Northern Maritime University (NMU) Network

DELIVERABLE D 6.6.1

NMU TRANSNATIONAL CAREER MAPPING

Due Date:	**30 06 2012**
Submitted:	**30 06 2012**
Main Author:	**JacobsUni**
Dissemination:	**Consortium**

NMU Document Control Sheet

Project Number:			
Document short name:	D 6.6.1		
Workpackage:	WP 6 Task 6.6.		
Deliverable :	D 6.6.1		
Version:	1.0		
Document History:	Version	Issue Date	Distribution
	1.0	30 06 2012	Consortium

Classification

This report is:

Draft	
Final	X
Confidential	
Restricted	
Public	

Partners Owning:	JacobsUni
Main Editor:	Indah Lengkong, Ilknur Erdogan, Zornitsa Todorova
Partners Contributed:	IVL, Bre-UAS
Made Available To:	All NMU Partners

NMU Project Office

Transport Research Institute
Napier University
Edinburgh, UK
Tel: **+44 (0) 131 455 2809**
e-mail: Y.boglev@napier.ac.uk
Web: www.tri-napier.org

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

EXECUTIVE SUMMARY

The aim of this report is to link the current industry trends and needs to the educational and training concepts and methods currently available. A career mapping would help young people in their choice of career path and type of education and training is needed in the future to improve the competitiveness of the European maritime industry.

This report starts with elaboration about characteristics of the seafaring profession, motivation for entering this profession and reasons to change career from ship to shore. Moreover, Training Needs Assessment (TNA) is conducted, in order to find out gaps between available Maritime Education and Training (MET) and current/future trends in the maritime industry. The TNA was focussed mainly on three skills: environmental policy skills, managerial skills and soft skills.

Furthermore, current Maritime Education and Training concepts and methods as well as transnational modules, which were jointly developed further within the Northern Maritime University (NMU) network to match with future trends and needs of maritime industry, are discussed.

The maritime industry has to compete by offering attractive working and living conditions on board and also modern lifecycle-oriented career paths from on-board to on-shore professions. Therefore, the NMU transnational career map is developed, having objective to show potential Career Path Development by using NMU modules and to facilitate the mobility of shore- and land based employment.

1 INTRODUCTION

The European Union (EU) has recognized the importance of shipping for Europe's economic growth and employment since the maritime economy has been growing faster than that of the overall economy in different regions in Europe. Container movement is increasing and is expected to grow even faster in the forthcoming decade. Moreover, in the "Integrated maritime policy for the EU" the commission states that Europe has the potential to become leader in world markets regarding the development of cutting-edge maritime products (shipbuilding, repair and marine equipment) and marine technology. Therefore, the strategy 2009-2018 focuses on six key dimensions to strengthen the competitiveness of the maritime industry: globalized markets, quality of shipping, working in international scene, exploiting the full potential of short-sea shipping, top maritime research and innovation, human resources and maritime know-how. Furthermore, the strategy places a particular focus on the human factor in European shipping. They state the importance of facilitating lifelong career prospects, with special emphasis on developing advanced skills and qualifications of European seafarers and providing good career paths for ratings to become an officer.

It can be argued that creating added value for European seafarers through implementing advanced training courses (both during their education as well as during their actual sea time) will eventually also bring benefits to the maritime industry such as continuing innovation and cost reduction. The following chapter shows the share of different maritime sectors for the maritime-related employment in the European Union (EU) gives potential development trends and outlines sectors that have a particularly high growth potential[1].

---

[1] Cf. (European Commission DG Fisheries and Maritime Affairs, 2006)

2 MARITIME INDUSTRY TRENDS

Figure 1 below gives the distribution of employees among the different maritime sectors. The graph intentionally omits the coastal tourism sector because the information provided by the member states was considered to be inaccurate. Also, the figure excludes the navy force. The fisheries sector is the largest sector occupying already 22% of the maritime-related workforce, followed tightly by the shipping and marine equipment sector. The smallest contribution comes from the offshore supply of energy and maritime services.
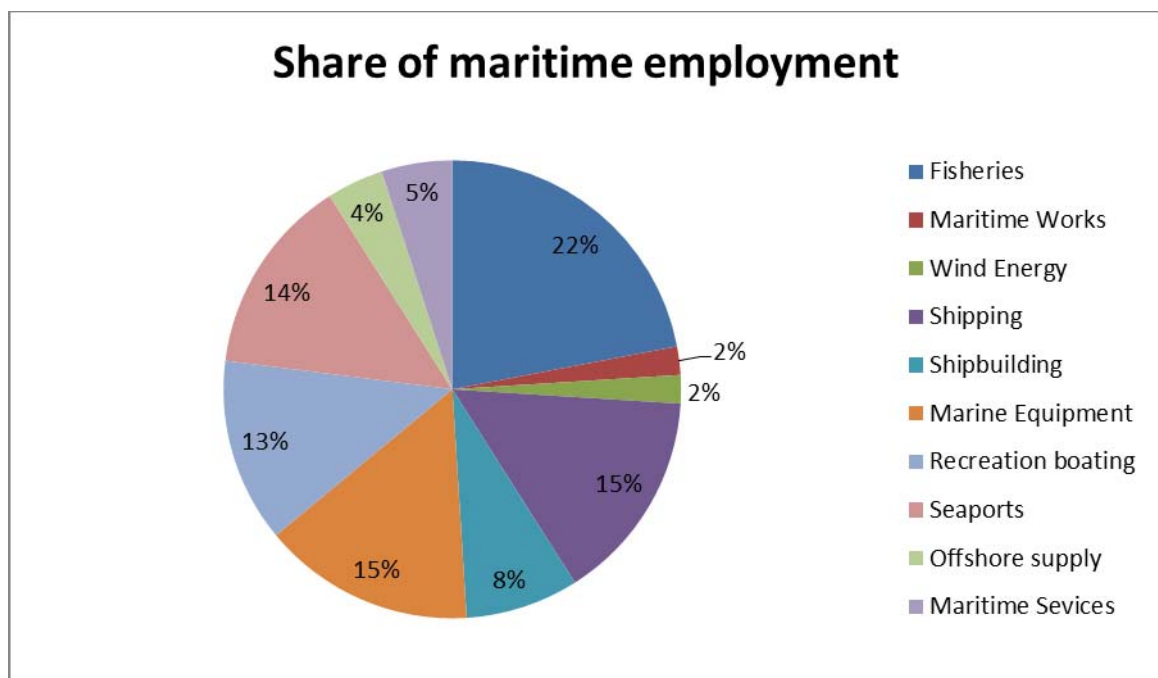
Figure 1: Share of different maritime sectors in the EU 2004/2005

(Source: Final Report for the European Commission for Fisheries and Maritime Sectors, 2006)

Five sectors where significant growth opportunities can be observed can be outlined. These are offshore and coastal wind energy, cruise tourism, coastal tourism, recreational boating and maritime works.

According to the European Wind Energy Association, the amount of people engaged in the manufacturing, installation, operation and maintenance of wind turbines is going to increase from 72 275 in 2002 to 196 900 in 2020. Consequently, there will be a tremendous increase in the demand for skillful employees in these areas. The recreational boating sector is projected to increase by 5-6%, which could be explained by the fact that the "baby boomer" generation is reaching a retirement age and also that there is a the huge potential in

developing countries. Taking into consideration the demographic trend of an ageing population, it is also not unlikely that the cruise shipping sector would continue to expand. Furthermore, similar trend is noticed in the coastal tourism. The WTO predicts a growth rate of 3 % for Europe. Finally, the dredging industry forecasts a 10-15% increase rate in dredging activities.

Taking all these developments in the maritime industry into consideration, we could observe that there is a tendency for diversification of the maritime-related activities. Thus, two conclusions can be made. First of all, there will be a demand for new jobs and for people with both technical (e.g. engineering) and soft (e.g. leadership) skills. Second, there will be a wider range of opportunities for transfer of employees between the different sectors. This could be particularly important for both seafarers that want to find sea-based jobs and for those who would like to find land-based jobs.

3 SEAFARING PROFESSION

3.1 Characteristics of Seafaring Profession

In contrast to other professions, seafaring requires individuals to leave their homes and family for a considerable amount of time. Thus, seafarers lead a life that is socially confined to the premises of the vessel and to the company of other fellow seafarers. It is also not uncommon that seafarers and ship owners come from different nationalities and that ships operate under a flag that is different from their country of origin[2]. Division of labor is characterized by a relatively inflexible hierarchy with crews split into officers and ratings (e.g. from captain to oiler/Able-Bodied Seamen (AB)). The importance of this hierarchy is further emphasized by the fact that seafarers usually refer to others by rank rather than by name[3].

Seafaring along with fire-fighting and mining is considered to be one of the most dangerous occupations in the world. Seafarers are exposed to adverse weather conditions (rough seas, tsunami), extreme temperatures (e.g. in engine rooms), noise, vibrations and to various dangerous substances such as explosives, fuels and gases[4]. Fortunately, due to recent advances in emergency communications technology and rescue programs the risks of fatal incidents can be minimized.

Seafaring is a demanding job both in terms of its long working hours and the skills needed. Because of the strenuous working conditions seafarers need to be physically fit and pass examinations for vision, color sensing and hearing[5]. What is also very particular about seafaring is that it involves its own language and special knowledge that can only be obtained through practical experience[6].

As we saw, seafaring is a rewarding but at the same time challenging profession. The decision to become a seafarer is a complex one that depends on many contextual as well as individual factors. Therefore, in the next section we are going to delineate the major contributing factors.

3.2 Motivation for Seafaring Profession

Very often the **location of home and place of upbringing** could play a decisive role in favor of choosing the seafarer profession. There are regions, usually the coastal areas, which have traditionally been places from which seafarers are recruited. Another reason is

---

[2] Cf. (ILO, 2012)
[3] Cf. (ILO, 2004)
[4] Cf. (WHOI, 2012)
[5] Cf. (WHOI, 2012)
[6] Cf. (Barnett et al., 2006)

the family influence[7]. Research has shown that most of the newcomers in the profession already have a seafaring family member[8]. This is not surprising since young seafarers would rely on family members for information regarding career opportunities. A further reason could be the **higher level of remuneration** that is difficult to match in other onshore jobs. Last but not least, seafaring is a **way of life**[9]. In this line of thinking, a profound interest in the sea and travelling could be contributing factors to the choice of becoming a seafarer.

Despite the many benefits of the seafaring profession, the number of seafarers who have decided to leave the ship in order to look for jobs ashore has recently increases[10]. The following section looks into possible reasons for this trend.

3.3 Reasons to change career to land-based profession

Changing working and social conditions are causing an increasing number of seafarers to be looking for career paths on shore. The current trend in the industry of seafarers being employed by different agencies **prohibits them to develop a sense of loyalty to any particular operator.** Consequently, there is a tendency that seafarers consider seeking employment ashore. Another important factor comes from the requirements of the **modern family**, where both woman and man are required to seek employment and develop their career, which creates pressures on seafarers to find jobs on shore so that the time for child caring could be equally divided. **Conditions on board which might create unusual stress, high workloads and a desire for a more socially diverse life** are additional influencing factors. Finally, the **increased demand for skillful workers on shore** could further attract seafarers[11].

Given the tendency of more and more seafarers trying to seek employment ashore, it is crucial to examine the career options they have, the challenges that will be facing and their chances for success. Thus, the next section develops a SWOT analysis to determine how well the strengths and abilities of the seafarers match the current industry needs.

3.4 SWOT Analysis

A SWOT analysis (strength, weaknesses, opportunities and threats) is going to be conducted. The purpose of this analysis is to evaluate the strategic position of seafarers who want to find employment on shore and to investigate how their resources and capabilities

---

[7] Cf. (Barnett et al., 2006)
[8] Cf. (Fricke, 1974), (Pekcan et al., 2003)
[9] Cf. (Barnett et al., 2006)
[10] Cf. (EC, Mobility and Transport, 2011)
[11] Cf. (Southampton Solent University, 2005.)

match the current needs and requirements of the industry. Table 1 below visually summarizes the results.

Strengths	**W**eaknesses
•Knowledgeable about ships and maritime systems •Experienced •Well-versed in the maritime jargon •Responsible decision-makers •Problem-solving abilities •Leadership potential	•Education focused too narrowly on technical terms •Lack of commercial and business education •Lack of general management and business administration skills
Opportunities	**T**hreats
•<u>Deck officers</u>: pilots, water police, VTS officers, lockmasters, superintendants, inspectors, surveyors, ports administration and management •<u>Engineers</u>: power and nuclear plants maintenance, technical supervisors for large buildings, hospitals, technical superintendants, surveyors	•Barriers to entry: away from recruiting events, interviews •Negative perception of seafarers held by shore dwellers •Competitors with formal education in management and business administration

Table 1: SWOT Analysis

The SWOT analysis permits us to conclude that seafarers have unique strengths (their knowledge, abilities and competences about ships and maritime systems) that could easily be matched to various job opportunities on shore. However, the problems that they are facing stem from their lack of formal education in management and business, limited access to recruiting events and the competition they are facing from university graduates on shore. Taking all this into consideration, we could make the assumption that if seafarers undergo additional training and education, they could easily find jobs on shore.

The next Chapter 2 introduces the concept of Training needs Assessment (TNA) and describes the three main pillars of training requirements for the European Maritime Industry: environmental policies, management of cultural diversity and soft skills.

4 TRAINING NEEDS ASSESSMENT

Training Needs Assessment (TNA) is conducted, in order to find out gaps between available Maritime Education and Training (MET) and current/future trends in the maritime industry. Therefore, it tries to answer the following research question: *What type of training that seafarers need in the future to improve competitiveness of the European maritime industry?*

The following three categories were analysed in detail because they were considered most important for both seafarers willing to find a job on shore and for other people looking for career opportunities in the sea.

4.1 Environmental policies and issues in shipping

The EU's maritime transport strategy 2009-2018 clearly argues for environmental friendly, safe, and innovative shipping operations. An important key concept in the EU strategy 2009-2018 is that international shipping needs to improve its performance in order to reach the long-term objective of 'zero-waste and zero-emission'. This means that employees in the maritime sector, and especially seafarers, need to be aware of the environmental risks and challenges, and the possibilities and solutions to reduce the environmental impacts.

Interestingly enough, research has shown that the knowledge of new employees depends on nationality and on the time of graduation. Europeans, Americans and employees from more industrialized countries tend to be more informed on environmental issues than employees from other parts of the world. Thus, the larger training needs for new employees from non-Western countries could be an important gap to fill. This could be done by providing basic courses to those who are to work for European ship operators. Issues that should be included in the course material are energy efficiency measures and the fundamental steps of the ISO 14001 standard.

Respondents in series of interviews conducted by the Swedish Environmental Research Institute (IVL) indicated that issues related to work environment such as handling of dangerous goods should be part of their education. This way, crew members will be able to make informed decisions and minimize working risks.

A final aspect needs to be considered is the necessity to keep employees updated about current developments both technology and policy. This need could be done by internal training and web-based education.

4.2 Management of cultural diversity

International trade and globalization lead to an increase of intercultural contacts within trade and business. Moreover, the crew on board of a vessel will have to work with different

nationalities and cultures and will have to be trained in order to work effectively and safely in an intercultural environment. To gain a more thorough view of the training needs of seagoing and shore-based personnel on the management of cultural diversity a survey among maritime professionals in the European shipping industry was conducted by University of the Aegean.

In this line of thinking, cross-cultural communication is one of the most crucial competencies that people working in the maritime industry should hold. A training program addressing this issue should include components such as culture in general, cultural self-awareness, culture specific information, acquisition of new attitudes and competencies associated with effectiveness in cross cultural business settings, patterns of verbal and non-verbal communication, conflict management in culturally diverse teams and establishment of culturally diverse teams. Effective techniques to implement such a program are lectures and discussions, role playing and supervising or being supervised by a person from another culture. The possibility to support these techniques through distance learning and e-learning approaches emphasizes the enormous contribution of the blended learning approach to cross-cultural training.

4.3   Soft skills in shipping

New ways of international trade and shipping (bigger ships and ports with more modern technology and on average a smaller crew size) lead to new responsibilities and challenges on board of a ship. These new responsibilities in combination with the high likelihood of seafarers going to work within the maritime industry on shore require new or improved skills. A study done by Bremen University of Applied science recognised that advanced soft skills are important for maritime business. Besides navigation and administrative skills good seafarers need abilities in the fields of leadership, teamwork, and bridge resource management. These could be obtained by in-class, distance or on-the-job training programs.

Having identified these main training needs, the next Chapter 3 will introduce existing educational concepts and teaching methods that are further developed within NMU project and analyse how these match with the industry needs.

5 NMU EDUCATIONAL CONCEPTS AND TEACHING METHODS

The service product portfolio of the NMU consists of the following five building blocks[12].

5.1 Exchange of students

The NMU network provides the students with the opportunity to spend a certain amount of time of their education at a different university. Since agreements on the curriculum are made between the different universities, the exchange can be organized in a consistent and efficient way. Also, whenever possible, NMU partner universities would incorporate ERASMUS programs

5.2 Joint developed courses

The NMU offers a wide variety of joint modules and sub-modules. Each module is worth 7.5 ETS credits points and consists of five independent sub-modules (1.5 ETS credits each). Such an approach is beneficial because it allows for flexibility (e.g. using some module elements as part of different modules), adaptability (e.g. revising the content of only one module element rather than updating the whole module) and transferability (e.g. easily transfer one module element into an e-learning approach).

5.3 Virtual competence center

Within the framework of the NMU a virtual competence center will be created which will contain profiles of researchers who are working on similar topics in the maritime industry sector. The ultimate goal of this educational concept will be to provide in an optimized, timely and comprehensive way a whole scope of university activities such as research, consulting, knowledge transfer and the supervision of theses for a Master's or PhD degree.

5.4 Travelling lecture concept

The meaning of this educational concept is that faculty members from the NMU network will lecture not only at their home universities but also teach at the partner university (e.g. for summer schools). One particular advantage of this is that students who are unable to go and study abroad could still have the chance the gain international teaching experience. Furthermore, due to the modular structure it is possible to teach one module element within a week and accredit its outcome towards the respective module.

5.5 Knowledge sharing and creation

Each individual NMU partner will establish close relationships with maritime companies and organizations on both a regional and international level. Thus, by increasing the

---

[12] Cf. (Kiel University of Applied Sciences, 2009)

geographic coverage and adding specific information knowledge will be created, shared and promoted. Additionally, an online the NMU marketing platform will develop a NMU placement pool, which would be a means to connect employers and current NMU students.

5.6 Teaching Methods

The above mentioned five educational concepts will be delivered using several teaching methods. Some of the classes will be carried on a traditional basis i.e. **face-to-face communication** in a classroom environment at the university or at the office. Other module elements will be offered in a **blended-learning** setting. A blended-learning can include a mix of face-to-face interaction and e-learning together with practical approach (such as seminar, workshop, excursion, training-on-job) for knowledge transfer. It also consists of problem based approach, such as case studies, group discussions and hands-on experience through industrial guest lecturers. The **e-learning** components are facilitated through the computer-based learning software and educational technologies, which will enable seafarers to conduct distance learning. An example for such an innovative educational technology is the **Video Conferencing System** used at Jacobs University, which allows for a convenient arrangement of online learning, lectures, exercises and examinations. Moreover, within the framework of NMU, **summer schools** can be offered. These can be carried out either on campus or onboard of a ship. Also, based on stakeholders' demand, **specific short courses** can be organized. Finally, the content of NMU modules and module elements can be transferred to **short textbooks**.

6 NMU TRANSNATIONAL CAREER MAPPING

6.1 Northern Maritime University (NMU) Modules

The NMU is a network of universities from countries in the North Sea Region, which are engaged in maritime business education, innovation and research. The network consists of both the 10 NMU partners from Germany, Norway, Denmark, UK and Sweden, but also of an increasing number of stakeholder groups (e.g. research institutions and industrial trading partners).

The major goal of the NMU is to facilitate knowledge creation through education, collaboration, and research. To accomplish its central objective NMU employs multidisciplinary and internationally oriented approach, which is reflected in its module offerings (See *Table 2* for an overview of the modules). The modules consist of many module-elements and thus encompass a broad spectrum of topics: from Strategic Management and Economics to Ship Technology and Intermodal Freight Transport. The NMU models are carried mostly by three educational concepts: face-to-face, e-learning and blended learning.

Module A: Strategic Management in Maritime Transport	**Module B: Maritime Transport Economics**	**Module C: Maritime Transport and the Environment**
• Innovation in Maritime Transport • Port and Terminal Management • Maritime Transport Industry Sectors • Maritime Transport Business Environment • Strategic Management in Maritime Transport	• Specialized Market • Container Shipping Economics • Bulk Shipping Economics • Maritime Governance Policy and Regulation • International Trade and Maritime Geography	• Practical Guide to Comply with Regulations • Operational Logistics Means to Reduce Impacts • Impact on Marine Ecosystems • Environmental Impact: History, Policies and Regulations • Emissions to Air from Maritime Transport & Emissions Cleaning
Module D: Logistics and Global Supply Chain Management	**Module E: International Maritime Human Resources Management**	**Module F: Intermodal Freight Transport**
• Intermodal Freight Transports • Value Added Logistics Services in Marine Value Chains • Analysing Cases of Marine Value Chains • Maritime Value Chains • Elementary Supply Chain Management	• Human Resources Management on Board Ships • Personnel Selection, Retention & Career Planning • Labour Conditions Regulating on Shore and on Board Ship • Wage and Benefit	• Intermodal Legal and Security Frameworks • Analytical Frameworks for Intermodal Systems Design • Intermodal Systems Management and Economics • Intermodal Transport Technologies

Module G: Ship Technology	Module H: Offshore Industry and Shipping related Renewables	Module I: Bunkering Operation, Management and Technology
	• Creation • Shore-based Human Resources Management	• Introduction to Intermodal Transport
• Ship Technology Development and Future Trends • Regulatory Framework for Regulating Ship • Ship Operation and Management • Ship Knowledge • Environmental Ship Technology	• Offshore Vessel Market • A Premier of the Offshore Wind Market • Technology for Offshore Wind Mills and Services • Current Maritime Operations in the Offshore Wind Mills Market • Future Prospects of Deep Sea Installation and Maritime Services	• Bunker Market Economics I • Bunker Market Economics II • Environmental Aspects of Bunker Oil for Maritime Transport I • Environmental Aspects of Bunker Oil for Maritime Transport II • Operations in the Bunkering Industry
Module J: Cruise Shipping, Ferries, MoS Operations, Management, Strategies	Module K: Cross-Cultural Management and CSR	Module L: Hinterland Management Related to Port Management
• Ferry Operations • Ferry Industries Strategies • Strategic Management in Cruise Shipping • Motorways of the Sea (MoS) policy • Motorways of the Sea (MoS) in Practice	• Responsibility (theoretical) Part I • Corporate Social Responsibility (general) Part II • Cross Cultural Management (theoretical) Part I • Cross Cultural Management (general) Part II • Cross Cultural Management for Seafarer (practical)	• Port Management • Terminal Management • Hinterland (Dryport) Management • Dryport Simulation • Dryport Case Study

Table 2: Overview of NMU Modules and Module Elements

6.2 NMU Career Map

In the previous chapters we examined the current training needs of seafarers, looked into different educational concepts and methods and introduced the NMU network and its modules.

Taking all the information we gathered into consideration, we came up with the idea to create a mind map matching the training needs to the educational concepts and to the NMU modules. In our particulate case, we argue that mapping is an appropriate tool because it visually depicts the links between these three categories and facilitates decision making and problem solving.
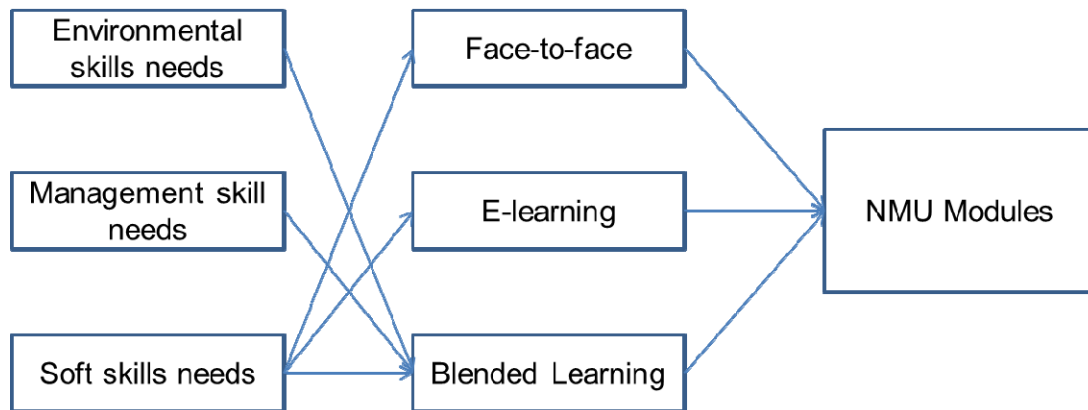
Figure 2: NMU Transnational Career Map

After analysing the map that we drew, we came to the conclusion that the most appropriate teaching method would be the blended learning approach. We support our solution by outlining three arguments in favour of blended learning.

First of all, although face-to-face teaching offers advantages such as interactive communication, body language and establishment of a dynamic relationship between instructors and students, it has to be admitted that in the particular case of seafarers this approach has its limitations. Seafarers spend considerable periods of time on board and therefore will not be able to attend courses that are solely taught in classrooms on shore. Blended learning could cater for these limitations because by combining online and classroom learning activities, blended learning would reduce the time seafarers have to spend in classrooms.

Second, e-learning (or computer-based learning) would reduce the travel times and costs of seafarers because they can study anywhere where there is access to the Internet. Also, e-learning is flexible and can be accommodated to the individual needs of the students. However, this concept is not appropriate for students with low motivation or bad learning habits, because they will inevitably lag behind. The blended learning approach overcomes the inconveniences of the e-learning approach because it incorporates the social interaction with instructors (e.g. Video Conferencing System at Jacobs University).

Third, blended learning is a highly flexible approach that makes it possible to combine different teaching techniques (e.g. workshops, case studies, guest lectures) and this way increases the efficiency of the learning process. Furthermore, blended learning is also beneficial from the point of view of universities because it allows for cost reductions.

Finally, for all the reasons given above, we can conclude that from the three listed educational concepts, the blended learning approach is the best one for seafarers who want to receive additional training.

7 CONCLUSION

To stay competitive in the maritime industry, Maritime Education and Training (MET) is important. Current industry needs and future trends should be complimented by modern MET concept. The modern way of teaching and training will enable mobility for employees both coming from sea-and land-based background, equipped with necessary skills.

The NMU jointly developed modules and educational concepts will complement the competitiveness of European education industry in the maritime business sector and will support removing obstacles for labor, academic, and student mobility.

REFERENCE LIST

EU, Transport and Mobility,2011, Report of the Task Force on Maritime Employment and Competitiveness and Policy Recommendation to the European Commissions, http://ec.europa.eu/transport/modes/maritime/seafarers/doc/2011-06-09-tfmec.pdf

(Access date: 2012, 14th September)

International Labor Organization.Labor Standards [Homepage of ILO], [Online]. Available: http://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/seafarers/lang--en/index.htm (Access date: 2012, 14th September)

Marine Working Conditions [Homepage of Woods Hole Oceanographic Institution, MA., USA], [Online]. Available: http://www.whoi.edu/page.do?pid=18195 (Access date: 2012, 14th September)

Barnett, M., Gatfield, D., Overgaard, B., Perkcan, C. & Graveson, A. 2006, "Barriers to Progress or Windows of Opportunity?A Study in Career Path Mapping in the Maritime Industries", *WMU Journal of Martime Affairs,* vol. 5, no. 3, pp. 1-18.

Fricke, P.H. 1974, *The Social Structure of Crews*, Department of Maritime Studies, University of Wales, Cardiff, UK.

International Labor Organization 2004, *The Global Seafarer. Living and working conditions in a globalized industry,* ILO, Geneva.

Perkcan, C., Barnett, M. & Gatfield, D. 2003, *A National Survey of Cadets*, Warsash Maritime Center, Southhampton, UK.

Southampton Solent University, 2005, The Mapping of Career Paths in the Maritime Industries.

Weber, T., & Nevala, A.-. 2006, *An exhaustive analysis of employment trends in all sectorsrelated to sea or using sea resources.* , European Commission for Fisheries and Maritime Affairs, Birmingham.