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DOI <https://doi.org/10.24919/2308-4863/42-3-6>**Anna VOLKOVA,***orcid.org/0000-0003-3675-7411**Lecturer at the English Language Department for Maritime Officers (Abridged Programme)**Kherson State Maritime Academy**(Kherson, Ukraine) freshmuk2010@gmail.com***MAKING SENSE OF SIMULATORS IN TEACHING MARITIME ENGLISH**

*The development of the merchant fleet makes adjustments to an educational process as a whole, and to those approaches in teaching English being considered to be critical components among the requirements for future marine professionals. The introduction of the latest and most innovative technical teaching aids into the educational process is taken as a priority for maritime educational institutions around the world in order to be capable of satisfying shipping industry crew criteria demands and to meet the requirements of the 21<sup>st</sup> century.*

*The article is aimed at analyzing specifics of maritime simulators application into the process of teaching English being the part of future marine professionals training program, mastering professional competencies in simulators' laboratories and performing practical training tasks in English classes. The following tasks have to be fulfilled in order to achieve the announced aim of the current study: 1) to carry out the analysis of class activities systems created to be performed by means of maritime simulators application taking into consideration the competency-based approach in teaching English; 2) to form and organise the structure of activities to be performed by students aimed at practicing and improving skills, capabilities, knowledge and competencies acquired with the help of modern teaching aids.*

*The scientific novelty of the current study involves processes of students' competencies formation when studying English for specific purposes at higher maritime educational institutions of Ukraine. Those competency formation processes address the required level of foreign language communicative competency in those main types of speech activities; formation of general competency; integration of competencies obtained into the process of independent activity; development of the creative potential of students, their intellectual and professional abilities in the process of professional training.*

*The research of the methodological approaches in teaching English using simulators, leads to the conclusion that modern communication-oriented training applied at maritime universities should be targeted at preparing students to use English in real life situations, which is considered to be enabled through the repeated simulation exercise of potentially possible occurrences aimed at improving knowledge, skills, capabilities and competencies acquired in English classes.*

**Key words:** *simulator, training program, English for specific purposes, professional competency.*

**Анна ВОЛКОВА,***orcid.org/0000-0003-3675-7411**викладач кафедри англійської мови з підготовки морських фахівців за скороченою програмою**Херсонської державної морської академії**(Херсон, Україна) freshmuk2010@gmail.com***СИМУЛЯТОРНЕ ОБЛАДНАННЯ У ПРОЦЕСІ НАВЧАННЯ МОРСЬКОЇ АНГЛІЙСЬКОЇ МОВИ**

*Розвиток морського торговельного флоту вносить корективи до навчального процесу загалом та до підходів навчання англійської мови як до критично важливого компоненту серед вимог до майбутніх морських фахівців. Саме через це запровадження новітніх технічних засобів навчання у навчальний процес є першочерговим завданням для морських освітніх закладів по всьому світі.*

*Метою статті є аналіз специфіки використання тренажерно-симуляторного обладнання у процесі навчання англійської мови для підготовки морських фахівців, опанування професійних компетентностей у лабораторіях тренажерних симуляторів та практичного відпрацювання ситуацій на заняттях з англійської мови у вищих навчальних закладах. Реалізація мети висуває такі завдання для її досягнення: 1) проведення аналізу систем вправ для відпрацювання на тренажерно-симуляторному обладнанні із зарахуванням компетентнісного підходу у викладанні англійської мови для підготовки морських фахівців; 2) формування структури вправ для відпрацювання та удосконалення навичок, умінь та знань за допомогою технічних навчальних засобів.*

*Наукова новизна роботи полягає у процесах формування компетентності здобувачів вищої освіти під час вивчення англійської мови у ВНЗ України морського профілю, спрямованих на: забезпечення необхідного рівня ініціативної комунікативної компетентності в основних видах мовленнєвої діяльності; формування загальної компетентності фахівців; інтеграцію компетентності у процесі самостійної діяльності; розвиток творчого потенціалу здобувачів вищої освіти, їхніх інтелектуальних і професійних здібностей у процесі професійної підготовки.*

*Дослідження методологічних підходів у викладанні англійської мови для майбутніх морських фахівців із використанням тренажерно-симуляторного обладнання привело до висновку, що сучасне комунікативно-орієнтоване навчання у морських ВНЗ повинно готувати здобувачів вищої освіти до використання англійської мови в реальному житті, що уможливується багаторазовим відпрацюванням потенційно можливих критично важливих ситуацій на тренажерно-симуляторному обладнанні для удосконалення набутих знань, умінь та навичок на заняттях з англійської мови.*

**Ключові слова:** *тренажерно-симуляторне обладнання, тренажерна підготовка, англійська мова за професійним спрямуванням, професійні компетентності.*

**Target setting.** The development of the merchant fleet is an extremely important task within the scope of the global economy upturn. The most advanced ships are huge, state-of-the-art, up-to-date and fully automated. In order to ensure safe and efficient operation of such vessels, maritime industry requires highly qualified maritime professionals, in particular, officers. Crew is an integral part of the maritime industry. For the purpose of remaining competitive, all components of the maritime business have to meet “the gold standards”. There is no chance of remaining competitive without highly qualified personnel on board. Personnel education and training is a core ingredient in achieving this goal, and in order to ensure the quality of training and education of marine professionals, it is imperative to constantly improve educational processes, taking into account the development and evolution of innovative technologies. Due to the rapid development of technologies and information, the changes in the formation of professional competencies of future marine professionals are being conditioned. The article is devoted to highlighting the significance of simulation equipment application into the process of teaching maritime English.

**Researches analysis.** BIMCO ISF Manpower Report studies carried out in 2005, 2010 and 2016 discovered a shortage of highly qualified officers (BIMCO/ISF, 2015). This situation determines us to reconsider the educational process and the training program for marine specialists. Modern ships are equipped with various systems for automatic control and management, for the purpose of minimizing the human factor. The latest technical equipment ships equipped with, requires continuous improvement in the quality of marine specialists professional training, as well as satisfying requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) (STCW, 2010).

The current study **is aimed at** the analysis of specifics of simulation equipment application into the process of teaching maritime English, mastering professional competencies in simulator laboratories and practical skills drilling of the situations in the English classes’ context at higher educational establishments. There is a need to analyze the systems of exercises

pointed at drilling by means of simulation equipment, taking into consideration the competence-based approach in teaching English and to organize structures of exercises pointed at drilling and improvement of skills, abilities and knowledge with the help of technical teaching aids.

**Statement of basic materials.** The data sources on board the ship, seafarers must be capable of utilizing, are provided by the personnel, equipment and information (MHRI, 2005). Personnel, as a resource necessary for safe navigation, must possess the competency to manage and use other crew resources, as well as the appropriate qualifications to perform duties. In addition, the crew must be well acquainted with the functions of the equipment in his/her allocation/position, be able to interpret the information obtained from the equipment, analyze it and respond to deviations. The equipment has to be installed and operated in accordance with all the requirements in order to fulfill the standards of safe operation of the vessel. Besides, the equipment must be fully functional at all times. Information comes from many sources when on board: from outside the ship, from the crew and from records of operation and maintenance of equipment, as well as it may be taken out of drawings, schemes and manuals. There are two types of information received from the equipment: information such as alarms and performance data that automatically come from the equipment or/and monitoring systems, and information such as leaks, sounds, vibrations detected by crew using their five senses. The information must be properly received, distributed and used to enable the safe navigation of the vessel. Implementation of virtual reality simulation equipment provides an opportunity to reflect the close connection of the educational process with the sea practice of future professionals, to model real life professional situations, to adjust the educational process to certain professional tasks performance, to objectively assess the level of professional training, to enhance professional competency and personal qualities of future seafarers (Popova, 2019: 70-84).

Shipping industry urges continuous self-education and development, readiness to act in emergency and atypical situations, decision-making and critical thinking, as well as handling and managing informa-

tion from various sources. The importance of English language skills can hardly be overestimated since, as a minimum, they have to be sufficient enough to enable appropriate exchange of information, namely: perception, understanding, analysis and feedback between crew members and information processing. A. Makarenko in his works noted that a teacher must be able to design a personality, i.e. clearly know what qualities of an educatee have to be formed in the process of education (Makarenko, 1990: 336). A. Makarenko was the pioneer in introducing the term "technology" into an educational process.

According to the Definitions from Oxford Languages dictionary, noun "technology" comes from Greek *tekhnologia* 'systematic treatment', from *tekhnē* 'art, craft' + *-logia* and has the following meanings: 1. the application of scientific knowledge for practical purposes, especially in industry; 2. machinery and equipment developed from the application of scientific knowledge; 3. the branch of knowledge dealing with engineering or applied sciences (Cambridge Dictionary).

It's only at the beginning of the XX century, when the concept of "pedagogy techniques" appeared, which includes techniques and tools used to improve the efficiency of the educational process. Beginning in the 1940s, technical teaching aids (TTA) started being implemented into an educational process, and as early as the 1960s, the concept of a "technology approach" emerged.

Yu. Passov believes an approach to teaching foreign languages should be structured and built as a model of the real communication process (Samoylenko, 2013: 9). Thus, the communicative situations used in foreign language teaching at maritime higher education institutions should simulate typical real-life situations on board a ship.

English language teaching program for professional communication requires the studying process of a language not as a set of individual elements, but as an integrated system of skills and knowledge (Hryshkova, 2015: 220). This diversification of language education is targeted at developing knowledge, skills and abilities in their interaction, acquired through the use of technical teaching aids.

Technical teaching aids include equipment, devices and mechanisms used in the educational process. Speaking of maritime educational institutions, one of the newest and most advanced technical means applied in training is a simulator. The simulator is designed for the practical acquisition of skills and abilities by future marine specialists, to meet the requirements and standards of the maritime industry. According to the STCW Convention, as amended,

"any simulator used in the training process must be able to simulate the capabilities of ship equipment at the level of physical realism" (STCW, p. 93). That is of particular importance since the training process with simulators application is assumed of equal value to the sea practice. Perhaps this fact can be attributed to the critical shortage of qualified officers in the fleet. According to the 1994 International Maritime Organization (IMO) Intersessional Working Group (ISWG), a simulator is a realistic simulation of handling ship, radar and navigation, engine and other ship systems, in real time, using an interface by an educatee or trainee, within or outside the work environment (IMO, ISWG, 1994: 94).

According to statistics data of 2012, from 60% to 94% of accidents in the maritime sector occur due to human factor (Mende, Ziegler, 2012: 67). In this regard, the STCW Convention and the Code have put forward the requirements imposed on operational and management levels of responsibility officers, to take a mandatory course in Bridge Resources Management (BRM) and Engine Room Resources Management (ERRM). The purpose of these courses is to ensure participants' acquisition of non-technical (soft) skills, the lack of which is said to increase the potential for emergencies occurrence due to the human factor.

R. Hryshkova states that the management activities of a foreign language teacher should be targeted at an in-depth conceptualization of mixed crew social diversity and inclusion, their values, priorities, culture, mentality and lifestyles by the future professionals (Hryshkova, 2015: 220). Thus, the teacher must create conditions and atmosphere throughout educational process encouraging tolerant and respectful attitude towards other people's culture and language, peace building and willingness to seek compromise solutions, learning to solve disputes peacefully.

For the purpose of skills, knowledge and proficiency integration, the system of exercises for the formation of speech competency of English for specific purposes is a mission-critical tool. Any system is a complex phenomenon that includes various elements, building up the certain sum total of internal linkages. Configurations of systems of exercises or classes may differ, but will pursue the uniform purpose. The key component of training is a system of exercises that aims to develop and practice skills and abilities that are part of the relevant activity. Simulation is one of the methods of interactive teaching, which the set goals achievement by immersing educatees into the atmosphere of solving problems of quasi-professional activities. Today, the following modern types of teaching aids are used for the formation of professional competencies: electronic textbooks, interac-

tive study guides, simulation equipment, augmented and virtual reality simulators, as well as e-learning. E-learning is a powerful tool for those continuing self-study and development being far away from the educational institution.

After mastering the competencies by means of training and simulation equipment, future marine specialists have the opportunity to consolidate the acquired skills in English language classes. For such purposes, the following types of exercises may be considered: discuss the real-life breakdown cases (provided by a teacher) suggesting following-up remedial actions; generate the remedial actions progress reports; debate on asserting one's view on an issue origin (provided by a teacher); discuss real-life breakdown cases (provided by a teacher) offering preventive measures to be taken; do the project work "Once experienced breakdown in ER, I have learned the lesson" (educatees are to share case study from their work experience, if none, then from their friends'/family experience); discuss the manual (provided by a teacher/educate) check-up list defining steps' to be taken importance/negligence.

The process of competencies building of future maritime specialists upon studying English language for specific purposes at maritime higher educational establishments of Ukraine should be aimed at: ensuring the required level of foreign language communicative competency in the main types of speech activity; building of future maritime specialists' general competency; integrating acquired competencies into self-study activities; building and strengthening educatees' creative potential, their intellectual and professional abilities in the process of professional training; expanding educatees' worldview through the prism of solving tasks of professional significance; encouraging career motivation; developing personal and professional qualities.

Wherever the communicative approach has been implemented into the teaching process at higher maritime institutions, it pre-determines the selection of language and speech content, teaching methods, techniques and exercises to be applied. Although dealing with technical content sources and manuals still occupies a significant part in the process of learning maritime English, however, handling the vocabulary and grammar content of the text acquires a special value in the communicative approach through its practical application in communication processes. Maritime industry requires the crew to fully understand the operation and maintenance of the equipment. For the purpose of enabling educatees to master the professional speaking skills and abilities that had been built throughout classes, we consider it necessary to repeat-

edly practice the relevant operations by simulators that will, after obtaining the content and its consolidation through a system of exercises, apply and improve skills, abilities and understanding of vocabulary units performing the appropriate operations required to run the equipment. Simulators will help to immerse oneself into virtual reality, which will assign future professionals the tasks necessary to achieve a satisfactory outcome in the operation of certain equipment on board a ship (Zolotovska, 2017: 95-99).

The skills, knowledge and proficiencies acquired throughout simulators training are applied in English language classes to consolidate language content, as well as to gain professional skills, such as: the ability to negotiate, make presentations, develop critical thinking, make and justify chancy decisions. Most commonly the lexical and grammar errors are normally being corrected and eventually do not take place at all provided that the educational process had been properly organized. Simulators and role-playing games, when combined or separately, create a realistic but safe environment for future marine professionals to acquire professional and language skills.

We believe that the structure of exercises to practice and improve skills, proficiencies and knowledge with the help of simulation equipment should include the following: detailed instruction(s) indicating the purpose and step-by-step stages of the task; any sources required to perform the tasks; implementation example and key necessary for self-monitoring may be available (on request) as optional component; in order to consolidate the acquired and developed skills, knowledge and proficiencies, it would be appropriate to do test tasks in the period of post-training practice.

Training of future sea specialists gives them the opportunity to improve the skills required to minimize the potential for an emergency due to the human factor. Simulators create artificial, but as close as possible to real conditions, where making a responsible decision is critical to complete the training. Systematic practice of acquired skills, abilities and understanding, during simulators training process, allows educatees to be prepared for an emergency situation and not to fall into a state of shock and panic, which might lead to terrible consequences. This approach to teaching has proven to be the best and is considered to be the cause of many international maritime educational platforms, such as the International Maritime Lecturers' Association (IMLA), the International Association of Maritime Universities (IAMU), GlobalMET, MariFuture and others (IMLA Conference, 2010: 467; IMLA Conference, 2009).

The features of introduction of the most advanced technologies and approaches into the educational

process of maritime educational institutions: systematic use of simulators to duplicate real-life conditions for the application of skills, abilities and proficiencies and their thorough practice; undertaking internship on board a ship for the purpose of getting acquainted with the real conditions and applying the gained skills, abilities and knowledge, their practical evaluation and validation; improving resource management skills and understanding and gaining risk management skills; development of integrated curricula ensuring its compliance with professional and academic requirements; IT skills improvement so as to ensure understanding and safe management of modern, sophisticated automation systems on board a ship; use of electronic training methods as a matter of facilitating the training process of marine professionals during the internship on board the ship; establishing strong and reliable cooperation and coordination with the maritime industry, in order to improve the academic program and the quality of undertaking internship on board a vessel; external evaluation and verification of learning outcomes with an intent to ensure its quality (Erdogan, Demirel, 2017: 947–952).

These days, shipping is a well-known international business that has adapted new technologies and best practices. The structure of the competitive approach has changed. Cooperation between states and shipowners intended to create innovative strategies that will be able to meet the demands of the differential market is a key element in such a complex and ever-changing world.

Training and education of marine professionals is a dynamic field that requires constant review and updating, considering the development of new tech-

nologies. In our endeavor to achieve the set objectives, we may consider the following actions: continuance of international and regional cooperation; engagement of maritime industry support at all stages of the educational process; introduction and implementation of the most advanced and state-of-the-art teaching technical aids into educational processes and training programs; creating the synergy of vocational and academic education.

**Conclusions.** Thus, we may draw the conclusion that the development of future specialists' foreign language professional competency at higher maritime educational institutions of Ukraine is being translated into practice through the introduction of a communicative approach into the process of teaching English. An integral part of mastering the specialty has been proven to be simulator training intended to increase the quality of professional competencies and personal qualities of future marine professionals. They are the properly organized learning environment, the combination of studying with real-life situations being possible in professional activities, that produce significant results in teaching English language through the consolidation of experience by means of the simulation equipment. The maritime industry is developing rapidly in all countries of the world and requires constant amplification and improvement of the system and process of educational training. In view of this, it is important to note the high priority interest of maritime educational institutions in creating an appropriate training system that would meet and fully satisfy the international requirements. At the present stage of development, there is a large number of issues for the educational process of training marine specialists that requires further research.

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