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## PROFESSIONAL TRAINING OF SEAFARES FOR WORKING ON THE SHIPS OF NEW GENERATION: GOALS AND OBJECTIVES

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Speed-increasing changes in the Sea and River Transport Industry in connection with the adoption of Manila amendments to the International Convention on Training, Certification and Watchkeeping for Seafarers 1978 and changes in the design of modern vehicles, their automation, using the latest technologies, techniques and materials have led to the need to upgrade vocational training of seafarers on the workplace. The transition from the traditional system of training of seafarers on workplaces to the preparation using pedagogical innovation through the introduction in the educational process modern educational technologies, flexible learning technologies, training complexes, equipped with modern information and communication technologies made it possible to provide training sailors to date and provide competitiveness in the maritime labor market. During the research revealed specific features of sailors training for the current generation of ships. Prepared by modern educational technology worker of maritime profile must: have a wider range of professional awareness and reduced mobility in the composition of crews; be familiar with the modern technology of the safety of the ship that is implemented in its management of automated processes; have required complex knowledge of special training under the STCW Convention and Code; possess professional knowledge of a foreign language to work in multinational crews; be prepared for the changes that make the IMO to sailors on the safe operation at sea. Special attention in the training of maritime workers are given to their preparedness in cases of emergency and dangerous situations through using modern training equipment and improvement of system of certification and control of professional competence of seafarers at all stages of vocational training of seafarers.

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**Introduction.** The article deals with the establishment of modern paradigm of vocational training of employees of Maritime profile for the current generation on ships, the formation of professional competence, professionalism, mobility and seamless implementation of international and national requirements for the safety of navigation. It is proved that in the pedagogical process of training of seafarers on workplaces and evaluation of their professional competence to work on modern technological ships' equipments should be taken into account the requirements of the international STCW Convention and Code, which clearly define the skills level of minimum standards of competence to ensure reliable performance works in the hazardous and emergency situations. Some measures to support the learning process by modern means of training equipment, program material to replicate the operational capabilities of the ship equipment at physical realism and its ability to provide a variety of conditions, which may include emergency, hazardous or emergency situations in the operation of vehicles and related training program. Given special attention to improving the training of teaching staff and examiners, formation of teaching experience, which depends on the quality of training and ability to perform seamen duties on board-level

requirements for their professional competence. On the basis of summarizing the experience of training skilled employees of Maritime profile in education on workplaces, found that to work in conditions of increased competition in the market of maritime labor offered the most important ability that should have sailors on ships of the modern generation. Attention is paid to the implementation of the pedagogical process of preparing skilled employees of maritime profile of new technologies of modern pedagogy preserving the positive aspects of traditional schools to prepare sailors for the formation of their responsibility for quality of work and the awareness where safety is at sea in the first place depends on their professional competence, professionalism and flawless execution of all requirements provided in the International Convention and STCW Code.

**The relevance of the problem.** National Doctrine of Education Development in the XXI century defined the main goal of professional educational activities of educational institutions such as formation a person of high culture, a skilled worker capable of creative work, professional development, mobility in the development and implementation of new processes and technologies. It creates conditions for professional self-identity and the needs of society and the state for qualified specialists.

Ukraine's future will create professionals who will be able to set and solve problems and successfully engage in professional activities. It depends on their professional and intellectual skills and abilities, creative skills, the ability to fully interact with society, free to realize their life plans and goals, consciously responsible for the results of their actions and perhaps for their consequences.

The world marine and water transport is growing rapidly, and with it the demand for skilled workers and team personnel is growing either. Skilled workers are necessary for bulk carries, containers, tankers and gas carriers, large superliner, etc. According New York Dahefman Rose, there are about 4700 tankers, bulk carries, containers into the world which are equipped with the modern equipment automated systems management and others. Approximately half of these vehicles will replace the old, but the other half will be clean addition to the existing fleet, which would require crews, 20-30 persons for each ship, including 4 navigators.

Particular concern is the stuffing of LNG tanker crews which, ideally, should be kept constant and train their crews on arrival to the ship. Tanker LNG - is not only a risk but also a great responsibility. Energy liquefied gas enclosed in a modern tanker loaded, equal to the energy of the atomic bomb dropped on Hiroshima. In the event of an accident in the port, which will lead to the explosion, the consequences will be catastrophic. Realizing the importance of maritime transport professionally trained staff, the Ukrainian government continually focuses attention on this and has taken steps to ensure the efficiency of the training of maritime workers on the workplaces.

**The purpose of the article:** To consider ways to study the modern paradigm of training workers on workplaces in conditions of fleet replenishment with ships of the modern generation and advanced technology, requiring high professional competence and mobility of seafarers in the labor market.

**Statement of the material.** According to the current "Regulations on training employees on their workplaces" there are such following goals in the face of vocational training system as:

- improving the quality of professional workers of enterprises of different ownership forms and subordination;

- the formation of workers' professionalism, skills and development of modern economic thinking;

- forming the ability to work in new economic conditions and on that basis, high productivity and effective employment [4].

Regulations run that the training of employees is continuous and non stop during their work with a view to broadening and deepening their knowledge and skills in accordance with requirements of production. This approach is consistent with international instruments, including provisions justified in the UNESCO report "Education for the XXI Century" ("Education: Unknown treasure") prepared under the direction of Jacques de Laura [9].

Further, Regulations not only defined the powers of the company to ensure skilled workers of the production process in a market economy, but highlighted the main task of formation of professionally-trained staff in the company, just as:

- development, in accordance with the requirements of production, working curricula of professions and work programs of subjects on basis of model programs;

- selection of teaching staff and improve their professional and educational level;

- creating educational production base for professional training on the workplace;

- introduction in educational process such teaching forms as modular, open and distance ones [4].

Unfortunately, the period since the release of this important document, have not been scientifically substantiated approaches to the organizing and training of skilled maritime employees on their workplaces with the peculiarities of the industry.

The traditional system of seafarers' training in educational institutions of shipping companies focuses on purely professional integral learning where knowledge and skills is the criterion of success of training workers. Young seafarers on the ship are faced with a lot of problems. Except private professional issues (level of competence), they are faced with psychological problems (activities in emergency and extreme conditions) and social (work in mixed crews "under the flag of" foreign companies). There is a need to consider training as a sailor complex psycho-pedagogical process, in contrast to other processes of human

life can not be shown in one, but in different areas. You need to pay attention to formation of professional competence of marine employees, their ability to perform their duties in terms of emergency and extreme situations do just focus on this passage for learning in school to work.

Ship-owners impose certain requirements for training ship crews, the main ones are deep theoretical and practical preparedness to work on modern vessels, communication skills, and ability to rapid "response" during emergencies and extreme actions, the ability to think professionally in emergency situations, organization, discipline and responsibility. Growing demand for skilled seafarers increases the requirements for professional competence, the quality of their professional training.

According this, among the most important professional abilities, which should have skilled seafarers of the current generation are: knowledge and skills in information and communication technologies, culture resolve production problems in extreme and emergency situations; ability which are connected with safety, etc. It is required, besides professionalism, neuro-emotional stability, good coordination, strength, and physical health. All crew members have a very big responsibility during emergencies. It is said that 60-70% of emergencies are caused by man, and 80% are caused by crew's action. Every year about 6000 ships have accidents (20% of the current fleet), 100 - 200 vessels are lost and 1000 of 2000 seamen are died not only on direct expenditures, but because of lack of training in organizing rescue operations [ 5, s.66-68]. Examples of such failures may be big disaster of modern passenger ship «Costa Concordia», which sank in the night January 14, 2012 near the island Gigli with 4200 passengers and crew members on board. This is because, in accordance with the dialectic of maritime worker training profile behind the development of means of navigation and control.

Results of researches of Ukrainian and foreign scientists on issues of vocational training on workplace (S. Y. Batyshev, O. Ya. Batyshev, Z. Vyatrovskyy, S. Cahors, T. Levovytskyy, T. Novatskyy, A. M. Novikov, N. G. Nychkalo, V. O. Radkevych, V. A. Savchenko, I. M. Starikov, S. I. Chistyakov, Shlosekta F. and etc.) confirmed that the introduction of new technologies in production dramatically change

manufacturing processes, and new technologies will lead to expansion activities of workers require their mobility in the manufacturing process.

As noted by I. M. Starikov "feature professional training production is its close connection with the process of material production, which consists of three components: employment, means of labor and objects of labor. With that in vocational training and educational component of employment may come as different components of the educational process "[7, s.50-62].

Meanwhile, highlighting the prospects of further development of vocational training on workplace, S. J. Batyshev in the 80s of 20 century emphasized the fact that "a man who has broad professional and polytechnic training, has a very high level of general culture, showing constant creativity in work, high professional stability. It has a margin of theoretical knowledge to perform work that is not part of its terms of responsibilities and the skills and abilities formed at the level of professional skills." [1, s.82-89,243]. He also originated the idea of developing predictive models of worker qualifications.

Vocational training personnel on workplaces in modern conditions oriented towards bringing the level of skills of workers to the requirements of each job and considered as part of the development and efficient use of personnel. According to V. Radkevich, "worker's functions are broadening: he has to combine the qualities of highly skilled workers and the operator and manager, able to design and provide resources working process, used in the process of information technology to plan and perform work, always focusing on maximum satisfaction of interests of the employer and customer. According to these requirements, the current skilled worker must be prepared to flexibly adapt to dynamic changes in manufacturing processes, quickly master the techniques of modern equipment, etc. [6, s.18-26].

In terms of this, to train a worker who is able to efficiently perform their duties on the ships of the new generation needs a modern paradigm of vocational training of workers marine profile which concentrate a positive side of the old, traditional school of training of seafarers on workplaces and new technologies of modern pedagogical science. Students should clearly understand their responsibility for quality of work, continuously improve their

professional skills in the rapidly changing technical re-equipment of the fleet and be aware that safety at sea, primarily depends on their professional competence, professionalism and flawless execution of all requirements specified in international conventions and national standards.

Our researchers at the stage of the experiment to ensure the crews of seagoing vessels skilled workers marine profile in terms of qualification shows that over 30% of ships have difficulty manning the relevant qualification personnel. However, in practice, the labor market has significant excess raw stock (over 200 thousand.), that is the basis to ascertain the contradictions between labor market needs in the marine industry and training skilled workers marine profile in schools establishments.

This once again confirms the need to bring the professional training of workers on workplaces in compliance with the labor market, global educational trends, and to security, environment, quality of professional activities, institutional changes taking place in the fields of economy, and this should define such objectives of employees' training on workplaces:

- ensure mastery of the working personnel of the ship fundamental theoretical knowledge and practical skills in the formation of sea profession, the ability to accurately perform certain types of work for a long time in operation of the vessel;

- mobility ability to acquire new knowledge, build professional skills and improve their professional competence, quickly adapt to changes in the production process;

- shipping companies providing highly skilled personnel, able to carry out their professional duties on the vehicles of modern generations.

The existing system of vocational training sailors in educational and training center provides not enough training for work on the current generation of ships. Young sailors who received a foundation of theoretical knowledge of maritime profession and practice was working two months in educational and training center requires a lot of time for professional and personal adaptation to professional activities on a particular type of vessels, especially in the multinational crew. Current labor market conditions in the maritime industry put forward fundamentally new

requirements for vocational training of sea workers profile, improving the educational process in educational and training center, their practical preparation for professional careers in modern ships.

The first steps to improve the quality of vocational training of workers in the maritime profile schools are doing, especially with the adoption of new international Convention Code on Training and Certification and Watch keeping for Seafarers 1978 as amended (STCW) [3].

Difficulties with training of maritime employees on their workplaces are linked not only with the economic activities of the shipping company, but also with other components: change in the principles of state regulation of activities, insufficient support at the state level vocational training in the workplace, as well as the introduction of new requirements at both the national and international levels to professional competency of seafarers. In this regard, there is a need to isolate and concretize the tasks to ensure the quality of training of workers on workplaces for the formation of professional competence:

- transition to modern paradigm of vocational training of workers on workplaces, based on the requirements of national and international instruments in the marine industry to professional competence sailor;

- introduction in the educational process of professional training of workers on workplaces quality management system (ISO 9001- 2008);

- Consideration of formation of professional mobility of workers marine profile specific to work on ships of modern generations and their competitiveness in the maritime labor market;

- identify the organizational and pedagogical features educational process of vocational training for workers on workplaces of maritime industry;

- the development and introduction of scientific methods and teaching of vocational training of workers on the workplace;

- implementing an effective system of training of teaching staff who are engaged in vocational training of workers in manufacturing involving prominent scientists and experts at the scientific institutions of schools, leading maritime industry and others.

Realizing the gravity of the situation in which the entire marine industry in Ukraine is

when the role of skilled workers marine of profile is increasing in world competition in all areas of maritime activity, global trends in the development of an effective maritime strategy are clearly understood by shipping companies which focused on the use of new technology on ships, automated control systems and information technology.

In addition to the technical state of ships, most of which are on the verge of technical resources (many vessels already thirty years), and invest in their repairing is not appropriate, require serious attention processing issues of human fleet.

**The conclusions.** During our researches process of training employees of maritime profile, both in the state educational establishments on workplaces (educational and training center at shipping companies: Training Center "Ukrainian Danube Shipping Company", training and educational centre "Izmail Sea Commercial Port" training and educational centre "Odessa Commercial Sea Port", etc.), and private shipping companies (educational and training center "Marina pro service", "Avant", etc.), as well as the international requirements for professional training of maritime profile, marked in the STCW Convention and Code and require:

- development, planning and organization of the production process on the basis of evidence-based methods that provide professional ability to perform functional duties established professional tasks at a high level;

- using in the professional training of modern training equipment, through which it is possible to reproduce the performance characteristics of the ship equipment and that meet the goals of competence assessment;

- free access to learning resources, professional information which permits to solve the problem and decide professional duties;

- choice of forms and methods that adequate professional and life experience trainees, and provide the ability to cover emerging production problems as a whole, with all its relationships and creative approach to its solution;

- develop a plan for the formation of professional readiness of the individual to carry

out their own work within their specialty, through self-development, decision making and finding the most effective means of implementation and be responsible for the outcomes of work;

- pedagogical problem solving in professional activities and creating sustainable and flexible "operating model" to analyze hazardous and emergency situations to predict their occurrence and development, in order to prompt their decision.

Therefore, the main promising directions of development of vocational training of workers in the maritime profile schools on ships for the current generation of qualified personnel are:

- 1) development of scientific and methodological basis of training of seafarers and verify their competence, reflecting the situation in Ukraine, where the majority of seafarers working on ships of foreign ship-owners;

- 2) the dynamism and flexibility of vocational training on the workplace, which will help quickly consider and implement new requirements and recommendations for the qualification of seafarers contained in the documents of the International Maritime Organization;

- 3) introduction of a system of training of seafarers and verify their competency recommendations International Safety Code management in the operation of ships (ISM), and to ensure control of the assimilation of the minimum standard of competency vessels;

- 4) to ensure compliance of the shipping company that conducts training in educational institutions in producing ISO9001-2009 quality standards, and introduction to the concept of implementation on modern vehicles the health and safety of seafarers, environmental protection and quality of service

The effectiveness of the implementation of solutions in the training of seafarers on the workplaces of ships for the current generation will be achieved only if they take into account the impact on the system of all the factors involved in safety at sea.

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### Реферат

#### Професійна підготовка моряків для роботи на кораблях нового покоління: цілі та завдання

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**КЛЮЧОВІ СЛОВА:**  
професійна підготовка на робочому місці, робітники морського профілю, професійна компетентність, пароплавання, морський ринок праці, навчальний центр

Швидкоплинні зміни в промисловості морського і річкового транспорту у зв'язку з прийняттям поправок до Манільської Міжнародної конвенції про підготовку і дипломування моряків та несення вахти (1978 р.), зміни в конструкції сучасних транспортних засобів, їх автоматизація з використанням новітніх технологій, методів і матеріалів спричинили необхідність модернізації професійної підготовки моряків на робочому місці. Перехід від традиційної системи навчання моряків на робочих місцях у підготовці з використанням педагогічних інновацій шляхом впровадження у навчальний процес сучасних гнучких освітніх технологій навчання, навчальних комплексів, оснащених новітніми інформаційними й комунікаційними технологіями дали змогу забезпечити навчання моряків, конкурентоспроможних на морському ринку праці.

У статті йдеться про створення інноваційної парадигми професійної підготовки робітників морського профілю для роботи на судах сучасного покоління, формування професійної компетентності, професіоналізму, мобільності та реалізації міжнародних і національних вимог до безпеки мореплавання. Доведено, що в педагогічному процесі навчання моряків на робочих місцях і в оцінці їхньої професійної компетентності при роботі із сучасним технологічним обладнанням суден мають бути прийняті до уваги вимоги міжнародної Конвенції ПДНВ та Кодексу ПДНВ, де чітко визначено рівень мінімальних стандартів компетентності та забезпечення надійної роботи і продуктивності праці в небезпечних та надзвичайних ситуаціях. Також розглядаються сучасні засоби навчального обладнання для розроблення ситуаційного моделювання з метою забезпечення умов роботи та поведінки екіпажу судна при небезпечних і надзвичайних ситуаціях. Особлива увага приділяється поліпшенню підготовки педагогічних кадрів та експертів, формуванню педагогічного досвіду, від якого залежить готовність та здатність моряків виконувати свої обов'язки відповідно до вимог професійної компетентності, а також реалізації педагогічного процесу навчання кваліфікованих робітників морського профілю за допомогою нових технологій сучасної педагогіки, що зберігає позитивні аспекти традиційних шкіл у професійній підготовці моряків та формуванні їхньої відповідальності за якість роботи й усвідомленні того, що безпека в морі насамперед залежить від їхньої професійної компетентності, професіоналізму і бездоганного виконання усіх вимог, передбачених міжнародною Конвенцією та Кодексом ПДНВ. На основі узагальнення досвіду навчання на робочих місцях при підготовці кваліфікованих робітників морського профілю підтверджено достовірність, що в умовах підвищеної конкуренції на ринку морської праці найбільш важливим є професіоналізм, який повинні мати моряки, працюючи на судах сучасного покоління.

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### Реферат

#### Профессиональная подготовка моряков для работы на кораблях нового поколения: цели и задания

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#### КЛЮЧЕВЫЕ

#### СЛОВА:

профессиональная подготовка на рабочем месте, рабочие морского профиля, профессиональная компетентность, пароходство, морской рынок труда, учебный центр

Быстротечные изменения в промышленности морского и речного транспорта в связи с принятием поправок к Манильской Международной конвенции о подготовке и дипломировании моряков и несении вахты (1978), изменения в конструкции современных транспортных средств, их автоматизация с использованием новейших технологий, методов и материалов вызвали необходимость модернизации профессиональной подготовки моряков на рабочем месте. Переход от традиционной системы обучения моряков на рабочих местах в подготовке с использованием педагогических инноваций путем внедрения в учебный процесс современных гибких образовательных технологий обучения, учебных комплексов, оснащенных новейшими информационными и коммуникационными технологиями позволили обеспечить обучение моряков, конкурентоспособных на морском рынке труда.

В статье речь идет о создании инновационной парадигмы профессиональной подготовки рабочих морского профиля для работы на судах современного поколения, формирование профессиональной компетентности, профессионализма, мобильности и реализации международных и национальных требований к безопасности мореплавания. Доказано, что в педагогическом процессе обучения моряков на рабочих местах и в оценке их профессиональной компетентности при работе с современным технологическим оборудованием судов должны быть приняты во внимание требования международной Конвенции ПДНВ и Кодекса ПДНВ, где четко определен уровень минимальных стандартов компетентности и обеспечения надежной работы и производительности труда в опасных и чрезвычайных ситуациях. Также рассматриваются современные средства учебного оборудования для разработки ситуационного моделирования с целью обеспечения условий работы и поведения экипажа судна при опасных и чрезвычайных ситуациях. Особое внимание уделяется улучшению подготовки педагогических кадров и экспертов, формированию педагогического опыта, от которого зависит готовность и способность моряков выполнять свои обязанности в соответствии с требованиями профессиональной компетентности, а также реализации педагогического процесса обучения квалифицированных рабочих морского профиля с помощью новых технологий современной педагогики, сохраняет положительные аспекты традиционных школ в профессиональной подготовке моряков и формировании их ответственности за качество работы и осознании того, что безопасность в море в первую очередь зависит от их профессиональной компетентности, профессионализма и безупречного выполнения всех требований, предусмотренных международной Конвенцией и Кодексом ПДНВ. На основе обобщения опыта обучения на рабочих местах при подготовке квалифицированных рабочих морского профиля подтверждена достоверность, что в условиях повышенной конкуренции на рынке морского труда наиболее важным является профессионализм, который должны иметь моряки, работая на судах современного поколения.

## ЗАХИЩЕНА ДИСЕРТАЦІЯ

Загіка Олена Олегівна

### **Формування професійної компетентності майбутніх агентів з постачання в професійно-технічних навчальних закладах.**

Дисертація на здобуття наукового ступеня кандидата педагогічних наук за спеціальністю 13.00.04 – теорія і методика професійної освіти. – Інститут професійно-технічної освіти Національної академії педагогічних наук України, Київ, 2015.

У дисертації на основі провідних ідей системного, компетентнісного та адаптивного підходів обґрунтовано зміст поняття «професійна компетентність агента з постачання», що відображає готовність та здатність до адаптивної поведінки при виконанні складних, інтегрованих за змістом професійних завдань, досягнення поставленої мети на основі рефлексії, аналізу власного професійного рівня, траєкторії подальшого професійного розвитку.

В основу теоретичного обґрунтування моделі та адаптивної технології формування професійної компетентності агентів з постачання покладено алгоритм адаптивного управління та концепцію спрямованої самоорганізації, що забезпечує фахову підготовку в умовах професійно орієнтованого навчального середовища шляхом опанування необхідними навичками роботи у відділах навчально-тренувальної фірми, застосування групових, індивідуальних і фронтальних форм навчання на основі інтеграції педагогічних технологій.