

## **E-LEARNING ENVIRONMENT FOR SELF-STUDIES IN MARITIME EDUCATION AND TRAINING**

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**Abstract.** This paper presents the educational potentials of applying Soft Model Course Database (SMCD) for self-work in maritime education and training. The paper acknowledges that model courses for self-work can be used to create a learning environment to support the teaching and training of numerous subjects under the STCW and other international conventions. The idea of the offered «SMCD» Project is directly derived from the IAMU key purpose, to create a network and forum to communicate and exchange the best maritime ideas, practices and scientific solutions and corresponds to Objective 1 «Strong IAMU membership and engagement, listed on the Annex to the Tasmanian Statement.

The proposed «SMCD» Project is the attempt to give an extra tool for developing innovative methods of the MET system. The main idea is to develop database serving as a roadmap for the creation of international or multi-national standards of self-study that could be used by maritime universities around the world.

The paper describes the main principles and the criteria of Soft model courses arrangement.

It is shown, that once properly deployed, the Soft Model Courses Database can become a constantly growing knowledge repository that enables maritime institutions to continuously extend knowledge platform. When applying in combination model courses in classroom and soft model courses in self-study modes, they can complement each other and contribute to achieve competence that is required of highly skilled professionals.

**Keywords:** model course, self-study, maritime education, e-learning

### **Introduction**

Existing standards of maritime education and training mandated by the International Convention on Standards of Training Certification and Watch-keeping for Seafarers (STCW) [1] and specified in terms of desirable abilities and skills of future seafarers as well as of those who work in shore companies, provide a framework for development of different approaches to selecting

among known and new methods of teaching. Today the first-priority task is not only to train specialists, whose qualification meets the Conventional requirements, but to form their skills to acquire new knowledge and skills independently.

MET system relies on the minimum standards laid down by STCW convention to achieve the required standards of competency and qualification of seafarers. But the main idea of any educational system is to prepare future specialists for advance. In this connection training of students to work in self-study regime opens additional perspectives. Maritime universities face the need to strengthen the role of self-study work of students, and therefore reconsider approaches to its organization in the educational process.

### **Part 1. The essence of self-study work**

Analysis of organization of self-study work of students from different faculties has allowed us to highlight the contradiction between the changed character of self-study work in the system of training and outdated approaches to its organization.

Self-study work of students should be provided with methodically correctly organized system of tasks that are arranged in a sequence of successive and complementary tasks of various kinds. While the learning process these tasks should be changed from reproductive to creative ones.

Maximum use of the system of self-study work of students in the educational process promotes not only the assimilation of the content of the subject, but provides the development of students' independence as an important quality of a future professional.

In didactics there are different approaches to understanding the essence of self-study work, but the idea of the most of them is to organize pedagogical conditions and a set of learning tasks, which are designed in accordance with the content of the subjects and methods of their teaching.

The important component of the considered system is the content, the selection of which usually is directed either to repeat the learned material during class hours, or to understand educational material, mastery of which is occurred in self-study regime. In this connection we've distinguished the following principles of selection of the content for self-study:

- sufficient reflection of the issue in the scientific and methodological literature;
- the accessibility of the studied material;
- its relative locality;
- gradual increase of complexity of the presented material;
- compliance with the certain level of a student training;
- module arrangement of the material.

Moreover, students should understand the role and place of the issue in the study course, as well as its logical structure in general. Providing students with appropriate literature and other

resources for the organization and execution of self-study work also should be taken into account. The means of arranging and management of self-study work of students include: tasks, instructions and methodical recommendations for their implementation, means of intermediate control, and self-control, tests, assignments, software, etc.

Another important component of the system of self-study work is control, whether current or final which is chosen depending on the type of self-study work. The form of control also is determined by the changing nature of the cognitive activity of students.

Very often the information model of education prevailing in marine specialists training mainly leads to fragmentary views in their minds. In result, the graduates with higher education do not have the experience of self-study work, and often it influences on performance of their activity in professional practice.

## **Part 2. Educational potentials of Soft Model Course Database for self-work in maritime education and training**

The idea of the Project «Soft Model Course Database» (SMCD) is directly derived from the IAMU key purpose, to create a network and forum to communicate and exchange the best maritime ideas, practices and scientific solutions and corresponds to Objective 1 «Strong IAMU membership and engagement» and Objective 4 «Achieve IAMU functional and regional cooperation», listed on the Annex to the Tasmanian Statement.

Soft model course is characterized as a course designed for self-studies which could be arranged in a different way than a Model Course. The Soft Model Courses included in the Database are meant for different methods of teaching: ranging from traditional face to face and distance learning to e-learning and blended learning, aimed at students seeking employment at sea and ashore in the entire spectrum of maritime careers at levels spanning from under graduates to post graduates. The under-lying criterion which will unite courses to be included in the database, is self-study. The Soft Model Courses included in the Database should be of optional character and both lecturers and students have the right to choose them according to their preferences. Educators from different countries and universities can participate in creation of the Database, provided they are developed on the basis of the set criteria.

The main idea of the SMCD Project is in the following:

- designing the main framework of the database of SMCD, which will include information on new ideas and courses developed and offered by maritime universities;
- developing cross national standards of self-study that may then be used to track and ensure quality of MET training;

- developing the mechanism for regular exchange of Soft model courses which can be implemented both for regular curriculum and for self-studies with the aim of providing for academic collaboration among maritime universities;
- creating free database of Soft Model Courses with purpose to offer extra opportunities for educators from different countries to maintain appropriate communication channels through the database and use them in order to improve quality of Maritime education in Universities;
- encouraging both beginners and experienced educators to develop new Soft Model Courses for optimization of educational and training process and research.

The advantages of the proposed approach to arranging self-study work of students are the following:

- reflexive-educational environment as a basis for the self-study allows the students to form stable, adequate self-esteem;
- trainees can choose any course according to their preferences among a wide range of courses which are offered for self-study;
- there are more opportunities for students in self-educational activities.

Thus, the Soft Model Course Database is a system of specially designed model courses for training of future sea specialists of different specialties and levels of training built under the Conventional and national requirements and guidelines for their use and designed for centralized storage and multi-use by Maritime universities. The offered model of the Soft Model Course Database (SMCD) presumes the following:

- regularly updated information database of disciplines (electronic textbooks and manuals, demonstration, test and other assignments, samples of completed projects, etc.);
- modular design of courses in different disciplines;
- automated system of knowledge assessment which facilitates the work of a teacher and promotes openness and objectivity of evaluation of students self-study work).
- choice of an information resource (optimum combination of electronic and traditional learning resources).

To have the courses more used they must be subject to constant update. But it should be kept in mind that due to differences in educational systems and the cultural backgrounds of trainees, the content of education varies considerably. Moreover the model course material should be designed to meet both the conventional and national requirements and recommendations.

The implementation of the Database of Soft Module Courses in the educational process helps to integrate general, special and interdisciplinary knowledge; to develop professional competences; and to develop experience in self-study.

Work with a Database of Soft module Courses as a reflexive-educational environment allows ensure access of a student in an active research position in relation to self-educational activities.

A systematic participating of students in a reflective role allows identify personal changes, to trace the dynamics of personal development, significantly influencing on the structure and the content of readiness for self-educational activities.

We have distinguished the following set of criteria and indicators of efficiency of self-educational activity of students:

- personal criterion (cognitive view of motivation includes the need for exploration, activity, stimulation, new knowledge, etc.);
- cognitive criterion (understanding of the essence of self-study activity, its role in the learning process and professional education);
- instrumental criterion, which indicates on general educational skills; constructive and practical skills; reflexive skills.

As for the organizational and pedagogical conditions we have defined the following:

- familiarization of teachers with the mechanism of students self-study work;
- creation of the methodical support for students in their self-study activity;
- optimal access of students to necessary educational resources, designed for self-study;
- providing of administrative assistance to students in the process of their self-study activity;
- free choice of means of self-study activities;
- poly-professional interaction of the teachers in the development of a software product;

Poly-professional interaction is one of the most important conditions of the SMCD functioning. This statement is grounded on the fact that being influenced by many factors such as constantly developing technologies, globalization and integration in economic and political spheres, sea specialists need to be equipped with interdisciplinary skills and knowledge to handle the dynamics and uncertainty of professional reality. This means that members of MET should use all opportunities to upgrade and exchange knowledge and experience in teaching future seafarers.

An educational module for self-study can be used as a full training course or as a certain part of the course. The module to be included in SMCD must contain a complete cycle of activities for student development including self-assessment.

A set of teaching methods used in the SMCD should provide:

- the interactive nature of the learning process (between learners and instructional material, a student and an educator, students and the virtual environment, trainees and vocational field of activity);
- the intensity of mastering of the educational content;

– the continuity of the movement of students from knowledge to understanding, to action, to creativity, providing the increase of competence of future specialists.

The offered model of the Database of Soft module Courses can play a role of extra tool to support traditional distance learning. It can be used in combination with web-based, internet-based learning programs. It is a new learning tool in a MET curriculum which can improve an educational value of the training process. Opportunities of the Database of Soft module Courses implementation are great. When applying in combination model courses in classroom and soft model courses in self-study modes, they can complement each other and contribute to achieve competence that is required of highly skilled professionals [2].

While arranging self-study work of students in the framework of the developed project, an educator acts in accordance with the algorithm shown below: 1) defines the purpose of the Soft Module Course (SMC); 2) defines the private-didactic purpose of SMC; 3) selects the content of SMC; 4) chooses the method of study; 5) chooses the form and means of SMC control.

The use of this algorithm allows define a set of tasks for self-study work for achievement by a student the required level of knowledge. And moreover, it allows change methods and tools of teaching directly in the process of passing the contents and presentation of teaching information based on the analysis of student activities.

Analysis of self-study work of students in terms of their interaction with the teacher has allowed establish that the method of activity is of great importance. In this regard, we have identified two types of self-study cognitive activity – reproductive and productive. Each of them is characterized by a certain level of independence. Both kinds of activity are closely interrelated.

### **Part 3. The organization of educational process under Soft module Course on the basis of situational and functional approach**

Any educational process should be organized in order to achieve the best planned result. In the context of our paper we consider the procedural model of SMC arrangement, as one of the possible way of the SMC development. This way represents the educational situation considered by us as a set of conditions which performance is necessary for existence of educational process. This model was designed on the basis of situational and functional approach, firstly proposed and worked out by E. Malinochka and then developed in different works [3; 4; 5; 7; etc.]. The main term here is the arrangement of the content on the basis of the analysis of professional poly-profile activity of specialists [4; 6].

This model consists of three functional blocks (readiness of students for actions on formation their competences; readiness of a teacher for formation of the certain competence of students; means of competence formation at students), which are allocated as components of the system of

activity as structures reflected in them are components of real activity. During formation of a situation, its component structure is defined, functional interrelations among components are established and there is a development of separate components by way of providing achievement of the purpose – readiness of process of competence formation [3; 4].

While functioning of the process, this situation continuously changes owing to enrichment of a current condition of erudition of students. The precise organization of educational functional system during training of future seafarers allows correspond to changes of requirements for a level of the specialists in connection with constant development of the branch, and to rate of mastering of a material. Influence of separate components can be changed under different circumstances, nevertheless, this is a self-organizing system which, finally, leads to formation of competence.

Conditions of the organization of process of the future sea specialist training under SMC include:

- a) creation of the situation developing imitation of a poly-profile and communicative industrial issues, current erudition of a student, readiness of a program and means of quasi-professional actions performance;
- b) performance of these actions, analyzing of their current results, correction and the further development on their basis of carried out actions;
- c) use of modern forms, methods, means of educational process (material and ideal means, information technologies, distant training, creation of the conditions simulating the future industrial poly-profile relations).

There is a transition of participants of the training process from a simple educational situation to a situation on the basis of integration of the content of training. This transition has inconsistent character. On the one hand, it is carried out to provide readiness of process of formation of poly-profile communicative cognition at students. On the other hand, this transition consists in increase in quantity and complication of the processed facts and theoretical knowledge about various objects of activity of sea specialist and objects of activity of his partners with the purpose of change of its quality, creation of cumulative integrated ability – poly-profile and communicative competence [2; 3; 4; 5].

The educational situation of future specialists is usually developed on the basis of the analysis of their future professional poly-profile activity. During formation of the educational situation its component structure is defined, functional interrelations among components are established. Moreover, there is a development of separate components in view of achievement of the purpose – readiness of the process of formation of the competence. Organizers of the educational process should keep in mind that during this process this situation continuously changes owing to

enrichment of a current condition of students' erudition [2]. And accounting of this fact can provide successful result in formation of learning outcomes.

## **Conclusion**

Technological knowledge is getting older every 3-4 years, with a steady positive dynamics of this process. While maintaining the same educational technologies by the end of University studies knowledge of a graduate will be largely outdated. As a consequence, the competitiveness of graduates in the labour market is not at a high level. Activation of self-study activity of students, their professional training, in fact, requires permanent search of possible ways and methods of advanced teaching. Modern information technologies offer new opportunities to improve the efficiency of the educational process. The increasing role belongs to methods of active learning, self-education, and distance educational programs.

The proposed SMCD can be considered as a means for developing of the MET system. The use of database served as a roadmap for the creation of international or multi-national standards of self-study opens extra opportunities for maritime universities around the world.

The Soft Model Courses Database is also an additional instrument in the learning process both for students and for educators in creating new methods of teaching and introducing them around the world.

When applying in combination model courses in classroom and soft model courses in self-study modes, they can complement each other and contribute to achieve competence that is required of highly skilled professionals.

Collaboration of participants of the offered Project is not locked in one region. The originality of the idea of the proposed Project is consistent with IAMU goal to invite new potential members, including different representatives of maritime industry and provide opportunity not only to strengthen connections among IAMU Members, by enhancing the sharing of experience and knowledge, but also to promote the next step of maritime education evolution.

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