MariComp

Developing the Competencies of Maritime Lecturers

Competence Compendium

Maritime Lecturers competencies

EU-program Leonardo da Vinci – Pilot Project

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Content

Introduction

This paper is a short summary of the report "Maritime Lecturers Competencies" that describes the analysis, conclusions and recommendations made from the answers to a questionnaire sent to stakeholders in the maritime education in 6 European countries. The full report can be downloaded from the project web site www.maricomp-web.eu

The report is made as part of an EU financed project under the Leonardo da Vinci program. The project is called MariComp, and its aims are to improve the competencies of lecturers in the maritime educational institutions (MET-institutions) educating students to the bachelor level to the maritime profession and through that improve the competencies of the maritime graduates.
The partner group in this project consist of 6 MET-institutions from different countries: Denmark, The Netherlands, Estonia, Ireland, Romania and Norway and furthermore as advisors an educational university in Denmark and a Nordic marine engineers' federation.

The aim of this part of the project has been to unveil the prospective requirements for lecturers' competencies within the maritime educational system. Another aim was also to determine the views of stakeholders regarding the competency of graduates to be able to carry out the most important job demands at sea.

A web based questionnaire was answered by 263 stakeholders in the maritime profession in February 2007. Of the 263 respondents 109 persons (41%) were maritime lecturers and 154 persons (59%) were stakeholders in the maritime profession. The 6 countries and the different stakeholders are not equally represented, and as we have not been able to filter all the answers, we cannot be completely sure of the conclusions in each country and on the different stakeholders. Especially the small number of responding lecturers from Norway and the small number of respondents from classification societies makes it very difficult to conclude something from those respondents, even if we had had the opportunity to filter the answers.

Different categories of respondents have different opinions. More detailed knowledge on those different opinions can be found in the full report. It is expected that each partner country compares the results with own situation in order to evaluate and compare their own educational level with the results here.

The present maritime lecturer

The analysis of the answers to the questionnaire on maritime lecturers' competencies gives reason to believe that the following general conclusions can be made:

The maritime lecturers' formal qualifications (education)

The lecturers seem to be well educated professionally and academically except for their pedagogical educations.

The two biggest groups of formal qualifications are lecturers having Master Mariners diploma (32%) and Marine Engineers diploma (31%). 70% holds a professional maritime diploma and 46% have a university degree, and 17% have a University degree in technical science.
But more than half of all the maritime lecturers have no or only very short educational or instructor courses.

70% of all the respondent maritime lecturer answer that they are now a specialist lecturer who can teach few subjects at present, and only 28% say they are a generalist who can teach several subjects.

The maritime lecturers work experience
The respondent lecturers seem to be experienced lecturers and have wide job experiences from both the maritime profession at sea and from the maritime and non-maritime shore based industry. 71% of the maritime lecturers have worked at sea and half of the sea experienced lecturers have worked as a senior officer. 37% of the lecturers have job experience in the maritime shore based industry and 55% of all the respondent maritime lecturers say they have other relevant non-maritime job experiences.

In the respondent group there is about half inexperienced lecturers and half experienced lecturers, quite many have even been teaching for a very long time, as 41% have more than 11 years experience.

26% of all the lecturers have never worked with projects and only 31% have worked with international projects.

The maritime lecturers' age profile
The group of respondent lecturers has a wide spread age distribution. The lecturers in all age groups teach all kinds of subjects.

Teaching methods and resources used by the maritime lecturers.
The most used methods by the lecturers are the teacher centred lecturing of theory and knowledge, supervision/instruction (in work shop, simulator, laboratory, training ship) and students' centred dialog based teaching. All these methods are used by more than half of the respondent lecturers.
A little less than half of the lecturers also use case studies/problem based learning, assignments from students corrected by the lecturer and project organised learning.

Black board, white board and "Power Point" are the most used resource in lecturing, The least used recourses are intranet, work shop, flip over and training ship.

Only 16% of the lectures use web based distant learning (e-learning) as a teaching method during the lecturers. This indicates that the lecturers' competence for using this teaching method may be poor.
Half of all the respondent maritime lecturers (48%) answer that they have *not at all* or *very little* sufficient knowledge and skills to manage e-learning.
Those who are now using e-learning have a much higher self-estimated knowledge and skills to manage e-learning, but surprisingly there are 29% of the lecturers who are actually using e-learning, who say they have too little knowledge and skills to manage e-learning.

Lecturers' informal learning in the organisation
We can identify outstanding forms of informal learning. 68% of the maritime lecturers participate in professional seminars, conferences or similar events and most of all lecturers have an active share in knowledge sharing with colleagues. This means that the engagement in non-formal learning is rather high. But not all maritime lecturers take part in these events.

Informal learning is partly going on as knowledge sharing. Virtual intranet supports knowledge sharing and knowledge sharing is supported by formal groups of lectures and libraries with professional and educational literature. Job-rotation is somewhere a means for creating knowledge sharing.

Almost all the maritime lecturers (94%) read articles in professional magazines. The respondents who feel they are well informed of research estimate their own knowledge and skills higher, with regard to practice, theory as well as pedagogy.

Age of the respondent is an important factor related to the level of engagement in informal learning. People over 50 participate to a relative high degree in informal learning activities, compared to the group of younger participants.

53% of all lecturers answer that their organisation offers internal technical, educational or personal developmental courses for lecturers, but 50% of those lecturers also answer that less than half of the lecturers attend those courses.

Relations between lecturers and stakeholders
64% of the maritime lecturers write that they personally have contact with stakeholders in the maritime sector.
There is a clear tendency towards that those lecturers who have contact with stakeholders also have a higher degree of self-estimated practical experience and knowledge, sufficient to develop teaching that link up with the daily practice. Surprisingly there is also a tendency towards that those lecturers who have contact with stakeholders also have a higher degree of self-estimated theoretical knowledge, sufficient to be a good teacher. And there is also a tendency towards that those lecturers who have contact with stakeholders also have a higher degree of self-estimated knowledge and skills to manage e-learning.

Expectations for the future maritime profession and the lecturer

The maritime profession in the future
Most of the respondents stated that more crewmembers are needed on ships. These crewmembers need more competences like more theoretical knowledge, more hands on experience etc.

Respondents think the size of the ships will increase or will remain on the same level. There will be more different types of ships, like LNG-carriers and more arctic going ice strengthened ships. Also the ship speed will increase. Ship as well as the equipment on board will become more complex, with a high degree of automation.
The sailing routes will be more pendulum and the present trading schemes will remain the same. Other respondents think that the number of fleet routes will expand to routes all over the world and that there will be more northern routes.

To stay in control of the fleet, legislation will be more stringent in the future with an emphasis on compliance. A number of respondents think that more support by flag states is needed. Safety will develop further, to meet the demands in a satisfactory way.

The graduated maritime student in the future
Most of the respondents consider that dual purpose education is not a solution for the future. They consider that it is best to educate most single purpose and only a few dual purpose officers.

New junior officers are not considered to be able to carry out most job demands by some maritime stakeholders. This reflects a need for greater attention to be paid to increasing graduates competence and concentrating on what is required of graduates when on board ship.

The maritime lecturers in the future

Most of the respondents are of the opinion that maritime educational institutions could improve their lecturers in the first place by refreshing their practical expertise.
Another important way of improvement is by means of further education, conferences and courses. Even though this statement is very clear, it is not really clear in which field more education etc. is recommended. It could be either pedagogical, managerial or addressed to the maritime profession. Furthermore, amongst other ways of improvement, contact with the industry is recognized as significant. Most respondents felt that it was important for lecturers to attend conferences.

83% of all the respondents think it is best if a maritime lecturer in the future will be a specialist who can teach few subjects. It is very clear that those respondents with a short education of 2-4 years favour a generalist much more than the other educational groups and the respondents with research experience clearly preferred the specialist lecturer more than the rest.

Every fourth respondent finds it rather or very important for maritime lecturers to have completed post graduate studies and every third respondent thinks that it is not important.
Every third respondent finds it rather or very important for maritime lecturers to participate in research, projects and/or development, and only every fifth find it not important.

There is a clear tendency towards those respondents who have teaching experience or research experience consider it more important for maritime lecturers to have postgraduate studies and to participate in research, projects and development than those who have never taught.

It is reasonable to conclude that knowledge-sharing and collaboration with stakeholders, with colleagues and with other European Countries could improve the competencies of the maritime lecturers.

The sea experienced maritime lecturer in the future

It seems that the respondent lecturers that have no or very little sea experience or no contact with stakeholders in the maritime sector feel they have insufficient practical experience and/or knowledge to develop teaching that links up with the daily practice on board.
The analysis clearly shows that the majority of respondents think that a lecturer should have sea experience or contact to stakeholders in the maritime sector. That is essential to link up the teaching with the daily practice on board.
Almost all of the total respondents answer that the lecturers should have work experience at sea. Compared to that 74% of all the respondent lecturers did actually work at sea, so the present situation matches the expectations.

58% of all the respondents find that the maritime lecturer's sea experience must be at senior officer's level. When we compare that to the fact that only 37% of the respondent lecturers did actually work at sea as senior officers, we must conclude that the present situation does not match the future expectations.

Respondents with a master mariners or dual diploma and respondents who have worked at sea as senior officers (or junior officers in the nautical department) want a higher percentage of lecturers to have sea experience than respondents with a marine engineer's diploma and respondents who have worked at sea as a junior engineer.

There is a clear tendency towards that lecturers teaching in nautical subjects and management find that the majority of lecturers should have sea experience and that lecturers teaching engine subjects find that a smaller part of the lecturers must have sea experience.

The future teaching and training

There is a gap between the perceptions of maritime educational institutions and other stakeholders. Maritime educational institutions feel that graduates are ready for future developments but some stakeholders do not agree. This indicates a need to bring stakeholders into the educational process. This will prepare graduates for future developments.
With increasing age, increasing sea experience and increasing lecturing experience respondents felt that there was a better reflection between courses and maritime practice.

Most of the respondents consider "Prevention of pollution of the marine environment" as an area that needs development in the future, for both deck and engine departments.
On personal competences the majority of respondents want development on almost all subjects.

A very large number of respondents consider celestial navigation and visual signalling areas that "needs lower priority in the future" in the deck department.
For the deck department a majority finds that the following subjects needs development in the future: Electronic systems of position fixing and navigation, Emergency procedures, English language, Manoeuvring and handling a ship in all conditions.

For the engine department the majority finds that the following subjects needs development in the future: Workshop practical training, Electrical and electronic control systems, Electrical marine systems, testing and maintenance of electrical equipment and detect machinery malfunctions and correct faults.

Recommendations for the future maritime lecturer and the profession

Lecturers' competencies in general

The present competencies of lectures are developed and supported through learning as formal learning, non-formal learning and informal learning. It is recommended that competence development initiatives continue to build on all three forms of learning.

From the findings it is clearly recommended that the majority of lecturers in the future should be specialist who can teach few subjects and has much in depth knowledge in these subjects.

Lecturers' formal education and qualifications

The lecturers seem to have very good professional education and work experience from the maritime profession at sea and it is recommended to continue using that strategy in educating and employing lecturers.

A large group of lectures have no or only were short courses in pedagogy. It could probably improve the quality of teaching if lecturers were better educated in educational and pedagogical subjects. It must be recommended that the learning system emphasises competence development of lectures in the field of education and instruction.
Since lecturers with no educational/pedagogical educations/courses use more traditional and less different teaching methods it is strongly recommended to give all lecturers courses or educations in pedagogy and education.

Lecturers should also be encouraged to obtain post-graduate qualifications.

Lecturers work experience at sea in the maritime profession
Competencies involve capacities to act, to solve problems in practice etc. It seems indispensable that interplay between experience and theoretical learning is necessary. In relation to this 27% indicate that they never got a certificate to be allowed to work at sea, and 23% indicate that they have not worked at sea. Only one third indicate that they have sufficient practical experience and/or knowledge to develop teaching that links up with the daily practice on board. All together this means that experience in work settings are low/insufficient for a big group, and education have to compensate for this.

It is clearly recommended that the maritime educational institutions should see to that the majority of lecturers have sea experience. A result of the investigations is that the senior officer qualified and experienced seaman is what the respondents want the maritime lecturer to be, especially those who teach nautical subjects. Among the respondent lecturers there is now only one third who has worked at sea as a senior officer, and every fourth did not work at sea at all. So the MET-institutions can improve by employing more senior officers and it will be a good target to increase the role of senior officers in the educational process.

Lecturers work content
If there is a wish to improve the competencies of lecturers by project work and international cooperation and knowledge sharing, it is important to let more lecturers work with international projects. Especially lecturers with short education and short teaching experience could improve their competences and knowledge by project work.

From the findings it is clearly recommended that the majority of lecturers in the future should have contact to stakeholders in the maritime sector. That is essential to link up the teaching with the daily practice on board.
Lecturers should also be encouraged to participate in research activities and projects.

Lecturers working methods
It is interesting to see, that of the lecturers with humanistic and social university degrees only few use the method of instruction/supervision in simulators, workshops, training ships and laboratories. It could be interesting to know if the contrary is also the fact, so that instructors in simulators etc. are mostly technical and professionally educated lecturers. With the increasing focus on human resources and management in the profession and in simulator and other training it could probably give a much better learning if the lecturers were educated to a higher level in these subjects.

Present courses reflect much of maritime practice but need to be improved to increase the reflection and relevance to maritime practice. Younger maritime professionals have the most recent sea experience and could be best poised to comment on what is required at sea. The views of younger personnel and those who have recently left the job at sea should be consulted to help improve course content.

Web-based distant learning, e-learning
Web based distant learning could be a method that will be used more in the future. As only 16% of the respondent lectures use web based distant learning (e-learning) and they are almost all from Denmark and Romania, it could be recommended that all MET-institutions and especially those from the other involved countries consider the development and use of this method in the future.

It seems that if MET-institutions want to use web based distant learning (e-learning) in the maritime studies in the future they will have to improve the competencies of the maritime lecturers as only few lecturers are using the method now and only one of every five lecturer think he/she has good competencies to manage e-learning.
Furthermore every second lecturer thinks he/she has no or too little competence. Even among those who are now using e-learning as a teaching method every third feels he/she has no or too little competence.

Since the lecturers with longest education and longest teaching experience has the highest self-estimated knowledge and skills in managing e-learning, it would be recommendable to educate the new lecturers to a higher academic level and to give them experience, knowledge and skills within the MET-institutions in managing e-learning, if this is a method that the MET-institutions want to use.

Lecturers' non-formal and informal learning

It is recommended to let the lecturers within the MET-institutions share knowledge of teaching methods with each other.

Since the involved lecturers from the different countries and with different educations have preferences for different teaching methods and resources it is recommended that the network of partner institutions collaborate and share knowledge of teaching methods and resources.

All maritime stakeholders feel that lecturers should attend conferences and seminars to improve and widen their knowledge base. This is seen as particularly important by younger respondents, educational institutions and researchers.

Since collaboration seems to improve competencies and improve the self-estimated knowledge and skills of the maritime lecturers, it is recommended for maritime lecturers to share knowledge and collaborate with other European Countries.

Internal courses held within the MET-institution could be a future means to further develop the in-formal learning, as it is not the option for the majority of the lecturers now.

Lecturers contact with stakeholders

As there is an indication of that information of the maritime educations does not reach the stakeholders working on board ships and in the maritime shore based industry, it is important to get a better contact with these stakeholders and inform the coming colleagues of the educations.

Since there seems to be a clear indication of that those lecturers who have contact with stakeholders also have higher self-estimated competence to be a good teacher and develop teaching that link up with daily practice it is very important for maritime lecturers to have close contact with stakeholders.

And since only 29% of the maritime lecturers personally collaborate with maritime lecturers in other European countries it is important to improve the collaboration between EU MET-institutions at the lecturer level in order to develop their competencies.

It is recommendable to give all the lecturers but especially those with the shortest experience in MET-institutions better opportunities to have contact with stakeholders and with maritime lecturers in other EU-countries.

It is also recommendable to give especially those with the shortest education and those with engineer's education better opportunities to have contact with stakeholders and maritime lecturers in other EU-countries.

MET institutions role

In some of the countries informal learning in this field seems not to be supported by libraries with literature in the field of educational/pedagogical literature.

It seems evident that the teachers use a broad range of resources in their teaching, so the existence of and access to these resources are important for implementing the training successfully. It should be recommended that educational systems support and make access possible and easy to this broad range of rather different resources: digital systems, simulator, internet etc.

It should be recommended too, that teachers should have the possibility to attend courses and continuing education to keep updated in the use and application of modern teaching technology.

It is felt that maritime graduates are able to perform many of the important job demands but not most of the job demands. To increase the excellence of graduates, shipping companies and manning agencies, i.e. those who employ graduate junior officers must be encouraged to participate in graduate training policies. This will ensure that graduates will be able to complete the relevant job demands and also make stakeholders aware of the requirements of International training regulations and content such as STCW 95.

Maritime students should be better prepared for future developments both at sea and in the wider industry. Maritime educational institutions should consult shipping companies and classification societies to determine how graduates would be better prepared. Those with recent sea experience should provide a large input into course content and structures.
Educational institutions should liaise with shipping companies and classification societies to ensure that relevant educational and training content is included in seminars and conferences and see to that they are invited to relevant seminars and conferences.

It is also recommendable to thoroughly asses the need for the dual education in the maritime profession especially in the view of that there is a tendency towards that the more sea experience a person has the less he favours the dual educated and because those who favour the dual educated are mostly employed in maritime educational institutions, shipping companies (job ashore) or in maritime shore based industry. And important point here is maybe also that those who are dual educated favour the dual education more than others.

It is recommende to start an individual development plan (IDP) for each lecturer as an instrument for improvement and follow up and to assign a coach or mentor for each lecturer to accompany and to make a plan for the whole group of lecturers, as an instrument for improvement of cooperation between lecturers, by sharing knowledge and teaching materials. This will improve the total competence of the MET-institution. Make the IDP a part of the periodical performance interview.
Give every lecturer the opportunity to have a sort of practical period on board of a ship, within another MET institution or if relevant within a maritime shore based company. Don't let this be without engagement, but make it part of the IDP.

Changes to curricula
From the investigation we can recommend that the maritime educations should include more teaching on pollution prevention and management for both deck and engine officers.
In the education of officers for the deck department it is recommendable to give lower priority to celestial navigation and visual signalling and to develop the teaching in electronic systems of position fixing and navigation, emergency procedures, English language and manoeuvring and handling a ship in all conditions.
In the education of officers for the engine department it is recommendable to develop the teaching in workshop practical training, electrical and electronic control systems, electrical marine systems, testing and maintenance of electrical equipment and detection of machinery malfunctions**.** Though there are many of the same problems in the participating countries, it is also recommendable to investigate the developmental subjects in each country.