety maturity level or capacity, and is perceived appropriate to assess the safety culture development of an organisation.

The industry is currently trying to achieve an overall step change improvement in safety and it is perceived that behavioural and cultural issues need to be addressed to achieve this improvement. Many players and stakeholders within the maritime sector are constantly putting a considerable amount of effort into establishing best practice and identifying tools and techniques that are proven effective for improving safety.

Whilst this approach is logical, its effectiveness may be limited by the heterogeneity in the safety culture across the industry. It is likely that companies in the early stages of developing their safety culture will require different improvement techniques from those with strong safety cultures.

Consequently, a safety culture maturity model has been developed to assist organizations in: a) establishing their current level of safety culture maturity, and b) identifying the actions required to improve their culture. It is proposed that organizations progress sequentially through five levels, by building on the strengths and removing the weaknesses of the previous level.

The safety maturity model has been used to assess in what areas the project partners can improve the learning conditions for the development of appropriate student safety and risk awareness. The descriptions below describe the 5 maturity levels.
Level One - Pathological
“Who cares as long as we are not caught?”

Safety is defined in terms of technical and procedural solutions and compliance with regulations. Safety is not seen as a key business risk and the safety department is perceived to have primary responsibility for safety. Many accidents are seen as unavoidable and as part of the job. Most frontline staff is uninterested in safety and may only use safety as the basis for other arguments, such as changes in shift systems.

Level Two - Reactive
“We do a lot when accidents happen”

The organisation’s accident rate is average for its industrial sector, but they tend to have more serious accidents than average. Safety is seen as a business risk and management time and effort is put into accident prevention. Safety is solely defined in terms of adherence to rules and procedures and engineering controls. Accidents are seen as preventable. Managers perceive that the majority of accidents are solely caused by the unsafe behaviour of front-line staff. Safety performance is measured in terms of lagging indicators such as LTI, and safety incentives are based on reduced LTI rates. Senior managers are reactive in their involvement in health and safety (i.e. they use punishment when accident rates increase).

Level Three - Calculative
“We have systems in place to manage all hazards”

Accident rates are relatively low, but they have reached a plateau. The organisation is convinced that the involvement of the frontline employee in health and safety is critical, if future improvements are going to be achieved. Managers recognize that a wide range of factors cause accidents and the root causes often originate from management decisions.

A significant proportion of frontline employees are willing to work with management to improve health and safety. The majority of staff accepts personal responsibility for their own health and safety. Safety performance is actively monitored and the data is used effectively.

Level Four - Proactive
“We work on the problems we still find”

The majority of staff in the organisation is convinced that health and safety is important from both a moral and an economic point of view. Managers and frontline staff recognise that a wide range of factors cause accidents and the root causes are likely to come back to management decisions. Frontline staff accept personal responsibility for their own and others’ health and safety.

The importance of all employees feeling valued and treated fairly is recognised. The organisation puts significant effort into proactive measures to prevent accidents. Safety performance is actively monitored using all data available. Non-work accidents are also monitored and a healthy lifestyle is promoted.
Level Five - Generative

“Safety is how we do business around here”

The prevention of all injuries or harm to employees (both at work and at home) is a core company value. The organisation has had a sustained period (years) without a recordable accident or high potential incident, but there is no feeling of complacency. They live with the paranoia that their next accident is just around the corner. The organisation uses a range of indicators to monitor performance but it is not performance-driven, as it has confidence in its safety processes.

The organisation is constantly striving to be better and find better ways of improving hazard control mechanisms. All employees share the belief that health and safety is a critical aspect of their job and accept that the prevention of non-work injuries is important. The company invests considerable effort in promoting health and safety at home.

4.3 Risk Assessment and Awareness

Implementation of a Risk Assessment Culture is a safety management instrument used to minimize the risk of personal accidents and damage to property in protecting any seafarer from getting hurt. It is a tool - when applied correctly and effectively - that is perceived as one of the most important proactive ways controlling and minimizing occupational hazards. It raises the risk awareness among those who are involved in the process and makes people stop and think.

A Risk Assessment is a systematic method of looking at work activities, considering what could go wrong, and deciding on suitable control measures to prevent loss, damage or injury in the workplace. The Assessment should include the controls required to eliminate, reduce or minimize the risks. It is therefore an important task to ensure that risk assessment processes are carried out correctly and are embedded truly and efficiently in the organisation.

Due to the importance of the Risk Assessment methodology it is pivotal for students to develop and embed an in-depth understanding of its use prior to the start up of any hazardous job task both at the training institution and on board.

4.4 Safety Training

The perception of the term Safety Training is often that it is identical to Emergency Preparedness, Safety Signs, Ships’ Safety etc. However, for this project the focus is not emergency preparedness or ships’ safety. The term safety training in this project refers to the protection of the seafarer at the work place.

The focus is to avoid accidents and sickness while performing the daily job routine as well as non-routine tasks the person is assigned for. As described in section 4.9 of this report the competencies to be developed are the trinity: skills, knowledge and behaviour.

We know what SJA means, but we are not very good at applying the principles.

As a safety representative I have not experienced that risk assessments have been made in connection with the training.

Students, SIMAC
4.5 Emergency Preparedness Training

The term emergency preparedness refers to areas such as fire fighting, evacuation training, boat drills etc. It addresses any situation where an unexpected emergency situation occurs and where instant and specific actions are needed. This area of safety is not the focus for this project.

4.6 Ships’ Safety

Ships’ safety refers to areas such as cargo securing, ships’ stability, ballast water management, rules of navigation, ship hull integrity etc. Any situations or conditions that can jeopardize the seaworthiness of the ship can be placed under the category ships’ safety. This is an important aspect but not a safety area for this project. However, the element of safety, which this report focuses on, will have impacts on both emergency preparedness and ships’ safety.

4.7 Safety Management

The term safety management refers to the maritime schools’ ability to manage safety activities at a strategic, tactical and operational level e.g.:

- Integrate safety training across subjects and departments
- Embed appropriate risk management principles in the training at the school; develop appropriate student safety behaviour and understanding of their own roles and responsibilities.
- Ensure that the schools’ safety policy is cascaded down through the ranks of the instructors and students
- Align and communicate clear messages related to safety
- Communicate the schools’ view on what safety competencies the students need to develop in order to become safety excellent seafarers.
- Communicate what has negative and positive effect on the safety culture

4.8 Safety Strategy

The purpose of a Safety Strategy is to drive the safety performance of any organization to a higher level and is therefore very important for any organisation. Further, in order to achieve these improvements the organization must be capable of assessing the present safety maturity (See section 4.2) level and pin point and define new safety goals for the future. To support the decision making process it is important that organizations define safety KPI’s, run statistics, assess and discuss existing procedures and ways of doing that might be subject for further improvements etc.

4.9 Definition of Competencies

To achieve safety affluent students, who will be applying best practice risk and safety awareness and management principles, calls for the embedment of appropriate competencies. In short, the industry is looking for seafarer safety competencies that will manage safety hazards and risks in the most competent way.

Seen in this respect it is important to discuss what types of competencies are considered important to embed and to understand the concept of competence. The concept of competence has numerous definitions. In order to avoid misunderstandings, it is important to have a clear definition of what is meant. The Competence Model (Figure 4.9) shown below is a model prepared by Thorup & Brosolat, 'Kompetenceudvikling i praksis'.
In short, the model illustrates which elements we as humans utilise, when we carry out any kind of work task. The task could be a specific job task, playing an instrument, raising a child or dealing with safety hazards.

![Diagram](image)

Figure 4.9 Thorup & Brosolat, ‘Kompetenceudvikling i praksis’.

**Talent and Personal Characteristics**

Talents and Personal Characteristics are considered as the underlying foundation of a person’s capabilities. These characteristics are essential premises for a person’s professional behaviour and regarded as the fundamental elements for achieving professional success.

Talents and Personal Characteristics are difficult to influence. For talent to be developed, an inborn aptitude is required. Correspondingly, personal characteristics are fundamental character traits that form your personality. These traits are established at conception or in the first years of a person’s life.

**Knowledge, skills and behaviour**

In extension of a person’s talents and personal characteristics the total level of competence also relies on knowledge, skills and behaviour. The combination of these competence components will decide a person’s ability to manage and solve a specific job task.

Competence is therefore result oriented, and the value lies in the action. The elements of competence composed of knowledge, skills and behaviour are built on the individual foundation; behaviour in particular is connected with personality.

**Knowledge** - Knowledge is information utilised in a competent way and is of value when put into practice through effective skills and relevant behaviour. As a car driver you need to know the meaning of e.g. road signs, driving rules, speed limits, etc.

**Skills** – Skills represent the ability to perform an act in real life and is often the result of persistent training. As a car driver you need to be able drive the car in accordance with the way it was designed and the facilities it has.
**Behaviour** - Behaviour is the will and ability to act, which is adjusted and tailored to given situations and surroundings. Successful behaviour demands reflection. As a car driver you need to be able to assess your actual driving in accordance with the weather conditions, traffic situation, etc.

As described in section 4.1 a safety culture is reflected in the behaviour and actions of people. Since crew actions and behaviour are closely linked to the idea of competencies it is important to assess how the specific competence development process is undertaken by those who have an impact on this process – the schools, its managers, safety culture, facilities, instructor competencies, educational principles applied etc.

In this respect it is important not only to look at the training taking place during the classroom sessions. It is also important to assess to what degree the school’s own safety culture impacts the safety competencies of the students. Both factors will have a large influence on the students’ safety competencies and these will, by the end of the day, have an impact on the safety culture of any shipping company they might work for.
4.10 Characteristics of Learning Processes

Risk awareness is to examine the on board environment to identify any potential hazards or risks. To manage and control this process the seafarer has 3 working tools: 1) Procedures and Checklists 2) Risk Assessment Tool 3) Personal and Individual Competence Tool Box.

As described in section 4.12 the use of procedures and checklists - only - has had a very positive effect to the overall safety performance within the maritime segment since the implementation of the ISM-code. Among many of the interviewed instructors and managers there was a fundamental perception of the need to embed discipline and compliance in accordance with any procedures put forward. The fundamental belief behind this approach is that as long as procedures and checklists are followed, nothing can go wrong.

The downside of this approach is that many companies have developed a compliance anchored safety culture where the ability to and acceptance of the need for generative and proactive safety management capabilities has hit the rocks. Bottom line in this respect is that no procedures or checklists will ever be able to take into account all eventualities and safety hazards. There will always be a need for the crew on board and the individual to make his/her own risk assessment.

To overcome this ‘competence gap’ and as an add-on to the use of procedures and checklists it is important to develop seafarer competencies that understand the need for on-going risk awareness and personal assessment together with management of the situation in accordance with the 3 working tools as described above. Managing hazards and risks takes more than procedure compliance.

To understand this stand from a theoretical starting point Argyris and Schön’s (1974) argue that people have mental maps with regard to how to act in situations. This involves the way they plan, implement and review their actions.

*When someone is asked how he would behave under certain circumstances, the answer he usually gives is his espoused theory of action for that situation. This is the theory of action to which he gives allegiance, and which, upon request, he communicates to others. However, the theory that actually governs his actions is this theory-in-use.* (Argyris and Schön 1974: 6-7)

Furthermore, they assert that these maps guide people’s actions rather than the theories they explicitly espouse. What is more, most people aren’t aware of the maps or theories they make use of. One way of making sense of this is to say that there is a split between theory and action. Argyris and Schön argue that two theories of action are involved - Single-Loop and Double-Loop learning.

In short, Single-loop learning is only when errors or challenges are detected and corrected, then learning occurs. Single-loop learning describes the process that occurs during activities that add to the knowledge-base without altering the
organization's central way of doing things (Read: We have safety challenges but we do not change the procedure). This is a lower level of learning described by Peter Senge (1990a) as adaptive learning or coping. Single loop learning is linear and does not question whether or not the process is right or wrong.

Double-loop learning occurs when a team is involved in questioning and modifying normal practices and procedures as well as the lower levels of learning through detection and correction of errors. Double-loop learning involves asking 'why' certain routines are in place and by adding extra, changed or modified 'ways of doing' to ensure that they managed as competently as possible.

Senge refers to double-loop learning as a higher-level of learning, or generative learning that expands an organization's capabilities (Peter Senge, 1990a). Double-loop learning is a process where the organization and its individuals allow, demands or invites its individuals to "make sense" of what is going on.

Double loop learning goes a step further than single-loop learning by asking why certain processes are in place and the value they contribute. In other words: An employee/organization who understands that the need for the re-assessment of the correctness of what is going on possess the adequate competencies.

Seen from a safety perspective these individual and organizational competencies are essential, and both single and double-loop training institution learning environments shall be created. Students have to be put into situations where they have to move beyond what is written in the procedures and develop their generative learning styles as described in section 4.2.

The students shall to a much higher degree show 'Theory-in-use' behaviour as described in section 4.11. For the students to achieve these competencies the training institutions need to embed learning processes that support this to happen. Altered learning goals and educational principles applied can support the process of achieving these competencies.
4.11 Safety Behaviour and Competencies

The idea ‘Appropriate Safety Behaviour and Competencies’ has been mentioned several times in this report. If this idea is to become more tangible, it is of course important to dig deeper and become more specific. In order to do so we wish to make use of various safety culture research projects that have been carried out within the off-shore segment.

In short, researchers have shown that complementary behaviour has a very positive impact on the company’s safety culture. The table below is a list of 5 complementary behaviour definitions, which have been identified as safety behaviour patterns supporting the process of achieving a safety culture with a high culture maturity. These are, in other words, the appropriate safety behaviour patterns and competencies any maritime training institutions should define as student safety competence learning goals.
### Assertiveness

- Express thoughts, feelings, and beliefs
- Influence effectively, listen, and negotiate
- Correct colleagues’ poor safety behaviour
- Give On-the-job feedback on safety performance
- Conduct Safety debriefing
- Constant communication
- Ask questions
- Appreciation is shown towards safe behaviour

To be assertive means to be forthright and positive. An assertive person speaks up, gives feedback, and makes comments and question the way things are done, in a constructive manner. The focus is to get the job done in the best possible way, regardless of position and responsibility. The school safety culture shall support this goal.

### Proactive

- Risk management capabilities are shown
- Future safety activities are defined and strategy is laid down.
- People react to low probability but high consequence risks.
- People take time to find the safest solution.
- Hazards and Risks are not accepted.
- Safety is discussed everyday.
- Continuous improvement are implemented
- Safety Action Plans are prepared, implemented and followed up

To be proactive means to create or control a situation by taking an initiative. Proactive safety managers possess the fundamental belief that improvements are ensured by looking ahead and trying to understand or figure out how to eliminate or control potential safety hazards. The school safety culture shall support this goal.

### Involvement

- All parties are involved in discussions of any safety issues
- Reports are questioned and analyses made
- The crew is involved in problem-solving processes
- All involved parties present arguments, solutions, and ideas.
- Relationships are perceived as an important part of having a safe working environment
- Safety initiatives on board are initiated

Involvement means “to involve” and “to get/be involved”. Involvement is, in other words, a two-way traffic process. Involvement is an important factor to ensure understanding, acceptance, and buy-in by those who will be affected in the process.

### Visibility

- Safety results and efforts are visible
- Safety goals and strategy are communicated
- Safety Key Performance Indicators are visible
- Safety activities are communicated
- Decisions taken lead to actions.
- Safety on board are discussed during ship visits

Top management policies, visions, strategies, and initiatives shall be visible and communicated to the involved parties. Visibility creates clarity and understanding. Visible safety management also shows specific important actions. Top Management shall ensure that safety actions, goals and initiatives are visible for all involved parties.

### Knowledge Actions

- Understand the principles of prevention.
- Understand exposures.
- Understand where to look for procedures.
- Delegate clear roles and responsibilities
- Study safety as a professional

Knowledge is necessary to carry out competent actions. To understand the basic safety principles and methods is necessary in order to become a competent safety manager.

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How you speak safety and apply its principles mirror the effectiveness of an organisation’s safety management initiatives.

#### 4.12 Didactics

To evaluate how the training institutions can ensure the development of the appropriate personal capabilities it is important to assess what is defined as the schools’ didactic learning approach and to understand the culture/safety culture at the various schools.

Didactics are, in short, the thoughts, considerations and reflections made in connection with learning - it being the thoughts and reflections made by the
teacher or by the students. These considerations can concern the rhetoric, methodology, goals and/or pedagogical approach (Ralking et. al. 2001).

Hilde Hiim and Else Hippe (Hiim, H and Hippe, E. 2006) employ a more holistic view using their “comprehensive model”, describing six elements that are all linked to one another.

These elements are:

- **Learning Premise**: Student background, interests of participants, knowledge, capability.
- **Framework**: Physical environment, resources, equipment, time available etc.
- **Goal**: Competences, knowledge, skills etc. that the student should gain. Goals can be set on a short term (e.g. one lesson) as well as on longer term (e.g. a semester).
- **Content**: What it’s all about? connected with goal, method chosen, literature etc (Eriksen, Y and Hansen, P. 2004).
- **Learning process**: Actions by student or the instructor. Group work, activity in class room, reading, practice, simulation etc.
- **Assessment**: Goals attained? Successful learning process?

During this process we have focused primarily on the considerations made by faculty members in connection with their own presentations and their interaction with the students, and how goals are defined, if defined.

Concerning the lecturer/student interaction it appears that teaching primarily based on instructions given by the lecturer. This statement is based, not the least, on the interview responses that we have received from the students.

The instructors’ Safety lecturing ability to integrate safety during class varies from instructor to instructor. Some instructors are very good at involving us in the activities others just do all the talking.

*Student, SIMAC*
Examples of the questions asked:

“Describe how safety training is undertaken today and how you perceive the value of this training”.

“Describe your interaction with your instructor during safety training.”

Answers:
- It's instruction based and you listen to the instructor
- More instruction rather than process in the teaching
- Safety is not the most important element in the training
- Obey the teachers' rules and know the answers
- Military style – orders are given and we follow them
- Sometimes the instructor asks questions and the students have discussions
- We have been taught the safe way to go
- We are told why a procedure is important
- Questions are pushed forward and we discuss it in a group
- It depends on the lecturer and the subject. Some are mostly instructing, others motivate us to try things out in practice.

These are examples of answers given by students in connection with didactic areas. The answers indicate that instructions on safety given by the lecturers to the students, who, for their part, sit still and listen, are the primary method used at the four schools.

However, some answers do indicated that, at least some, lecturers do ask the students to work in groups and solve problems that they have not necessarily been exposed to before. Concerning goal setting the instructors were, among other questions, asked:

“What are the safety goals and how are they communicated?”

Answers:
- We have the goal of embedding the correct safety awareness among our students, but we know the process needs to be placed on rails.
- We have not yet specific objectives.
- A lot is done to communicate safety when students start in the workshops
- Top management does not communicate safety very much, only in very overall terms
- In general, my perception is that safety is discussed and communicated only very little

“How does your university decide how the course syllabus should be? (Compliance versus Excess to statutory requirements)”

Answers:
- A safety checklist exists for various areas at the workshop
- We carry out instruction but in the second year students have to manage their safety processes themselves
- Risk Assessment might be carried out, but it is not an integrated activity
- We do not introduce the students to a Risk Assessment method
- Safety learning goals are not included in the course syllabus
- Safety subjects will pop up, but in an unstructured way

These and other answers and questions, as seen in Annex 1, indicate that the didactic approach to safety management training is largely unstructured and left to the individual instructor to consider and decide. It appears that instructors, in
general, fail to imply a holistic view on safety management training and rather focus on their own personal experiences, and instruct the students on what to do and what not to do.

Thoughts and ideas on didactics might also, very well, be undertaken by the academy management. Management representatives were also given questions on this matter, examples:

“What pedagogical and educational principles do the instructors’ typically apply?”

Answers:
• The principles applied are decided upon by each individual instructor. But it is our firm belief that they have a number of educational methods in their ’Tools box’ that makes them capable of assessing if educational principles are the most appropriate.

“What type of training do instructors undergo?”

Answers:
• All teachers go through lecturing courses addressing various educational principles and didactic ideas and methods
• There is no specific safety training for instructors

The answers indicate that management generally do not pay much attention to didactic and pedagogical concerns regarding safety management training. Not due to malevolence (ill will) but because it has not been a point of focus so far.

When asked how safety management training could be made more interesting, the students responded e.g.:
• Multimedia application – we like to play
• Practical training – application
• Use a combination of multimedia and application
• More practical exercises
• Visit ships
• New things are better than old things
• Movies – awareness films
• Computer games – simulations

These answers, along with the answers given by faculty and management, indicate that a lot could be done in the future in order to make safety management training more interesting, relevant and motivating. Students clearly request a learning process which is more “hands-on” based and encourages them to think for themselves and make up their own mind in various situations.

According to Hiim and Hippe it may in many cases be necessary or wise for the instructor to differentiate and adjust the content of the subject and/or lesson. Choice of content, goal and premise should be made with respect to areas of interest of the students as well as previous knowledge and training. The instructor might benefit from answering some of the following questions (Hiim, H and Hippe, E. 2006):

• Is it possible to connect the content to practical exercises?
• Are relevant tasks found in the local community?
• Is it possible to connect the contents with the contents of other subjects?

In terms of safety management it is important that the instructor, over time, focuses the training on all levels of safety and all participants and levels. Finn
Brodersen, senior director with A. P. Møller-Maersk describes three important levels.

1. Organizational level: Safety Management System, procedures, checklist etc.
2. Crew level: Risk Assessment Tool, Actions by crew.
The Risk Management Circle illustrates the importance and interconnection of the three levels (Green-Jakobsen – July news, 2009) In order to embed a natural understanding of the crew and individual levels the present educational principles and training shall to a higher degree be arranged to support this learning process. Today the main focus is at the organizational level – following procedures and orders.

The Organizational level is basically regulated by Safety Management Systems guided by the ISM Code. Further, the tendency has been to regulate all details at Crew level by the use of the overall ISM management system, which then easily becomes cumbersome and heavy lacking operational efficiency and ownership at crew level.

As the Safe Job Analysis (SJA) principles (Risk Assessment) have been introduced in the recent years by the regulators, this concept should principally be the management tool at crew level at the work places to minimize the risk of personal accidents and damage to property. In this context it is therefore important that the graduated seafarers have the in-depth understanding of these principles.

During one of the project group’s interviews with the students, one student clearly stated: “If all on board the vessel follow the rules, then we can avoid all accidents” This indicate the understanding that if the safety management system as well as the SJA System is “perfect” and covers all situations, we will avoid accidents.

Off course, in the perfect world, this may be true, but in reality we cannot foresee all situations and processes. Therefore “the individual” is shown in the figure indicating that the individual has the remaining part of the full circle in the risk management process. The challenge in this context is to equip and educate the individual to deal with his own situation and the related details, which are not covered by the SJA nor the safety management system.

It is in this area we see most of the personal accidents today, and it is therefore important that the cadets understand this and understand their own responsibilities.

The above statements indicate that we cannot solve all safety issues by regulations, rules and guidelines. This creates a challenge at institutions where a disciplined approach toward the students is dominant. A disciplined approach will precisely require rules and will drive a compliance culture. Principally, a compliance culture must exist, but not without addressing the area and situations where rules are not adequate and maybe even lacking. Precisely in this area the individual must be able to handle the situation and in Consequently the institutions must develop processes in their education to fill this gap.

4.13 Change Management – Safety Culture Improvements

In order to understand the suggested safety training change approach we will make use of Harold Leavitt’s Diamond model. Leavitt’s Diamond is based on the idea that it is rare for any change to occur in isolation. Leavitt sees technology, tasks, people, and the organizational structure in which they function as four interdependent variables, visualized as the four points of a diamond.
Change at any one point of the diamond will impact some or all of the others. Thus, a changed task will necessarily affect the people involved in it, the structure in which they work, and the technology that they use. Failure to manage these interdependencies at critical times of change can create problems.

**People** - The nature of the people undertaking the tasks. For example, their attitudes, skills, attributes, needs, expectations, relationships, patterns of behaviour, leadership styles etc.

**Tasks** - The goals and objectives of the organisation. Tasks refer to the nature of inputs and outputs, and work activities to be carried out during the work process.

**Structure** - The patterns of the organisation, lines of authority, formal authority, relationships, channels of communication among the employees. Structure refers to the division of work and co-ordination of tasks.

**Technology and Procedures** - The manner in which the tasks of the organisation are carried out and the nature of the performance. The materials, systems and procedures used during the work process.

To study the contents of the change content and process reference is made to Annex 4, 6 and 7.
5. **Project Method and Goals**

The process of achieving safety affluent seafarers is a discussion that has been running for decades. Many and good initiatives have been taken over the years, and the general safety awareness and capabilities of the industry as a whole has without doubt improved. The general perception is that the goal shall be an incident and accident free working environment.

The downside of the story is that accidents, illnesses and body deteriorations still happen. The zero accident industry goal is therefore still not accomplished and there is therefore still work to be done. Improvements are needed and innovative and well designed tools, training solutions, structures etc. have to be developed.

A classical industry approach towards the goal of improving the merchant marine safety standards has been to study the fatalities and accidents in merchant marine ship disasters (Ex. Titanic, Herald of Free Enterprise, Estonia), accidents on board etc. When accidents have happened the industry has often reacted very swiftly through enforcement and implementation of rules, regulations, procedures, guidelines and checklists. The approach can to a large degree be described as reactive and based on experiences gained. The cynic will define it as a “We do a lot when accidents happen” approach.

Research within the safety and health shows that those who understand to live by a "look ahead, assess, remove and control hazard" approach have a better overall safety culture.

5.1 **Purpose of School visits and outcome**

The overall purpose of the school visits was to: 1) To elaborate further and discuss the project idea with school management and instructors; 2) Carry out a gap analysis of existing risk management training effects and conditions and what is perceived as the optimum training processes and conditions 3) Map out and develop a clear understanding of the degree of risk management integration in the basic training activities at the 4 maritime training schools; 4) Ensure top management endorsement of the project 5) Receive feedback and input for the final project definition.

As described in the initial application the outcome of the visits is a full description of actions to be taken and materials to be prepared in order to better integrate risk management training at the 4 schools.

5.2 **The ideas behind the chosen method**

To achieve the overall project objectives it has been of paramount importance to develop a training environment ‘investigation tool’ usable in connection with the school visits and to ensure a clear understanding of the 4 schools’ approach, ideas and capabilities towards safety training.

The goal has been to work ‘ourselves around’ the visited schools' existing risk management structures, people, tasks, procedures and facilities and to evaluate these against what is believed will be the best training conditions for embedding

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**We need to develop a better idea of industry requirements. Today we work “in the box”**

*Instructor, PMMA*

**In general my perception is that safety is discussed and communicated only very little**

*Instructor, SIMAC*
appropriate risk management capabilities and behaviours. The process can also be defined as a gap analysis.

In short, it was agreed to base our studies on qualitative input via interviews and official school documents describing policies, course syllabus, vision and mission statements etc. In order to cross check statements and perceptions put forward it was decided to run a process involving 3 stakeholders: 1) Top management; 2) Instructors and 3) Students.

The survey guide and questionnaire developed to carry out the gap analysis was designed and developed by the project group and tested at SIMAC prior to the meetings in Shanghai, PMMA and AMET. The areas addressed during these interviews can be seen in section 5 of this report.

In total 4 x 3 meetings have been held. The input gathered during the interviews and the materials collected has served as the research data material in the process of deriving how risk management can be integrated more effectively in the schools' training activities.

Minutes of meeting, policies, vision and mission statements and course curricula can be found in annex xx

5.3 Top management commitment – Safety Policy, Vision and Mission

The total safety capability and culture of any organization is highly dependent on its leader’s commitment and ability to drive an organization’s safety performance. In this respect a signed policy is important but far from sufficient to embed a best practice safety culture.

An appropriate safety training approach needs leaders to ensure organizational competence embedment. The mapping and evaluation of the schools' top management commitment and capabilities have therefore been of paramount importance.

5.4 Questionnaire

The gap analysing tool applied during interviews was 3 unique questionnaires for each of the following target groups:

1) School Top Management
2) Instructors and
3) Top Management.

The purpose of the questionnaires was to ensure that a number of key issues were addressed and assessed. In short, the issues addressed can be defined as important components influencing the level and quality of the safety training and overall safety culture at the training institutions.

The headlines addressed and why they were found important to unfold is described in the table below:
<table>
<thead>
<tr>
<th>Issues Addressed</th>
<th>Motivation Behind</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Safety Policy, Vision and Mission – Top Management Commitment and School Safety Organization</td>
<td>Like any other organisation the training institutions top management safety policies, visions missions the way they are conveyed will have an impact on how instructors and students will perceive safety and the importance it should be given.</td>
</tr>
<tr>
<td>Educational goals versus existing course syllabus including safety subjects being addressed</td>
<td>A clear understanding of the training institution’s set learning goals, defined syllabus etc. shall always be ensured. Creating an overview of these is a prerequisite to discuss potential changes.</td>
</tr>
<tr>
<td>The educational principles applied during safety training</td>
<td>Educational principles will influence student motivation, effectiveness of learning process, result of learning process etc.</td>
</tr>
<tr>
<td>Instructor competencies and the on-going competence development process</td>
<td>The level of instructor competencies and the instructor competence development processes will influence student motivation, effectiveness of learning process, result of learning process etc.</td>
</tr>
<tr>
<td>The school’s perception of student needs and characteristics – target group analysis</td>
<td>Any training process shall take into account its target group. Age, gender, background, culture etc. are all important parameters.</td>
</tr>
<tr>
<td>The school’s available materials, IT equipment and multimedia resources and systems utilized during safety training</td>
<td>Training institutions facilities and equipment can offer both possibilities and limitations.</td>
</tr>
<tr>
<td>General perception of training effect</td>
<td>How did top management, instructors and students perceive the effect of their training? What was the end result?</td>
</tr>
</tbody>
</table>

### 5.5 Compliance versus Best Practice Driven Process

Over the years many safety culture development processes have been driven by the need for compliance in accordance with client and legislator requirements. The impact of these requirements can’t be neglected. Without this ‘push’ the industry would not have achieved the safety level they are experiencing today.

Despite the fact that clients and legislators have had a large and positive impact on the safety level on board merchant marine vessels, this project has not focused on assessing the schools’ level of compliance towards safety. Instead it is the philosophy of the project group that safety should be driven by the organisation supported by individuals focusing on what is believed to the best for safety rather than just ensuring compliance.

The project group has tried to unveil safety perceptions, habits, attitudes and ways of doing rather than conducting an audit-like investigation. The positive outcome of this approach has been an open, honest and constructive dialogue with all involved parties that has resulted in a number of observations, ideas and suggestion to improve the overall safety culture at the training institutions and safety and risk awareness and capabilities of the students.
To improve a safety culture the focus should be to do what is best for safety rather than doing what is good for compliance. Achieving compliance is equal to achieving optimum safety. Compliance is a minimum standard, which no longer is perceived sufficient and compares 2-3 in the safety culture maturity model as described in section 4.2.
6. Gap Analysis

6.1 Overall Key Observations

During the school visits, the meetings held and the touring of the school facilities a number of key observations were made addressing a number of areas such as: management commitment and focus on safety, education principles, facilities, instructor training, instructors’ safety performance etc. The purpose of highlighting these observations is to ensure a logical link between the present safety training activities, performance and safety culture and the suggested improvements.

Despite the fact that all 4 schools are situated in different regions of the world numerous and identical perceptions of ‘ways of doing’ were observed. The fact that all schools – in principle – are driven by the same learning requirements the management and planning of the training activities was in most areas very identical.

Common for all 4 schools was also that top management, instructors and students confirmed each others’ perceptions of the training carried out.

Based on the gap analysis and in order to provide the reader with a quick overview of some of the processes, materials or competencies that potentially – if developed properly - can have a positive impact on the students’ safety and risk awareness competencies this summary has been prepared.

1 = No schools have implemented these/this
3 = Some schools have implemented these/this
5 = All schools have implemented these/this

<table>
<thead>
<tr>
<th>Subject Example</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety policies, visions and missions are implemented</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New safety goals are defined on a regular basis and drives the safety performance further</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk assessment is a formally integrated element of all relevant training exercises</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student safety competencies are evaluated in accordance with well defined standards</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The maritime training institutions apply formal safety training for their instructors</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The schools actively use Near Miss incidents to learn from</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools have established a formal safety organisation involving students in the work processes</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The educational principles applied are primarily of instructional character (SIMAC applies more problem solving training activities)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.2 Management Commitment and Policies

For all 4 maritime academies the top management approach and commitment towards safety - as a whole - was very identical. The schools’ safety culture is stimulated by a management commitment and approaches that - despite the fact that all schools do their best endeavours to create a mirror of life at sea – allows a number of areas to be developed. Generally speaking all 4 training institutions
acknowledge that their approach is unstructured and only consists of bits and pieces.

As stipulated in section 4.1 it is perceived of high importance that the training institutions focus on the development of a school safety culture embedding and underlining the best practice principles and mirroring the life on board. In this respect all 4 schools have underlined their willingness to work in this direction. The areas to be developed are described in principle in section 4.13 – Leavitt Diamond Model.

### 6.3 Educational goals versus existing course syllabus

The overall impression is that safety training is mostly carried out in accordance with STCW requirements only. Also the majority of the training has a high focus on emergency preparedness and ship safety. Based on the feedback from the interviewed persons the following conclusions have been made:

- High focus on emergency preparedness awareness and training
- High focus on personal protection awareness and risk assessment discussions during workshop exercises.
- All schools admit their lack of focus on on-the-job protection
- Course curricula and the training approach was compliance driven
- The evaluation of student safety competencies is oral and based on the instructors’ perception of what good safety behaviour is.
- Risk awareness is dealt with in an non-uniform and unstructured way

In short, the formalised integration of Risk Assessment and other important safety management tools, activities and processes during class room and workshop training are limited and the approach is based on instructor instructions. The instructions given rely on the instructors’ experience and self-gained safety competencies.

### 6.4 Existing educational principles and student competence evaluation

The overall impression of the educational principles applied is that all 4 training institutions primarily can be described as instrumental. Most instructors stick to instructional based teaching fashion and the key focus is teaching the students to follow procedures and to ensure discipline. The following key observations were made:

- There is no formalised and defined standard for student safety competence evaluation
- Most training activities (SIMAC exclusive) were instruction based. Only on a few occasions are students involved in the problem solving process.
- The process orientated educational principles can be developed
- Integration of risk assessment, safety management principles etc. was only to a very limited degree integrated in the training

As argued elsewhere in this report the development of appropriate safety competencies shall be achieved by activating and developing competencies such as personal responsibility, assertiveness, proactive focus and actions. To develop...
these competencies it is important to run learning processes fit to support these learning goals.

When it comes to developing the best safety behaviours it is believed that some behaviour patterns are more appropriate than others. As described in section 4.11 there are five safety behaviour patterns that should be embedded in any seafarer. In order to embed these behaviour patterns it is of course of paramount importance that those undergoing any type of safety training get to understand why, what and how to do in order to become a good safety ambassador.

Classical and opposite directed learning goals are:

- ‘Respect towards superiors’ **versus** ‘we are all equal and important’ (High Power Distance, Hofstede). Too much respect might withhold some seafarers from speaking up and be assertive.
- ‘Work in accordance with your orders’ **versus** ‘help find a solution’. Orders are important, but when it comes to safety everybody on board has a responsibility to be alert and be critical, if the orders are assessed to be inadequate or wrong.
- ‘Procedures shall be followed’ **versus** ‘procedures are important but we also have to think for ourselves’. Procedures are good to have, but they the crew and the individual always need to make their own risk assessments and take appropriate precautionary measures in case of change in conditions, especially in the cases where procedures are insufficient or even lacking.
- ‘Non-assertive’ **versus** ‘Assertive’. Non-assertive behaviour can be critical for safety. In a strong hierarchy with a high power distance assertive behaviour can be pushed aside.
- ‘Instruction’ **versus** ‘process’. Working safely is to involve all involved parties in the work. It is not only a question of giving orders and following these.
- Etc.
The Philippine Merchant Marine Academy stands as one of the oldest and most illustrious institutions in the Philippines today, particularly in the field of maritime education. At PMMA a very expressed and visual learning goal is to embed discipline among their students.

In this respect the educational principles applied by the instructors will have a major impact on the students’ safety capabilities and performance. Experience shows that instrumental and instructional educational principles will develop these skills sufficiently. The risk of developing the inadequate safety competencies is too high.

To obtain these competencies and behaviour a different approach is recommended. Instructors can, in other words, achieve a better learning impact if appropriate educational principles are applied during training.

6.5 Instructor/teacher competencies and competence development

In short all 4 training institutions leave it to the instructor to integrate appropriate safety training in the lectures. None of the schools have a formalised way of training the instructors in safety. The classical instructor training approach is to undergo the IMO model course and to participate in discussion, seminars and conferences.

6.6 Student – target group - needs and ideas

The student target group was assessed to be very homogeneous and with the same preferred learning styles and motivations. Common for all students were:

- The students were looking for more interesting, visual and hands on training sessions.
- Safety needed to have a higher priority
- The materials presented could be improved
- It was frequently emphasised that a hands-on training approach combined with interesting visuals was the preferred learning situation

However, the target group was also very influenced by the learning and lecturing styles at the training institutions (Also see section 4.10 and 6.4). These lecturing
styles varied from country to country. 3 of 4 training institutions had the fundamental belief that the students needed to be disciplined, follow orders and show respect for superiors. 1 training institution treated their students more like equals and found it important to develop their problem solving skills and to learn how they can participate actively in the work processes on board.

Due to the training institutions’ different learning environments and educational principles and beliefs the students’ appearance was very different. Some students showed great respect towards instructors. Others saw them more as equals and were not afraid to speak their opinion. Potentially a conflict between discipline and an assertive and involving behaviour is apparent.

‘During my time at the maritime academy I was instructed by my room officer to steal the school flag. The purpose of this order was to test my discipline and commitment towards my group. Despite the fact that I knew it was wrong doing it and that I could be heavily penalised if I was caught, I went ahead and did it. My loyalty and discipline towards my group was more important than what was right and wrong.’

Former PMMA student

6.7 Available materials, IT equipment and multimedia resources

In general the materials, IT equipment and multimedia resources available at the training institutions were limited and mostly of ‘older version’. Power presentations were plenty and the use of visual effects very few. The need for new and updated materials is in other words very large. Both students and instructors expressed a need for better multimedia solutions, movies, interactive tools etc.

6.8 Perception of training effect

All 3 target groups acknowledge the fact that the effect of the safety training can be improved and be changed for the better. The interviews carried out have also highlighted the need for investigating how this type of training can become more effective, interesting and interactive. The ‘instructor decides all on safety’ approach relies on the competencies and interpretations of the individual rather than policies and dispositions of the organization.

In order to manage this process the training institutions were particularly looking for a better understanding of what safety competencies needed to be developed, how this can be done and what tools, methods and ideas need to be lectured.
6.9 Management endorsement of project

Top management from all 4 schools have given their endorsement and support towards the project. None of the schools have expressed any major concerns and have confirmed that they wish to play an active role in the preparation of the project.
7. **What we need to do**

The overall objective of the project is to improve the level of risk and safety management competencies among cadets. The definition of the term ‘competencies’ in this connection, is the ability to apply new knowledge, skills and behaviour into practical work life as defined in section 4.9. In order to achieve this risk assessment and awareness ideas have to be integrated during all relevant training sessions.

The rationale behind this objective is that cadets with strong competencies in this area will – when on board a vessel - have a point of view and best practise approach, which could have a positive influence on the existing safety culture and performance of the ship.

Risk – and safety management competencies are then more than just the understanding of principles, systems and tools. It is applying this understanding in an everyday context on board were there are many parallel processes in actions and a multi cultural environment in which the cadet will have to act.

**Existing type of training is not enough**

Today most training in the area of risk and safety management is aimed at providing understanding of administrative processes, systems and tools. The Cadet learns the importance of complying with rules and regulations and how these systems can support the safety efforts. However very little learning efforts are made to prepare the cadet on how to deal with unexpected incidents, attitudes, and perceptions, or how to take responsibility when dealing with an area or situation not described in a procedure.

In this respect there is a need for training that would go beyond the traditional classroom training, if implemented in an optimum way, to focus more on the personal requirements to deal with multiple processes, collaborate with others, be put in situations where there is no straight forward answer or decision making with attention to the risk and safety management philosophies.

**Shipping companies will increase demands**

As argued earlier the ongoing efforts to improve the safety on board rest on the shipping companies. At this stage where the safety performance has stagnated with a LTA+ plateau, an improved approach is required to improve further. Providing more of the existing type of training will not have a significant impact to result in further improvement.
Risk and safety management needs to be a firm belief among all, not only the crew on board, but the whole organisation. More shipping companies share this perception and will increase their demands towards the training of cadets in the coming years. These companies will be looking for cadets who not only understand how to comply but are an active part of the ongoing efforts of constant improvements in this area.

The opportunity of maritime academies to go on the forefront

With shipping companies taking steps to have the risk and safety management fully integrated in the whole business there is an opportunity for Maritime Academies not just to comply with demands as they are expressed, but to actually step in the forefront of this area.

The risk and safety management competencies of the new recruited cadets will reflect the discipline and safety culture experienced at the school. In other words, if the Maritime Academies will pursue the opportunity of providing acknowledged cadets, the academy will, as a minimum, need to match the culture of the recruiting shipping company and furthermore to include a risk and safety management training that supports the development of personal competencies among the cadets.

In order to develop the appropriate safety culture and training at the training institutions a number of activities, tools, methods and processes need to be developed and embedded in the 'ways of doing' of the schools. The arguments behind the suggested development are based on an evaluation of theory/best practice versus training institution observations. Many of these arguments lay implicitly in the section above.

However, before a detailed description is made it is important to develop an overview of the project goals, means, drivers and methods:
In short, the 2 Tool Boxes shall provide the schools with “The Talk” (Content, Procedures, and Policies etc.) and the ability to do “The Walk” (Safety Management Processes and Behaviour, Set new Goals, Reporting Mechanism etc.) Top management and instructors are the key drivers but in order to do so they must be equipped with a Tool Box appropriate for the purpose.

Improving the safety competencies, capabilities and culture of any organisation needs to take into account how to ensure behavioural embedment - Ensuring that the Talk Walks.

7.1 Top Management Tool Box

Top management commitment and involvement is essential. All organisations look for leadership and direction. Improving the safety culture of an organisation is no exception. To drive the process forward top management must understand how this task is managed. The purpose of the Management Tool Box is therefore to provide management with ideas, advice examples of policies, visions, missions, values, activities and goals that are essential in order to have effective safety culture processes at the training institutions.

To study the content of the Management Tool Box we refer to Annex 6.
7.2 Instructor Tool Box

The instructor tool contains 2 overall sections: 1) Train-the-Trainer section and 2) Safety Content section. The Train-the-Trainer section will describe and advice instructors how to manage safety and health training processes. The Safety Content section shall explain and introduce important safety topics and principles such as: Risk Assessment, Observation Techniques, Appropriate safety behaviour etc.

Similar to any other training process any subject needs well defined learning goals, materials and an approved syllabus. Subjects such as: Risk Assessment, Safety Organisation, Safety Reporting: Meeting management etc. are all seen as important lectures to integrate in the training today.

To study the content of the Instructor Tool Box we refer to Annex 7. This tool will also include a Train-the-Trainer course and a Multimedia Behavioural Role Simulation BeRoSim (See Annex 4).
Annex 1
# Management questions and replies

<table>
<thead>
<tr>
<th>Question/subject</th>
<th>PMMA</th>
<th>AMET</th>
<th>SMU</th>
<th>SIMAC</th>
</tr>
</thead>
</table>
| **What is your school’s safety policy?** | We have bits and parcels but on a general approach we are really not good enough. We are not into it yet – we follow Government baseline. I need to explain the importance of safety. | o We do not have a formal policy, but we have a system which is related to the quality management process.  
 o We refer to emergency preparedness and the use of PPE etc. | o Good question – We do not have any formal safety policy.  
 o No vision is expressed.  
 o Safety components exist but they are not tied up to an overall policy.  
 We have a formalised safety organization at our school but the students are not very much involved in this work. | o Good question – We do not have any formal safety policy.  
 o No vision is expressed. However, we emphasize the importance of safety during their start-up.  
 o Safety policy as components do exist but it is not formalised.  
 o At SIMAC we have a formalised safety organization. |
| **What are the safety goals and how are they communicated?** | We wish to integrate safety in our day to day activities. | o We have specific safety goals related to a number of issues, but we try to communicate various matters.  
 o We have curriculum and we address safety – but we need to integrate properly in our culture.  
 o Not much visible safety communication.  
 o We deal with a lot of safety related matters. | o We have defined a goal for 1st year students – the students shall be competent enough to avoid getting hurt. How we achieve this goal is not defined in detail.  
 The instructors communicate it, but we also communicate it when the students start up their training.  
 It is not clear towards the students what the school thinks about safety. We talk about it, but we don’t have a | o We have defined a goal for 1st year students – the students shall become competent enough to avoid any accidents during their stay.  
 The instructors communicate safety and we also communicate it during introductions.  
 It is very clearly communicated, but the structure and organization of safety is not good. It is not fully integrated in the training. |
Annex 1.1

| How are accidents recorded? | We have no safety records | o  No statistics. When something happens, we try to bring awareness reactive approach | We track accidents but we don’t communicate them |
| How does your academy evaluate the level of safety competencies that the students need to develop? (Review) | Oral evaluation and feedback but no formal focus is carried out | o  Oral evaluation  
  o  Individual interpretations made by each department  
  o  Not aligned | There is no formalised and defined standard for the evaluation of student safety competencies |
| How is your introduction of newly employed instructors to safety? | I find it hard to get instructors to take it on board  
  They will think of it as an extra load but I don’t believe it is the truth | o  IMO model course  
  o  No particular forum or focus on safety  
  o  We have general discussion  
  o  Seminars and conferences  
  We discuss with the students about their experiences – near miss, etc. | It is up to the instructor to integrate it in the training |
| How are the students introduced to safety from management and when? |  o  When they join there is a little bit about safety, which is about emergency preparedness  
  o  During class | Students are in introduced to safety on a regular basis. However, we deal with it as modules and not as an integrated part of all training activities. | When they start up at our school, we address it. |
### What needs for improvements do you potentially see for your own school?

- Our instructors need to develop their safety and health competencies and I think that they will need to change their attitude towards safety.

- We need to develop a culture
- Checklists can be a problem – the downside is that it takes away responsibility
- We get feedback from the industry via the students
- We interact a lot with the industry
- A. P. Møller tells us their experience

**Good question. We do not have a formalised feedback process. We are mostly driven by DMA requirements.**

### How does your university decide how the course syllabus should be?

- During workshop training it is our aim to go beyond compliance, but the rest of the time we don’t go above compliance.
- The university has 3 types of safety training: Safety Engineering – Ship, People and Environment Management
  - Personal Safety
  - Personal Survival
  - Fire Fighting
  - Medical First Aid
  - Maritime Psychology
  - Equipment Safety

**During workshop training we try to go beyond compliance but during the rest of the time we stay within the curriculum (compliance).**

### Have you received any feedback from any clients regarding the safety competencies of your graduates?

- We feel the pressure from our clients who have a higher focus on safety. They require more training

**We carry out client feedback analysis – but we don’t know if we address safety**

### Describe how safety training is

- Modules, but after that it is up to the instructor

**We are very attitude focused and as described**

**We are very attitude focused. Especially during**
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
</table>
| Describe the student/instructor interaction during safety training      | • Instruction but sometimes we have group exercises  
• We would like to change it so that they take the responsibility  
• We go from instruction to process  
• The instructors go through a basic educational principles  
• It is described in syllabus  
• We go from instruction to process  
• The instructors go through basic educational principles  
• It is described in syllabus |
| How do you ensure that safety issues and safety management are coordinated across the subjects with your colleagues? | In certain related subjects (Personal Safety) the students shall pass an exam  
We have no structured safety competence evaluation approach |
| How are the students’ safety competencies evaluated?                    | In certain areas we include the principles of risk assessment, but we don’t have a generic risk management tool for personal safety  
It is not integrated. It is up to the instructor to assess if and how this shall happen. It is not a management/policy requirement |
| How is Risk Assessment integrated in activities at the school?          | In certain areas we include the principles of risk assessment, but we don’t have a generic risk management tool for personal safety  
It is not integrated. It is up to the instructor to assess if and how this shall happen. It is not a management/policy requirement |
<p>| How is the school’s safety policy implemented and communicated in your training today? | Since we don’t have a written safety policy we don’t communicate it. But of course we do find safety important and safety is therefore discussed during various learning processes, but it is not anchored in policy signed by management |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are safety meetings conducted together with the students?</td>
<td>We do have safety meetings but the students are not very much involved in the process</td>
</tr>
<tr>
<td>How do instructors develop their Safety lecturing competencies?</td>
<td>In an unsystematic way</td>
</tr>
<tr>
<td></td>
<td>All teachers go through a section 16 course</td>
</tr>
<tr>
<td></td>
<td>They have to finalize a section 16 course</td>
</tr>
<tr>
<td>What type of training do instructors undergo?</td>
<td>There is no specific safety training for instructors</td>
</tr>
<tr>
<td></td>
<td>All teachers go through lecturing courses addressing various educational principles and didactical ideas and methods.</td>
</tr>
<tr>
<td></td>
<td>There is no specific safety training for instructors</td>
</tr>
<tr>
<td>What pedagogical and educational principles do the instructors’ typically apply?</td>
<td>The principles applied are decided upon by each individual instructor. But it is our firm belief that they have a number of educational methods in their ‘Tools box’ that make them capable of assessing what educational principles are the most appropriate.</td>
</tr>
<tr>
<td>How do you assess the instructors’ safety management competencies?</td>
<td>There is no formalized evaluation</td>
</tr>
<tr>
<td></td>
<td>There is no formalized evaluation</td>
</tr>
<tr>
<td>Looking at the target group how do you believe that safety management training can be made more</td>
<td>Games and simulations</td>
</tr>
<tr>
<td></td>
<td>We are missing the horizontal approach. We need to integrate it in all activities</td>
</tr>
<tr>
<td></td>
<td>Towards safety we are missing a horizontal learning approach</td>
</tr>
<tr>
<td></td>
<td>We need better safety process descriptions</td>
</tr>
</tbody>
</table>
### Annex 1.1

<table>
<thead>
<tr>
<th>Question</th>
<th>Our students need to understand the whole work process</th>
<th>Descriptions of evaluation processes</th>
<th>We have no feedback in this area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have any response or evaluation from the students suggesting how safety training might be improved/changed?</td>
<td>o Tell us more about SOLAS</td>
<td>o We do not have any feedback on workplace safety</td>
<td></td>
</tr>
<tr>
<td>What IT and multimedia facilities does the University have to their disposal for safety training?</td>
<td>o Videotel</td>
<td>o Towards safety training we have only very limited multimedia facilities</td>
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<td></td>
<td>o Power Points</td>
<td></td>
<td></td>
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<tr>
<td>What materials are being used during safety training classes?</td>
<td>How important compared to other subjects would you evaluate the safety management training?</td>
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<td></td>
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<tr>
<td>-------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We make presentations. Various written materials</td>
<td>Those instructors who have been on board have a high awareness – those who haven’t do not have a high focus. The safety focus varies from instructor to instructor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Many of the Seahealth Denmark materials are being used. In general, it is up to the student and instructor to find appropriate materials, but we do have a good library for this purpose.</td>
<td>Since we don’t have a structured approach towards this, it is of course difficult to evaluate the precise training effect. However, our perception that Simac – especially due to workshop training – do embed, among the students, a good safety attitude and awareness.</td>
<td></td>
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</tr>
</tbody>
</table>
### Student questions and replies

<table>
<thead>
<tr>
<th>Questions</th>
<th>PMMA</th>
<th>AMET</th>
<th>SMU</th>
<th>SIMAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>How did you experience the introduction of safety entering the school?</td>
<td>• During our 3rd year simple safety matters are introduced – report things we find unsafe&lt;br&gt;• It has been imposed that safety is important</td>
<td>o The main agenda was about the training we were to receive&lt;br&gt;o Safety was emphasized during classroom training</td>
<td>o We were introduced to security matters&lt;br&gt;o We were never introduced to personal safety&lt;br&gt;o Basic professional courses&lt;br&gt;o We were introduced to emergency preparedness</td>
<td>• Lessons in safety at sea have been stopped and the instruction is not structured.&lt;br&gt;• Has not attended a course for safety representatives.&lt;br&gt;• A preliminary course was cancelled.&lt;br&gt;• We are not allowed to operate a machine before we have been taught how we avoid injuries.&lt;br&gt;• The student must be able to say no if necessary and take responsibility – one must have the guts to put one’s foot down.</td>
</tr>
<tr>
<td>What is your impression of the school’s focus on safety? When you started your training? During class and training sessions in general?</td>
<td>We have not seen any safety policy but are aware of the quality policy</td>
<td>o No safety policy&lt;br&gt;o AMET is a safe place – There are a number of things which are addressed&lt;br&gt;o Safety has a high priority&lt;br&gt;o We learn to follow procedures&lt;br&gt;o We have safety regulations</td>
<td>We don’t know</td>
<td>• SIMAC’s view on safety is not very visible, they take for granted that you know about the safety issues - there are some issues they want us to pay attention to.&lt;br&gt;• We are not acquainted with SIMAC’s safety policy – we don’t know how the management’s view on safety is.</td>
</tr>
</tbody>
</table>
### Define what you believe are important training needs

<table>
<thead>
<tr>
<th>Can you explain the following words: SJA and Risk Assessment and how are they applied?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Near miss is a situation where an accident could have happened and we have to report in order to avoid things happening again. The old students are aware of the risk assessment process.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Follow the procedures</th>
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<tbody>
<tr>
<td>We have to manage the hazards</td>
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</tbody>
</table>

| We don't know the idea of safe job analysis |

| We know what it means, but we are not very good at applying the principles |

### Are procedures equal to a Risk Assessment?

<table>
<thead>
<tr>
<th>• We apply procedures but we do not carry out risk assessments ourselves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No systematic risk assessment method exists.</td>
</tr>
</tbody>
</table>

| • Lack of knowledge about the concept risk assessment/ workplace assessment. |

<table>
<thead>
<tr>
<th>• We apply procedures, but we do not carry out risk assessments ourselves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No systematic risk assessment method exists.</td>
</tr>
<tr>
<td>• Lack of knowledge about the concept risk assessment/ workplace assessment.</td>
</tr>
</tbody>
</table>

As a safety representative I have not experienced that risk assessments have been made in connection with the training.

### Describe what you believe are important training needs?

| Good house keeping is important to address |

| More focus on practical training on how to do things. The best learning process happens when |

| When it comes to personal safety we see a lot of potential improvements |

<p>| It needs more focus and integration in our other activities |</p>
<table>
<thead>
<tr>
<th>Annex 1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Describe how safety training is undertaken today and how you perceive the value of this training.</strong></td>
</tr>
<tr>
<td>o It is mostly the instructors who tell us what to look out for and what to do. We must remove potential hazards – the wet floor.</td>
</tr>
<tr>
<td><strong>Describe your interaction with your instructor during safety training</strong></td>
</tr>
<tr>
<td><strong>How are your safety competencies evaluated?</strong></td>
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<tr>
<td></td>
</tr>
<tr>
<td>How is Risk Assessment integrated in activities at the school?</td>
</tr>
<tr>
<td>Do you ever evaluate or review your way of dealing with safety?</td>
</tr>
<tr>
<td>Are you involved safety in meetings together with your instructor?</td>
</tr>
<tr>
<td>How will you describe the instructors’ Safety lecturing ability to integrate safety during class?</td>
</tr>
<tr>
<td>Can you describe how focused the instructor is on safety?</td>
</tr>
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<td></td>
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</tbody>
</table>
between practical training and practice could be improved.

- simulations
  - E-learning

the teaching on board is required.
- Good interaction between practical training and practice could be improved.
- The subject is dry - let us see a film
- Multimedia would be nice

---

<table>
<thead>
<tr>
<th>Describe the IT facilities, materials and classroom facilities used during safety training?</th>
<th>We have visual aids but the safety and health materials we have assessed are generally limited.</th>
<th>Power points</th>
<th>We need more materials explaining the content of personal safety</th>
<th>The material is very limited. We use materials and procedure from Seahealth Denmark.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>How will you evaluate the training effect seen in relation to the goal of becoming good at managing safety?</th>
<th>We have a good idea of how to act in case of emergency situations but after talking to you we realise that we need to develop our personal protection capabilities.</th>
<th>Our training at the school is so limited that it is fair to say that the effect of the training we receive at the school is limited.</th>
<th>Our training at the school is so limited and unstructured that it is fair to say that the effect of the training we receive at the school is limited.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>How important compared to other subjects would you evaluate the safety management training?</th>
<th>We know that it is important.</th>
<th>Very important</th>
<th>The most important</th>
<th>Properly more important than the attention we give it</th>
</tr>
</thead>
</table>
# Instructor questions and replies

<table>
<thead>
<tr>
<th>Question/subject</th>
<th>PMMA</th>
<th>AMET</th>
<th>SMU</th>
<th>SIMAC</th>
</tr>
</thead>
</table>
| **Does your school have a safety policy?** | - PMMA policy is included in our quality system – But safety is not mentioned. However, there is a focus on emergency preparedness  
- No clear and written policy but we have policies in relation to our students  
- We need to adjust our policies  
- We have modules, bits and pieces | No – we don’t remember, but we think we have one. I have seen a training and quality policy | There is no clear, communicated policy for safety. We know about emergency preparedness. | o Good question – I have not seen one in the form of any document  
o In the workshop everything we do has an element of safety  
o We apply/have 12 safety commands/principles in the workshop, which shall help the students understand how they protect themselves.  
o We have a number of procedures and checklists |
| **What are the safety goals and how are they communicated?** | o We have the goal of embedding the correct safety awareness among our students but the process needs to be placed on rails  
We have not yet defined specific objectives | | The goal is to create awareness among the students, but we need to improve the process. | o A lot is done to communicate safety when students start in the workshops  
o Top management does not communicate safety very much only in very overall terms  
 o APM students go through a safety programme at MTC. In general my perception is that safety is discussed and communicated only very little |
| **How are accidents**                  | No                                                                   |                                                                      |                                                                      | o We register our |
### recorded?

- We conduct safety meetings where we discuss incidents.
- The students do not participate in safety rep training.
- Discussions made during safety meetings are passed on to their fellow students.
- Safety Area Inspections are carried out – we tell them what to look for.

### How does your academy evaluate the level of safety competencies that the students need to develop? (Review)

- There are no stipulated ways of doing this. We need to develop a method to evaluate safety competencies.
- We do give feedback but this is up to the instructors own attitudes, knowledge and understanding.
- We try to inform them of the hazards at school. At the workshop training, we discuss safety procedures – first lesson. We instruct and give them handouts. We have safety posters.
- We give feedback when safety issues are discussed. No structured evaluation exists.
- This does not happen in a structured way – in case of incidents we evaluate.
- Apart from that we don’t carry out any formal assessment of student safety competencies.

### What needs for improvements do you potentially see for your own school?

- We need to develop a better idea of industry requirements. Today we work “in the box”.
- We comply with UK.
- We discuss safety in connection with specific safety issues or tasks, but we need to improve interrelation.
- I believe we do a good job – we try to learn our students what to do in relation to specific safety tasks.
- There is a lack of process understanding of the human element.

### How does your university decide how

- Safety learning goals are not included in the syllabus.
- Safety wise we develop our own syllabus.
- Safety wise we develop our own syllabus.
- A safety checklist exists for various areas.

<table>
<thead>
<tr>
<th>How does your university decide how</th>
<th>recorded?</th>
<th>How does your academy evaluate the level of safety competencies that the students need to develop? (Review)</th>
<th>What needs for improvements do you potentially see for your own school?</th>
<th>incidents and near miss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety learning goals are not included in the syllabus.</td>
<td>We try to inform them of the hazards at school. At the workshop training, we discuss safety procedures – first lesson. We instruct and give them handouts. We have safety posters.</td>
<td>We comply with UK.</td>
<td>Safety Area Inspections are carried out – we tell them what to look for.</td>
<td>We conduct safety meetings where we discuss incidents.</td>
</tr>
<tr>
<td>Safety wise we develop our own syllabus.</td>
<td>We give feedback when safety issues are discussed. No structured evaluation exists.</td>
<td>We discuss safety in connection with specific safety issues or tasks, but we need to improve interrelation.</td>
<td></td>
<td>The students do not participate in safety rep training.</td>
</tr>
<tr>
<td>Safety wise we develop our own syllabus.</td>
<td></td>
<td></td>
<td></td>
<td>Discussions made during safety meetings are passed on to their fellow students.</td>
</tr>
<tr>
<td>A safety checklist exists for various areas.</td>
<td></td>
<td></td>
<td></td>
<td>Safety Area Inspections are carried out – we tell them what to look for.</td>
</tr>
<tr>
<td><strong>the course syllabus should be?</strong></td>
<td>course syllabus</td>
<td>Curriculum is decided by academic council</td>
<td>Curriculum is decided by academic council</td>
<td>at the workshop</td>
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<tr>
<td>Safety subjects will pop up but in an unstructured way</td>
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<td>We carry out instruction, but the second year students have to manage their safety processes themselves</td>
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<td>Risk Assessment might be carried out, but it is not an integrated activity</td>
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<td></td>
<td></td>
<td></td>
<td>We do not introduce the students to a Risk Assessment method</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Have you received any feedback from any clients regarding the safety competencies of your graduates?</strong></th>
<th>We have a reactive approach. When we hear something we evaluate and react</th>
<th>We have received no formal feedback</th>
<th>We have a reactive approach. When we hear something we evaluate and react</th>
<th>We get feedback from the students after safety meetings and assignments in the workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>The feedback process is not formalised</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>We do not receive feedback during the students' first on board term</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Describe how safety training is undertaken today and the educational principles applied and implemented</strong></th>
<th>We try to integrate safety in the professional training. However, we still need to discuss the optimum way to do this</th>
<th>We have no records and idea of the effect</th>
<th>Safety is to a limited extent integrated in the training. No principles are laid down.</th>
<th>We instruct and involve the students in the process</th>
</tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Describe the student/instructor interaction during safety training</strong></th>
<th>More safety related activities need to be implemented</th>
<th>We try to learn them principles</th>
<th>We instruct the students</th>
<th>We believe in going from instruction moving towards supervision and finally leaving the safety work to the student</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>We do not conduct safety meetings with the students</td>
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</table>

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<table>
<thead>
<tr>
<th>Question</th>
<th>Response 1</th>
<th>Response 2</th>
<th>Response 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How do you ensure that safety issues and safety management are coordinated across the subjects with your colleagues?</strong></td>
<td>We don’t</td>
<td>There is no coordination</td>
<td>No coordination</td>
</tr>
<tr>
<td><strong>How are the students safety competencies evaluated?</strong></td>
<td>Safety competencies are evaluated simultaneously with subject understanding but we don’t have defined evaluation criteria</td>
<td>We have no idea of the training effect what we believe is correct to do</td>
<td>We don’t have defined evaluation criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We base it on our own experience and we discuss the students’ experiences</td>
<td>We base it on our own experience and we discuss the students’ experiences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We teach risk assessment in handling cargo</td>
<td>We give feedback but we have no formalised system to do this</td>
</tr>
<tr>
<td><strong>How is Risk Assessment integrated in activities at the school?</strong></td>
<td>Its not integrated very well</td>
<td>We try to explain the importance of safety awareness but it is carried out in a unstructured way</td>
<td>At workshop level we try to integrate it a lot, but later on during their studies it is only touched upon in a very limited and unstructured way</td>
</tr>
<tr>
<td><strong>How is the schools safety policy implemented and communicated in your training today?</strong></td>
<td>We must admit that we provide the students with a poor introduction – we need to provide the students with a better picture of the importance of safety</td>
<td>It is not but we communicate safety when we believe we have to</td>
<td>Only the instructor’s knowledge and experience is communicated in the training.</td>
</tr>
<tr>
<td></td>
<td>We teach risk assessment in handling cargo</td>
<td></td>
<td>Since we don’t have one it is not communicated. It is the instructors own understanding and knowledge of safety that is communicated</td>
</tr>
<tr>
<td><strong>Are safety meetings conducted together with the students?</strong></td>
<td>No</td>
<td>We don’t have safety meetings – but explain – it is a good idea</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>We have safety meetings but not all students are involved in the process</td>
<td></td>
</tr>
<tr>
<td>How do instructors develop their Safety lecturing competencies?</td>
<td>We take it for granted that the instructor has the right attitude and competencies, which is wrong.</td>
<td>We did not receive any formal training, information or introduction when we started.</td>
<td>We take it for granted that the instructor has the right attitude and competencies – no formal training.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Today safety is lacking in focus and magnitude.</td>
<td>We revalidate our instructor certificate – STCW driven.</td>
<td>Not systematised.</td>
</tr>
<tr>
<td></td>
<td>We need to make new instructors aware of the importance of safety.</td>
<td>Some faculties offer courses.</td>
<td>We dig it up here and there.</td>
</tr>
</tbody>
</table>

| What type of training do instructors undergo? | IMO model course | We have no formal training. We have a safety manual for emergency preparedness. | We have no formal training. We have a safety manual for emergency preparedness. | Sec 26 course – welding course. |

| What pedagogical and educational principles do the instructors’ typically apply? | • It is very instruction and order focused. | • Compliance is important but the way you wish to do it is up to you. | • Group work and role plays. | It varies what educational principles we apply. When it comes to safety in the workshop we first carry out instruction, then we move towards supervision and self-control. |

| How do you assess the instructors’ safety management competencies? | We don’t. | The concept of teaching safety is not there. No formal discussions. | Not formally discussed. | Obviously we have limited competencies but at workshop level we are very good at communicating the importance of safety. |

| Can you explain the following words: SJA and Risk Assessment and how are they applied? | Risk Assessment is not trained. | WE don’t have a best practice. | They are tools to help ensure safety management. | It is a formalized tool to help you understand how to reduce, minimize and control safety hazards. |
### Annex 1.3

| Are procedures equal to a Risk Assessment? | Safety pocket book – training book  
Discuss experiences  
Safety quizzes  
In house magazine safety – communication vehicle  
Equipment facilities  
Safety committee shall be formalized – Saturday meetings  
Multimedia tools would be good to have - simulation | More interactive training would be appreciated if properly developed and facilities available.  
Discuss experiences. | • Think of the learning environment  
• Proper equipment  
• Better lecturing materials |

| Looking at the target group how do you believe that safety training can be made more interesting and have a larger effect? | We need to make the training more industry real  
Find jokes – bikini girl on motorbike  
Computer based training – When students get started they are hard to stop  
Interactive – war games etc. are appreciated among the students  
Show what is wrong | Safety pocket book – training book  
Discuss experiences  
Safety quizzes  
In house magazine safety – communication vehicle  
Equipment facilities  
Safety committee shall be formalized – Saturday meetings  
Multimedia tools would be good to have - simulation | |

| Do you have any response or evaluation from the students suggesting how safety management training might be improved/changed? | No | Look to other business areas | No |

| What IT and multimedia facilities does the University have to their disposal for safety training? | For personal safety training we only have limited multimedia facilities. However, when it comes to ships safety and emergency preparedness we have some excellent facilities. The students are therefore very used to a learning process through multimedia application. | New multimedia materials will stimulate the students’ learning process  
Hands on training is important but multimedia can be used at a later stage during | New multimedia materials will stimulate the students’ learning process  
Hands on training is important but multimedia can be used at a later stage during |
## What materials are being used during safety training classes?

| We have a very limited number of training materials | Fairly limited. | Many Seahealth materials are being used |

## How will you evaluate the training effect seen in relation to the goal of achieving safety affluent students? (Review)

| We can definitely improve. Since we don't have any structured way of doing this it is difficult to assess the training effect. | We can definitely improve. Since we don't have any structured way of doing this it is difficult to assess the training effect. | We can do better but I do believe that students will have gained a good attitude towards safety and its importance after their workshop training |

## How important compared to other subjects would you evaluate the safety management training?

| It has of course always been very important but we have not been good enough at ensuring the optimum learning process. Also we have not a structured and focused approach. | It is of course very important, but we stocææ have to improve ensuring the best learning process. |  |
Annex 2
AMET Safety Engineering and the Environment

This Unit is designed to enable candidates to understand all relevant Health and Safety legislation and complete basic risk assessment on the equipment, environment and methods relating to the engineering sector.

On completion of the Unit the candidate should be able to:

1. Explain the current Health and Safety legislation covering employers and employees.
2. Explain the handling, storage and disposal of dangerous substances.
3. Explain work equipment safety requirements.
4. Carry out a suitable risk assessment within a workplace environment.

Outcome 1

Explain the current Health and Safety legislation covering employers and employees

Knowledge and/or skills

- Health and Safety at Work Act
- Provision and use of work equipment regulations
- Management of Health and Safety at Work Act
- Personnel Protective Equipment regulations
- Confined space regulations
- Noise at work regulations

Outcome 2

Explain the handling, storage and disposal of dangerous substances

Knowledge and/or skills

- Manual handling regulations
- Control of substances hazardous to health regulations
- Chemical hazard identification and packaging regulations
- Environmental protection act

Outcome 3
Explain work equipment safety requirements

Knowledge and/or skills

- Provision and use of work equipment regulations

**Outcome 4**

Carry out a suitable risk assessment within a workplace environment

Knowledge and/or skills

- Relevant health and safety legislation
- Risk assessment process
- Actions required following risk assessment

Assessment: The assessments for Outcomes 1 and 2 will be combined to form a question paper of 20 short answer and/or structured questions that should be answered in one hour.

Outcome 3 will be assessed by completion of a short report on the hazards associated with a specific piece of equipment. The assessment should last 30 minutes.

Outcome 4 will be assessed by the completion of an individual formal risk assessment that will be generated from notes taken during a previous group activity. Candidates should be allowed to use these notes at the assessment event. The assessment event should last 30 minutes.
Shanghai Maritime University

OBJECTIVES AND GOALS

General Objectives
By 2010, to be a teaching-research university with shipping as its special feature and with many disciplines developing harmoniously. By 2020, to grow into a world-class maritime university.

Goal in terms of type
A teaching-researching university.

Goal in terms of level
Taking undergraduate education as its primary activity while promoting postgraduate studies. The proportion of postgraduate students to undergraduates will reach 25 percent in 2020.

Goal in terms of disciplines
With shipping as a special feature and transportation, logistics, ocean science, economics, management and law as key disciplines, SMU will aim for the integration of disciplines and encourage balanced development of engineering, management, economics, law, science and liberal arts.

Goal in terms of service
Training high-level practical shipping specialists who are proficient in shipping, skilled at utilizing Shanghai’s resources, proudly serving the nation and reaching out to the world.

QUALITY POLICY

Taking educational quality as our life-blood, promoting meticulous scholarship and focusing on shipping to foster first-rate specialists.

SCHOOL VALUES
Explorative
Forward-looking
Practical
Innovative
Annex 3
**AMET School Values, Vision and Mission statement**

**SCOPE**

“Design, Development and conducting Maritime and Maritime related courses, programmes, examinations and assessments at Short term, Diploma, Undergraduate, Postgraduate, and research levels.”

**QUALITY POLICY**

AMET University is committed to provide the highest quality in education and be the most preferred institution for pursuing marine and marine related courses.

This will be achieved by consistent focus on:

- Providing a conducive, vibrant, progressive and enriching learning environment.
- Teaching Excellence and research output
- Global outlook and engaging with the world through learning, teaching and research.
- Attracting the best and the brightest students.
- Providing competitive advantage in gaining employment or further academic opportunities.
- Maintaining excellent links with commerce and industry both nationally and internationally.
- Complying with all applicable requirements and continually improving the effectiveness of the Quality Management System.

**VISION**

To upgrade AMET University to a position of pre-eminence among the world’s Maritime universities.

**MISSION**

To be the fountainhead for nurturing finest intellectual capital base for the maritime sector – worldwide.

**COMMITMENT**

AMET is committed to provide a learning environment of high order to personnel in the Maritime Industry and qualify them to be competent, skillful and professional in serving the industry worldwide.

**Safety and Health course syllabus and curriculum**
Safety Engineering and the Environment

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Outcome 1

Explain the current Health and Safety legislation covering employers and employees

Knowledge and/or skills

- Health and Safety at Work Act
- provision and use of work equipment regulations
- management of Health and Safety at Work Act
- Personnel Protective Equipment regulations
- confined space regulations
- Noise at work regulations

Outcome 2

Explain the handling, storage and disposal of dangerous substances

Knowledge and/or skills

- manual handling regulations
- control of substances hazardous to health regulations
- chemical hazard identification and packaging regulations
- environmental protection act

Outcome 3
Explain work equipment safety requirements

Knowledge and/or skills

- provision and use of work equipment regulations

Outcome 4

Carry out a suitable risk assessment within a workplace environment

Knowledge and/or skills

- relevant health and safety legislation
- risk assessment process
- actions required following risk assessment

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PMMA QUALITY POLICY STATEMENT

The PMMA recognizes the value of end-users’ satisfaction in this competitive world of seafaring and recognizes further that the main contributing factor to this satisfaction is the supply of merchant marine officers with an assured level of quality. This is basically in consonance with its mission as stipulated in RA 3680 to wit: “to produce efficient and well trained merchant marine officers who can favorably compare with marine officers of progressive maritime countries sufficient to carry the expanding international trade in times of peace and capable of serving as a naval and military auxiliary in times of war and national emergency”.

In achieving this objective, the PMMA then is committed to a policy of providing the highest practicable standards of maritime education and training to its corps of midshipmen. This commitment is geared towards satisfying within its Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering (BSMar-E) programs, all requirements of national and international standards, such as the STCW’95, PSG 2005 and ISO 9001. Likewise, the Academy adheres to the policy of providing adequate maritime education and training equipment, qualified faculty and well-organized and efficient personnel for both its programs. The PMMA is further committed to train and re-train its faculty and staff for it believes that the quality and reliability of its graduates are dependent on its faculty and staff.

All PMMA midshipmen are scholars of the Filipino people. Therefore, they are indebted to the Filipino people for the education they receive in the Academy. They are expected to develop in themselves the values and honor, customs and traditions that leads to a national identity that true Filipinos must possess.

The attainment of these sets of goals require a dedicated, strong and responsive management, and it is important that the management can enjoin all employees to have a united commitment for quality since quality is easily achieved in a healthy and harmonious working environment.

The policies and procedures used in the quality system will be kept and continually be under review for probable improvement so that the quality standard system will be continuously evolving program.

PMMA VISION and MISSION

Vision of the Institution

The Philippine Merchant Marine Academy envisions, through its academic programs and quasi-military training, to produce a balanced personality out of every graduate, i.e. an internationally capable officer and gentleman who can function efficiently in their field of endeavor and contribute to the development and progress of the Filipino nation.

Mission of the Institution
To educate and train midshipmen/women to become qualified and competent merchant marine officers for shipboard and shore-based positions, in response to the global requirements of the expanding international maritime industry as well as to become competent and capable naval officers who can serve as naval and military auxiliaries in times of war and national emergencies and to contribute to the improvement of maritime education.
Behavioural Role Simulation - BeRoSim

As argued in numerous sections of this report there are a number of competencies seafarers need to apply in order to become 'safety competent'. Like any other learning process a well arranged and intelligent learning process is therefore of paramount importance. However, due to the strong need for appropriate behavioural competencies, attitudes and perceptions the learning process in relation to risk awareness, risk management and safety management in general needs to be addressed from a different angle.

In contradiction to the more traditional learning subjects lectured at the maritime training institutions e.g.: Ships Stability, Rules of Navigation, Electrical Engineering etc. all types of safety is far more interpretable and driven by and relies on perceptions, attitudes and habits. Good risk awareness and safety management processes therefore rely more on the interpretation and execution of principles, frameworks, methods and tools that are in the hands of the seafarer.

An analogy in this respect is car driving. The car is constructed in accordance with design manuals and procedures and as a starting point it is proven for driving. The quality of the driving is still in the hands of the driver and the general driving culture of your fellow drivers. In this respect the first way to influence the driving culture of a country is to ensure that those people taking their driving license have learnt how to drive properly and in accordance with good and safe driving principles.

To ensure a learning process where the embedment of appropriate safety competencies is effective the BeRoSim aims at bridging the gap between theory and practice and providing students with the opportunity to understand the consequences of his/her behaviour and actions before working in the workshop or on board the vessel. The aim is also to supplement the existing training and focusing on how the individual best can apply this knowledge and skills in the everyday work.

Crew performance is dependent on the individual ability to apply the training and skills into everyday context. Many subjects related to safety are fairly easy to comprehend, but can be difficult to execute in work life on board (See section 4.10) where many different cultures meet and have to collaborate and further to operate in situations were unexpected issues arise.

The theories of safety and risk management and awareness can be somewhat abstract in a daily work life where most work is covered by procedures and explained by routines. As accidents or incidents rarely are consequences of one mistake but more often consequences of a series of small neglects, it is important to test the understanding of the theories in a more complex context.

Stimulating a behavioural change
Most learning falls short when it comes to documenting that a behavioural change has happen based on the learning provided. Many factors need to fall into place before learning results in
new adapted behaviour. Too often learning provides the best of intentions but old habits takes over when the cadet is back in the usual environment.

There are no simple ways to ensure behavioural change and there are large variances in how cadets will adopt the learning. BeRoSim will use the following means to stimulate and motivate cadets reflect on own behaviour and improve this were needed.

- **Behavioural conceptual framework:** By providing the cadets with a conceptual framework and terms they will be able to discuss behavioural and their profiles. They will become aware of the possible impact of different mind sets and how to deal with this.

- **Moderator lead role simulation:** By acting their role in a virtual environment and trying to solve the provided tasks, cadets will demonstrate their natural behaviour and mindset. The moderator will be able to provoke situations and create conflicts to stress the `actors`, this way they will experience the possible consequences of different types of behaviour.

- **Reflection and feedback on behaviour:** Cadets will get feedback on their behaviour by the peers in the simulation and by the moderator. Combined with their understanding of the conceptual framework they will be able to comprehend their own strengths and development areas when it comes to applying the theory into actual behaviour.
The BeRoSim training concept
The training will test the cadets’ ability to act and take responsibility by providing a simulated environment and applying the many factors of everyday work life, such as irrelevant information, different and opposite commands the training will ease the understanding of how to apply the knowledge in everyday work life. During the BeRoSim learning process all three student competencies – skills, knowledge and behaviour - are evaluated during the collaboration process with their fellow class mates.

The training package will focus on:
- Increasing collaboration skills through the interaction and problem solving in online groups
- Behavioural based development, through the user interactions and direct feedback from peers in problem solving
- Improved skills development through the ability to act in virtual environments and simulated situations.
- Improve the capability to handle unforeseen situations and areas not covered by rules, regulations and procedures
- Participate in problem solving risk assessment process

At all 4 training institutions the use of a simulator is an important means of training. High quality bridge and engine simulators have been installed and used diligently to evaluate student competencies. Simulation training is highly appreciated by both students and instructors.

The training is constructed as role play of typical working situations. Scenes and situations are simulated to create an environment as close to real environment as possible.

Cadets will be given an overall task to perform, - a task which requires input and collaboration between the different positions on board. They will have to take initiative to engage with the other roles in the scene in order to plan and execute the tasks.

The instructor will be the moderator of the role play providing different types of input, which the cadets will have to address or ignore. This is to simulate the typical information “noise” on board and have the cadet to evaluate between high and low important inputs.
The moderator will observe the collaboration and note the areas of weak interaction which is to be commented by the cadets after the training session.

By performing in this environment the cadets will gain input as to their ability to transform the theory into practice and further their ability to react to abnormal circumstances – situations that are not described in a procedure or in a rule.

The feedback among the cadets and the overall evaluation of performance will provide the cadet with greater understanding of own behaviour as to transform risk – and safety management principles in daily tasks and further insights as to their individual personal strengths and development areas.

**The Role Process**

Prior to the actual role play, cadets will be tested to retrieve a personal profile. They will get individual feedback and learn about the different profiles types and the typical issues of interaction.

Cadets will be assigned different roles and will then enter the virtual environment where they will start interacting and getting more input as to the task.

After the role play cadets will have the opportunity to comment on the different roles and behaviour experienced during the play, and furthermore they will receive feedback from the moderator.
Training Components

The training concept has three main components with the following purposes:

<table>
<thead>
<tr>
<th>Component</th>
<th>Content</th>
<th>Objective and purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>The personal profile and behavioural reference</td>
<td>A Personal profile test. Feedback on individual score</td>
<td>To provide the user with an understanding of own profile and strengths and further a behavioural conceptual framework for discussing the interaction between different personal profiles</td>
</tr>
<tr>
<td>The virtual collaboration and case</td>
<td>A multi user online space Tools for developing and executing role plays</td>
<td>To establish an environment that reflects the typical scenes on board and create the typical as well as abnormal situations in which the user has to act and collaborate in order to execute the typical tasks</td>
</tr>
<tr>
<td>The reflection and evaluation</td>
<td>Instructor/Moderator guide for providing feedback on personal profile and behaviour</td>
<td>To provide evaluation and input for self reflection of the cadets in order to develop own behaviour and adaptation of the risk – and safety management principles in work approach and interaction</td>
</tr>
</tbody>
</table>

The largest and most complex of the three components is the Virtual collaboration and case module. This module is the engine for the role play and will provide a realistic setting in which the users will interact.

The setting will consist of visual appearance with interactive functions, e.g. a visual replication of the engine room on board with possibility to point and click on various artefacts such as valves or control handles.

In this setting the user will have visual contact with the other user and can engage communication. Furthermore, the user will receive information from e.g. the moderator.

The online virtual environment

The virtual collaboration module is envisioned as an online virtual environment similar to ‘Second Life’. The main arguments for utilising the online opportunity in this connection is:

- Possibility of establishing realistic scenarios in which the cadets can navigate and deal with constraints in the psychological environment.
- Having a relevant scene in which to act. Users who will have to make role plays live on stage will find it awkward. But when acting a virtual scene, which reflects the reality, the user will be more likely to act and perform as they would in real life.
- An online virtual environment can be controlled and the moderator can apply new or different inputs as to see new reactions.
- Ability to reuse the scenes and expand the environment or to get other relevant new input from other sources.

An online virtual environment would be a strong supplement to the classroom training, not as narrow focused as e-learning and less expensive as the existing proprietary navigational simulator set ups.
Annex 5
Safety Awareness Questionnaire

A Safety Awareness Questionnaire was carried out by the project team during the visits at the universities. The questionnaire is included in Annex 5. This questionnaire is used by A. P. Moller Maersk, when recruiting seafarers to the fleet. The purpose is to screen the applicant for his personal safety awareness and safety perception and from day one put safety on the agenda in relation to the seafarer. Furthermore, it gives an excellent opportunity to discuss any safety matters directly related to the answers given by the applicant.

The Project Team exposed a number of the students at the four universities to this questionnaire and the result is found in the table below.

<table>
<thead>
<tr>
<th>University</th>
<th>Mean Score</th>
<th>Max Score</th>
<th>Min Score</th>
<th>Number of replies</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMAC</td>
<td>35,5</td>
<td>38</td>
<td>33</td>
<td>6</td>
</tr>
<tr>
<td>SMU</td>
<td>31,1</td>
<td>37</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>PMMA</td>
<td>32,8</td>
<td>37</td>
<td>30</td>
<td>6</td>
</tr>
<tr>
<td>AMET</td>
<td>32,0</td>
<td>35</td>
<td>29</td>
<td>10</td>
</tr>
</tbody>
</table>

Score 27 to 40 is considered passed.
Score 13 to 26 is considered passed, but with remarks
Score 0 to 13 is considered failed.

The above result should be seen as a pilot test and should not be considered a competition but more as a random sample of the safety maturity at the universities. As can be seen from the table all students have passed, but one with remarks. None obtained maximum score.

This tool maybe enhanced and designed to fulfill many purposes. One application could be in the process of employing staff to the universities, but it could also be used among the students to discuss safety behavior and uncover critical safety perceptions.
A. How would you react if you see this?
   1. Report it to the 2nd Officer or the Chief Officer
   2. Go to him and explain to him that what he is doing is not safe
   3. Report him to the Master

B. What does the Company expect from me?
   1. That I take efficient short cuts
   2. That I work efficiently and safely
   3. That I show a good example to others

C. You need to use the pallet truck. What do you do?
   1. Take the pallet truck and leave the pallet
   2. Put the pallet on top of the other pallets in order to get to the fire equipment if needed
   3. Inform the safety officer immediately that the area is in a mess before removing the pallet and cleaning up

D. You and a colleague are walking on deck and see one of the railings to the sea is missing. What do you do?
   1. Ask your colleague to get some cordon material while you are standing guard
   2. Tell the repairmen to repair it
   3. You do not want to interfere because you can see the engineers are working on a sea railing 20 meters away

E. How would you react if you see this?
   1. Report it to the 2nd Officer or the Chief Officer
   2. Go to him and tell him that what he is doing is not safe and why
   3. I would not do anything. He’s an engineer and knows what he is doing
F. Who is responsible for my safety on board?
- 1. The safety officer
- 2. The Chief officer
- 3. Myself

G. How do you understand the words “Safety Awareness”?
- 1. That you always have to wear head, ear and eye protection
- 2. That you think and act safely and efficiently in every situation
- 3. That you are assertive in all situations

H. You have told this repairman three times within this month that he should wear his safety helmet. What should you do now?
- 1. Nothing, he will never take any notice
- 2. Report him to the Master
- 3. Ask him again to wear his safety helmet

I. You are walking on deck and see this. What will you do?
- 1. Report it to the 2nd Officer or the Chief Officer as an unsafe condition
- 2. Clear the electrical cords away so nobody will trip over them
- 3. Nothing, because I know they will be used in 5 minutes

J. When should I be wearing safety goggles?
- 1. Only when required by a Work Permit
- 2. When I am grinding
- 3. Whenever there is a risk of getting something in my eyes

K. What would you do if you saw this sign before entering the room to the left?
- 1. Inform my colleagues that there is a requirement to wear eye protection
- 2. Report it to the Safety Representative
- 3. Ask them to have a break and after that to pick up a set of eye protection for each
L. How should a Toolbox Talk be used?
   1. The Toolbox Talk should be placed where we are working and returned when finished
   2. The person in charge should create it and explain the content to the crew and contractors
   3. To prove that our work complies with the Company procedures and legislation

M. How would you react if you see this?
   1. Report it to the 2nd or the Chief Officer
   2. Address them and explain what they are doing is not safe
   3. Write a near-miss report

N. What would you do if you are sitting in the Mess Room and see smoke in the alleyway?
   1. Yell "Fire" and activate the fire alarm button
   2. Begin to extinguish the fire immediately
   3. Run for the nearest exit

O. Is this work situation OK?
   1. Yes, they are wearing proper hand protection
   2. No, they should wear hard hats
   3. No, they should wear goggles

P. Do you think it is sometimes necessary to take a risk to do the job?
   1. Yes, but I will not accept it
   2. Yes, I don’t talk about it, I just do it
   3. Yes, but I am careful
Q. Are these people at risk?
- 1. No, it’s their private business
- 2. Yes, they could use some personal protection
- 3. No, they have the proper lifting equipment available

R. Order and tidiness are important. What system would you prefer to keep the ship tidy?
- 1. Everybody cleans up once a day
- 2. Have a designated person to clean up after you
- 3. I will clean up after I’m finished

S. On your way to the bridge a tool falls through the railing above. What are you going to do?
- 1. I will be aware in the future when I pass this spot in case it might happen again.
- 2. I will address the person who dropped the tool so it will not happen again.
- 3. I will inform the safety representative of the unsafe condition.

T. What does the picture below show?
- 1. It shows good safety culture
- 2. It shows bad safety culture
- 3. It shows four people at risk
Annex 6
MANAGEMENT TOOLBOX

Scope

The scope of work is to establish a Top Management Tool Box containing important safety management tools, procedures, templates that can help Top Management implement and manage the on-going management and development of the school’s safety culture and student safety training.

Based on the gap analysis prepared by the project group the table below describes what is assessed necessary to be prepared and implemented in order to integrate and improve the safety training presently carried out at the Maritime Training Institutions.

Tool Box Content

The contents of the Top Management Tool Box will mostly be based on written documents and illustrations describing methods, ideas and various best practice safety management principles. However, in connection with the start up of the implementation process a 2-day introduction workshop is suggested as a kick-off course. The purpose of the kick-off course is to introduce top management to:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top management responsibilities</td>
<td>Describe and clarify:</td>
</tr>
<tr>
<td></td>
<td>- Top management roles and responsibilities</td>
</tr>
<tr>
<td></td>
<td>- Rules, regulations and industry requirements</td>
</tr>
<tr>
<td></td>
<td>- Principles and policies for Safety and Health Management</td>
</tr>
<tr>
<td></td>
<td>- Why and how the school safety culture shall be a mirror</td>
</tr>
<tr>
<td></td>
<td>of how the safety should be managed on board.</td>
</tr>
<tr>
<td>Safety Policies, Management, Strategy and</td>
<td>- Develop tool for development and design of the safety</td>
</tr>
<tr>
<td>Action Tools</td>
<td>strategies for the school</td>
</tr>
<tr>
<td></td>
<td>- Establish connection between the safety strategy and the</td>
</tr>
<tr>
<td></td>
<td>top management strategies; policies, visions, missions, values,</td>
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<td></td>
<td>goals</td>
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<td></td>
<td>- Develop overall top management templates like; policies, visions,</td>
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<td>missions, values, goals etc.</td>
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<td></td>
<td>- Develop a Safety Culture Survey Tool</td>
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<tr>
<td></td>
<td>- Elaborate Safety Action Plan Template including:</td>
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<td></td>
<td>- The process of preparing a safety action plan</td>
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<td></td>
<td>- Management of Safety Action Plan</td>
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<tr>
<td>School Safety Organization</td>
<td>- Describe and design the principles for the safety organisation</td>
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<td></td>
<td>including:</td>
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<td></td>
<td>- Roles and Responsibilities</td>
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<tr>
<td></td>
<td>- Safety Group and Safety Committee</td>
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<td></td>
<td>- Principles for good safety organization</td>
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<td>- Safety Meetings</td>
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<td>- Etc.</td>
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<td></td>
<td>- Decide how and what safety activities to implement on a regular</td>
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<td></td>
<td>basis</td>
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<td></td>
<td>- Involve students in the work and assignments of the safety</td>
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<td></td>
<td>organization</td>
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<tr>
<td></td>
<td>- Elaborate Safety Organization Training materials and</td>
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<tr>
<td>Annex 6</td>
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<td></td>
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<tr>
<td>templates including:</td>
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<tr>
<td>o Risk Management</td>
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<tr>
<td>o Problem Solving Techniques</td>
<td></td>
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<tr>
<td>o Safety meeting agenda</td>
<td></td>
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<tr>
<td>o Safety Minutes of Meeting report</td>
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<tr>
<td>o Principles of Prevention</td>
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<td>o Observation Techniques</td>
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<tr>
<td>o Campaigns</td>
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<tr>
<td>o Etc.</td>
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<table>
<thead>
<tr>
<th>Safety Management and Reporting Systems</th>
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<tbody>
<tr>
<td>o Develop a Safety Management System Template</td>
</tr>
<tr>
<td>o Procedures and Checklist</td>
</tr>
<tr>
<td>o Establish safety reporting templates including:</td>
</tr>
<tr>
<td>o Near Miss reporting</td>
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<tr>
<td>o LTA reporting</td>
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<tr>
<td>o Minutes of Meeting</td>
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<tr>
<td>o Incident Investigation</td>
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<td>o Safe Area Inspections</td>
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<tr>
<td>o Etc.</td>
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<tr>
<td>o Describe communication and feedback processes to ensure proper follow-up procedures</td>
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<tr>
<td>o Establish System Management</td>
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<thead>
<tr>
<th>Instructor Job Descriptions – Integration of safety responsibilities</th>
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</thead>
<tbody>
<tr>
<td>o Prepare descriptions of instructor safety roles and responsibilities to be integrated in instructor job descriptions</td>
</tr>
<tr>
<td>o Define instructors’ safety competencies as described in instructor Train-the-Trainer course</td>
</tr>
<tr>
<td>o Define instructor safety competence evaluation requirements</td>
</tr>
<tr>
<td>o Implement a safety culture maturity assessment during the recruitment process of new instructors</td>
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<thead>
<tr>
<th>Integration of safety and risk management activities in workshop training</th>
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<tbody>
<tr>
<td>o Develop a programme for integration of safety and risk management activities in workshop training</td>
</tr>
<tr>
<td>o Describe processes for appropriate integration of risk assessment during classroom and workshop training</td>
</tr>
<tr>
<td>o Prepare tools for;</td>
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<tr>
<td>o Procedures, Risk Assessment and Individual Risk Assessment</td>
</tr>
<tr>
<td>o Permit to Work</td>
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<tr>
<td>o Isolation</td>
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<tr>
<td>o Tool Box Talk</td>
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<tr>
<td>o Observation Techniques</td>
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<td>o Etc.</td>
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<tr>
<th>Effective communication of safety activities, goals and initiatives at the training institutions</th>
</tr>
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<tbody>
<tr>
<td>o Develop a communication strategy for the start up of the safety training concept</td>
</tr>
<tr>
<td>o Develop an effective communication flow for continuous communication about safety issues to the whole organisation</td>
</tr>
<tr>
<td>o Communicate the top management engagement in the safety initiatives</td>
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<tr>
<td>o Establish effective communication channels</td>
</tr>
<tr>
<td>o Appoint responsible people for editing and publishing of the communication</td>
</tr>
<tr>
<td>o Develop a publishing programme based on subjects, channels, target groups</td>
</tr>
</tbody>
</table>
| Continuous improvement of school safety management processes, training and culture | o Describe the role of top management as drivers for establishing and maintaining a good safety culture  
o Manage and ensure that the instructors acknowledge their role as translators of the school's safety strategies and goal  
o Manage and ensure that instructors have the possibilities of updating themselves concerning safety issues  
o Manage knowledge sharing between key personnel (instructors)  
o Monitor and review the school's safety performance and training – Making safety performance efforts visible. |
|---|---|
| Knowledge and fact database | o Introduce and develop an understanding of the terms:  
o Safety Culture  
o Safety Maturity  
o Safety Behaviours  
o Ergonomics  
o Noise and vibration  
o Chemicals  
o Safety Signs  
o Physical exposures |
Annex 7
INSTRUCTOR TOOL BOX and TRAINING

Scope

In brief the scope of work is to prepare: 1) an Instructor Tool Box and 2) Train-the-Trainer programme. The Instructor Tool Box shall contain all important safety management tools, procedures, templates that can help instructors perform safety training at the highest possible level. The Train-the-Trainer programme shall lecture the educational principles as described in the instructor manual and create an understanding of content and curriculum, etc.

Based on the gap analysis prepared by the project group, the table below describes what is assessed necessary to be prepared and implemented in order to integrate and improve the safety training presently carried out at the Maritime Training Institutions.

Instructor Tool Box

The contents of the Instructor Tool Box will mostly be based on written documents and illustrations describing methods, ideas and various best practice safety management principles.

In order to secure optimum transfer of know-how to the instructors, an instructor manual shall be prepared. The purpose of the instructor manual is to provide new instructors with a course manual supporting him/her in the lecturing of the principles, contents and materials.

To support the process of developing both skills and behaviour, it is recommended to include a multimedia role game learning component in the instructor Tool Box. In short, the Behavioural Role Simulation helps bridging the gap between theory and practice.

The training presently carried out at training institutions within this area is mostly aimed at providing understanding of administrative processes, systems and tools. The Cadet learns the importance of complying with rules and regulations and how these systems can support the safety efforts.

However there are very little learning efforts used to prepare the cadet how to deal with the unexpected, or how to take responsibility when dealing with an area or situation which is not described in a procedure. As described in section 4.2 of this report, students need to develop a generative understanding of safety and to be capable of applying the tools developed to help manage the process. This learning process is particularly ensured through the behavioural based training as described in Annex 4.

There is a need to develop, implement and embed a training process that goes beyond the traditional classroom training. This will help to focus more on the personal requirements in dealing with several processes at one time, as well as collaborating and taking decisions with attention to the risk- and safety management philosophies.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Learning objective</th>
<th>Materials</th>
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</thead>
<tbody>
<tr>
<td>Safety Culture and Maturity</td>
<td>To know what lies within the concept ‘culture’ and what culture consists of, and to be able to identify the different parts of the culture. To understand your own role in creating and maintaining a genuine safety culture. To understand the safety culture maturity model and be able to distinguish between the levels and identify what activities are needed to reach the next level.</td>
<td>Power points Posters Student Handouts Exercises Reports Multimedia role game</td>
</tr>
<tr>
<td>General Risk Awareness</td>
<td>To gain an overall understanding of why it is important to have a high degree of safety awareness. This will include: Observation techniques, Housekeeping, Sleeping Factors, Behavioural Audits, Safety Area Inspection</td>
<td>Power points/white board Hands outs Exercise Student Handouts</td>
</tr>
<tr>
<td>Risk Assessment</td>
<td>To know the steps of a risk assessment and be able to utilise it in practice. This will include: Identification of activities, Hazards and risks, Risk score matrix, Changing conditions, Organizational, Team and Individual Risk Assessment</td>
<td>Power points Posters Student Handouts Exercise</td>
</tr>
<tr>
<td>Preventive Measures</td>
<td>To know the principles of prevention and be able to identify the different approaches. To know the purpose of the PTW and Isolation process and be able to apply and control the preventive measures. This will include: Principles of prevention, Permit to work, Isolation</td>
<td>Power points Posters Student Handouts Exercise</td>
</tr>
<tr>
<td>Toolbox talk and Instruction</td>
<td>To be able to summarize the important elements a toolbox talk should consist of, and be able to conduct a good toolbox talk. This will include: Principles behind a good Tool Box Talk, Creating dialogue, Roles and responsibilities, Question techniques, Active Listening</td>
<td>Power points Poster Student Handout</td>
</tr>
<tr>
<td>Job evaluation-Continual improvement spiral</td>
<td>To understand the idea of why a job evaluation is important to ensure a continual improvement spiral.</td>
<td>Power points Poster Student Handout</td>
</tr>
<tr>
<td>Appropriate safety behaviour</td>
<td>To understand what safety behaviour is essential for creating a good safety culture and to be able to identify the safety behaviour patterns among other behaviour patterns in case studies/examples.</td>
<td>Power points Posters Hand outs Exercises Case-studies</td>
</tr>
<tr>
<td>The Safety Organisation</td>
<td>To know the structure of the safety organisation and the purpose of having a safety organisation. To understand the roles and responsibilities in the work around the safety organisation.</td>
<td>Multimedia case-study</td>
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<td>-------------------------------------------------</td>
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</tbody>
</table>
| Safety Process Tools | To know and understand the use of different safety process tools and be able to apply the tools in relevant situations. These are:  
- Problem solving techniques  
- Meeting management  
- Corrective feedback  
- Stress management  
- Etc | Power points  
Posters  
Handouts  
Exercises  
Case-studies |
| Ergonomics | To understand in what way the work exposes you to ergonomic strains and be able to adjust the work or make use of personal protection equipment to lessen or eliminate the strains. | Power points  
Handouts  
Exercises |
| Chemicals | To understand in what way the work exposes you to chemical strains and be able to adjust the work or make use of personal protection equipment to lessen or eliminate the strains. | Power points  
Handouts  
Exercises |
| Noise | To understand in what way the work exposes you to noise strains and be able to adjust the work or make use of personal protection equipment to lessen or eliminate the strains. | Power points  
Handouts  
Exercises |
| Physical aspects | To understand in what way the work exposes you to strains based on different physical aspects and be able to adjust the work or make use of personal protection equipment to lessen or eliminate the strains. | Power points  
Handouts  
Exercises |
| Psychosocial aspects | To understand in what way the work may expose you to psychosocial strains and what you can do to be part of creating a good and healthy working climate on your workplace. | Power points  
Handouts  
Exercises |
| Educational Principles and Didactics | To ensure the optimum learning process the instructors shall implement process orientated educational principles. | Power points  
Exercises |
| Multimedia Role Game | A full description of the Multimedia Role Game can be seen in Annex 4 | |

**Instructor Training**

In order to secure optimum transfer of educational principles, the instructor’s shall undergo a 3-day Train-the-Trainer course. The purpose of the course is to provide new instructors with an understanding of how to lecture the contents of the instructor manual effectively.

The Train-the-Trainer programme shall lecture the educational principles as described in the instructor manual and create an understanding of contents and curriculum, etc.

**Deliverables**
The Train-the-Trainer Course shall contain a lecturing process addressing the following:

- Introduction stipulating purpose of the course
  - The philosophy behind the course
  - What is expected from the participant
  - What is expected from the instructor
  - The benefits of leadership training
- Course Framework
- Description of educational principles such as:
  - All information is free
  - Action learning
  - Differentiated learning
  - Learning processes
  - The importance of interaction
  - How to manage the training on board
  - Storyline training method
- Detailed safety tools as defined in the Instructor Manual:
  - Description of objectives
  - Agenda
  - Content to be learnt
  - Exercises and methods to be applied during class
  - Time tables for each lesson to be conducted
  - Questions to be asked by the instructor
  - Suggested response to the questions asked by the instructor
  - Power point slides for instructor purposes during class
- Student Safety Behaviour Evaluation
- Quality Management