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APPLICATION OF CASE STUDY METHOD IN CREW MEMBERS' TRAINING PROGRAM

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Abstract: *Specific didactic aspects of the case study method (teaching through case-based practical examples) are presented in the paper. In order for the ship's crew members to achieve an effective collaborative work, contemporary teaching methodologies should adopt a cautious approach to relevant factors such as innate abilities, policy management, cooperation and professional communication skills, experience, work skills and working environment.*

Case study is a problem method of teaching, focused on the acquisition of knowledge, skills and competencies – vital prerequisites for quality professional realization of the prospective ship's crew members. The essential elements for developing the teaching method are analyzed – structure, sources, advantages. An authorship of an organizational model for students' practical training with the implementation of case study is being shown.

An example structure and a case study creation model is suggested. Conclusions drawn from the use of the case study method lead to a safe professional situation in which the prospective specialists are being trained. The case study approach unlocks the trainees' creative potential, their professional thinking and stimulates searching for new unconventional solutions of problematic situations which the future professionals will be faced with. The method increases students' training motivation and broadens their knowledge.

Key words: *case study method, training, students, ship's crew members*

1. Introduction

The dynamically changing requirements to marine specialists' professional qualification and the growing demand for navigational safety addresses the need of training which promotes not only best theoretical practices, but also empirical skills for coping with different situations in the field. The main aim of the International Maritime Organization (IMO) is deck officers' constant broadening of knowledge and experience. The management personnel's training as well as the improvement and maintenance of good moral and psychological qualities, are essential tasks in the complex training of marine universities' students.

The solution of the problem requires searching for new ways of training and improving the qualifications of the crew members in order to form competencies needed for professional career fulfillment.

The use of the case study method (an in-depth study of a particular situation) in students' training programs will shape their professional thinking when arriving at the right decision in a tense situation. The method creates a real-life situation that increases the motivation for the creative development process and helps to achieve professional career fulfillment.

2. Exposition

The development of competencies functioning as a dynamic combination of knowledge, skills and a common value system has become a priority for the modern educational system which is needed for university trainees' successful professional and social activity as well as personal growth. However, the change in the educational process' trajectory demands a relevant approach to its aims and problems to address the pragmatic effectiveness of educational results.

While using interactive methods of learning, the students are taught to think critically, to solve problems based on analysis of circumstances and available information, to formulate and give reasons for

alternative opinions, to make decisions, to participate in discussions, to communicate, to be tolerant, and to cooperate in team environment. Interactivity allows students to enjoy their full rights in the learning process. They do not gain direct knowledge – their experience is the main learning tool and functions as a stimulus for independent search for answers and solutions to problems in the wide spectrum of theory and practice of the specified professional field of study.

The case study method is a method of situational analysis problem solving, based on the solution of specific problems. It is related to active and imitation learning and is used as a tool for transforming theoretical knowledge needed for solving practical problems. Overall, the method represents a system for teaching based on analysis, a solution and a discussion of situations both framed and real. In this process the trainees are obliged to pro-analyze the situation, to get to the crux of the problem, to suggest different solutions and to choose the most appropriate among them [1].

The effectiveness of case study lessons is contingent on the trainer's ability to organize the group work activity, to lead the discussion in the right direction, to control the time in the interaction process, to engage all participants in the process of discussion, to obtain feedback, to point out the right literary references, to summarize the obtained results and to guide formulating the conclusions constructively [2].

Ship's crew professionals are often compelled to demonstrate their professional skills in environment that is not natural to humans – in stormy seas, in difficult hydrometeorological conditions. Evidently, there is enormous diversity of hazardous operations within wider spheres of marine industry activities. The implementation of individual cases in the working environment represents an organized cognitive learning activity in a specific way that assists the development of professional competencies. This is a problem-based education in which self-education is used as a basis.

Knowledge is not readily assimilated but acquired through individual cases whose solution shapes scientific research, combining cognitive activity and existing stock of knowledge.

The central concepts used in the case study method are “situation”, “analysis” and their derivative “situational analysis”. The method uses problem analysis and is run in a “framed” problem-solving situation. Through collaborative efforts in the group, a specific professional case is analyzed and practical solutions are suggested. The choice of the best decisions for the immediate problem is the result of analysis and assessment of the provided alternatives from all participants.

We suggest a model for practical education of students with the use of case study:

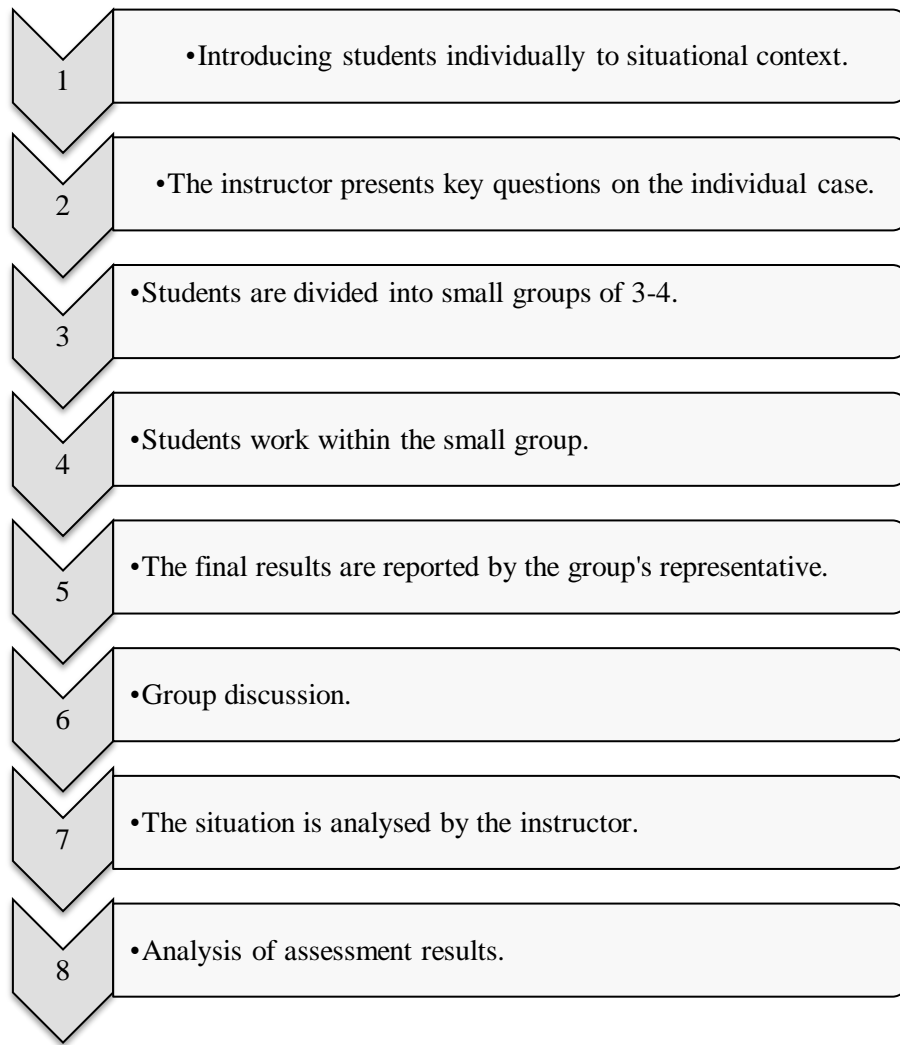


Figure 1. Case study practical educational model

During the first stage students individually make themselves familiar with the situation, seeking for a problem and a solution.

The second stage is connected with the work in the small group, without the participation of the instructor. Students express their thoughts, offer their opinions and together look for a solution to the problem.

The third stage is the group discussion – an analysis of the specific situation is made, a problem diagnosis. The group discussion has competitive characteristics among the small groups and ends with agreeing on a solution. The instructor supervises the discussion.

The primary role of the instructor is:

- ❖ selecting the most appropriate case study example.
- ❖ finding other sources of additional information
- ❖ preparing visual aids
- ❖ producing possible solutions of the problem situation.

Case study connects education with reality. Students are made familiar with real professional situations along with their analysis in contrast to empirical and theoretical conclusions. Students play an active role in discussions, generate ideas, communicate effectively, pose questions and look for answers [3]. All empirical knowledge is viewed in the context of the situation; the information is supported with relevant scientific evidence [4].

The structure of an individual case study is graphically illustrated in fig. 2.

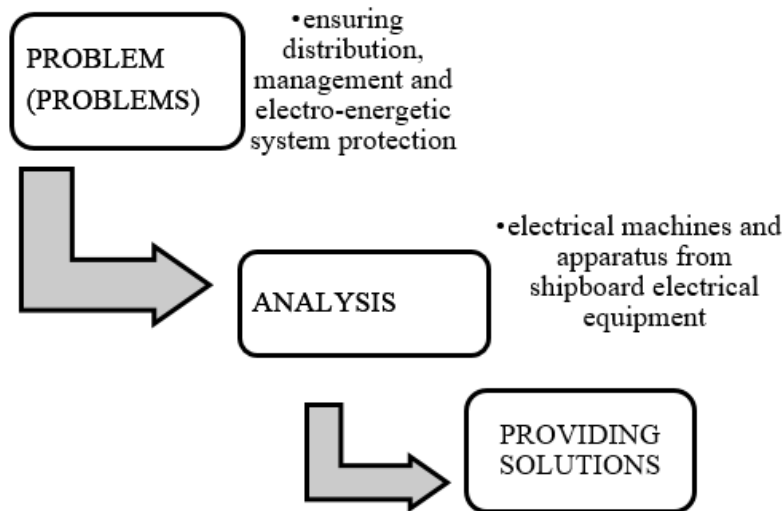


Figure 2. An example structure of case-based learning

Electrical machines and apparatus are an indispensable part of shipboard electrical equipment and hence have a crucial function to produce electric power with the needed quality for the needs of the autonomous ship power generation system and to provide uninterrupted electric power supply to consumers. The wide variety of mechanisms, devices and systems on the ship which are powered by electrical engines, requires the use of different in shape, size and construction electrical machines which must be designed for marine use only, to meet the requirements of performance standards and to be tested in accordance with their regulations [5].

Therefore, a broad range of case study examples can be prepared by the instructor that are linked to the electrical apparatus mounted in the ship's main distribution system. Students arrive at the right solutions of the problem using analysis of the main questions from the theory of the electrical machines available on the ships.

The effective application of the case study method allows optimal solution of three **pedagogical tasks** concurrently:

- instructor-led learning;
- active student participation in the learning process;
- high quality feedback and control in the educational process

Sources for providing individual cases might be found in real-life and professional situations, scientific research papers, and a lecture course – See fig. 3.

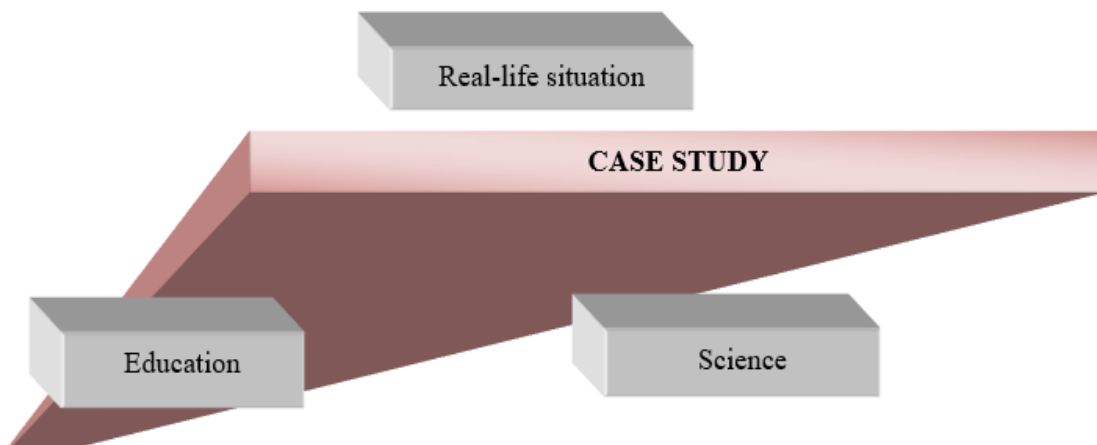


Figure 3. Case study data sources

Individual cases are prepared and applied in the educational process according to the curriculum:

- ✓ they have to match the purpose of the learning outcome;
- ✓ they should be closely related to the real-world professional activity (potentially realistic problems);
- ✓ the tasks should be selected in such a way as to offer multiple options for solving the problem;
- ✓ the information in the individual cases should be updated in compliance with the latest changes in real-world practice.

A conclusion can be drawn that the individual case is a complex unit comprised of real-life events that include current and present questions of interest and use multi-method studies [6]. In order to prevent “focus shift”, we suggest placing “restrictions”:

- precise definition;
- precise time;
- right place;
- precise course of action;

Stages of individual case study examples include:

- setting didactic goals and objectives of the individual case;
- the main emphasis that has to be reflected in the individual cases;
- choice of a real-world situation;
- writing the individual case;
- examining the individual case – comparing existing empirical knowledge for problem’s solution; comparing trainees’ abilities within the scope of the method effectiveness;
- preparing a final version of the individual case – controversial issues are being discussed;
- the final structure of the written text is presented for a common discussion;
- incorporating the individual case in students’ training program;
- publishing the individual case in order to share the instructor’s professional experience;

During the learning process common situations are mainly used and there are ready-made samples (standards) for their coping. In this case the method of handling the situation is fixed. When a situation is being scrutinized and a comparison to a similar situation is needed, which is not always the same but has the same base that can be altered, then we talk about similar situations.

Accidental are the situations which do not commonly appear in the everyday practical activity and should not be compared to any standards and hence, a new unconventional solution should be found.

In the contemporary dynamic marine conditions, uncertainty and unexpected changes, marine professionals must have a number of essential qualities:

- adaptability;
- ability to move with the times in terms of innovations and make the right decisions;
- progressive thinking;
- multicultural awareness;
- teamwork skills;
- leadership [7].

The application of the case study method provides a safe professional problem-based situation which develops skills, knowledge and competencies – see fig. 4.



Figure 4. Safe professional situation with the case study method

Using the individual case method guarantees the ship's crew members a successful professional life—see fig. 5.

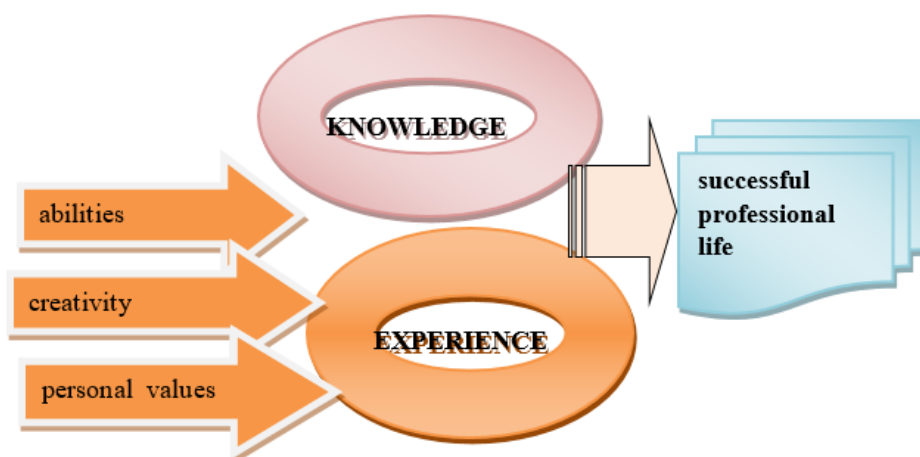


Figure 5. Building a successful professional life with the case study method

After graduating university and when starting a job, the young professional must continue with their development and broaden their knowledge with new information. Furthermore, the training should be aimed not only at acquiring specific knowledge and a set of practical skills, but also at arousing interest in personal development through seeking and reflecting changes in general.

It is undisputable that all levels marine trainees' professional training is essential to maritime industry as a rule. Being professionals with European-oriented way of thinking, engaged with the present and future and as members of the European Union, we need to take into account the level and importance of such training in order to improve the specialists' competitiveness in the European maritime labour market.

3. Conclusion

The high demanding standards and requirements of the International Maritime Organization and all maritime-related organizations towards the sailors and the crew' professional competencies, leadership, team work in the technical, operational and crew management service, the transcultural aspects in the multinational crew's activity, call for a change in the educational process' trajectory. A relevant to its goals and problems approach is required that is directly linked to the professional implementation of the educational results.

In accordance with the strategic goals and recommendations for the EU's maritime policy, it is vital for the community to achieve and sustain stable and foreseeable competitive conditions for navigation. In order for this aim to be reached, a high-performance human resource management is required to pay more attention on the development and improvement of the required skills and qualifications.

In all levels of building a professional competency, different types of individual cases can be used depending on the educational goals and the framework for practice-oriented lessons. The didactic interaction based on interactivity actually involves all participants in the knowledge acquisition activities – they have the opportunity to learn, to analyze and to be independent and critical thinkers when using the available educational resources.

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