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ОСОБЛИВОСТІ ДІАГНОСТИКИ СФОРМОВАНOSTІ ЛІДЕРСЬКОЇ КОМПЕТЕНТНОСТІ МАЙБУТНІХ ФАХІВЦІВ З НАВІГАЦІЇ ТА УПРАВЛІННЯ СУДНОМ

Анотація. У статті представлено особливості діагностики сформованості лідерської компетентності майбутніх фахівців з навігації та управління судном, зокрема критерії, показники і рівні. Результати вивчення та узагальнення наукових публікацій з теми дослідження дозволяють зробити висновок, що критерій потрібно розуміти як інструмент оцінки. Це ознака, яку беруть за основу класифікації. За основу класифікації для визначення критеріїв запропоновано обрати структуру лідерської компетентності, що поєднує її основні компоненти. За результатами узагальнення висновків наукових публікацій з'ясовано, що критерії повинні відповідати певним вимогам. Оскільки у структурі лідерської компетентності майбутніх фахівців з навігації та управління судном виокремлено чотири компоненти, то критеріями сформованості цієї компетентності доцільно обрати: когнітивно-понятійний (корелює з когнітивним компонентом; його визначення обумовлено тим, що лідерство передбачає володіння певною інформацією, певними знаннями, що усвідомлені особистістю; лише спираючись на знання, можна здійснювати вплив на інші компоненти компетентності); практично-поведінковий (корелює з практично-діяльнісним компонентом; дозволяє визначити відповідність вчинків особистості складовим лідерської поведінки); професійно-психологічний (корелює з професійно-особистісним компонентом; дозволяє визначити відповідність властивостей, рис характеру та здібностей особистості складовим лідерської компетентності); аксіологічно-мотиваційний (корелює з ціннісно-мотиваційним компонентом; критерій стосується системи цінностей особистості і мотивації). З урахуванням теоретичного аналізу та узагальнення вимог нормативних документів щодо оцінювання навчальних досягнень здобувачів вищої освіти у морських закладах вищої освіти визначено, що сформованість лідерської компетентності майбутніх фахівців з навігації та управління судном доцільно визначити за чотирма рівнями: критичний рівень – сформованість лідерської компетентності не відповідає вимогам; низький рівень – сформованість лідерської компетентності частково відповідає вимогам; достатній рівень – сформованість лідерської компетентності відповідає вимогам вище низького; високий рівень – сформованість лідерської компетентності відповідає вимогам.

Ключові слова: критерії, показники та рівні; лідерська компетентність; діагностика; фахівці з навігації та управління судном; курсанти і студенти; структура лідерської компетентності, професійна підготовка.

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PECULIARITIES OF DIAGNOSTICS OF THE FORMATION OF LEADERSHIP COMPETENCE OF FUTURE SPECIALISTS IN NAVIGATION AND SHIP HANDLING

Abstract. The article presents the peculiarities of diagnosing the formation of leadership competence of future specialists in navigation and ship handling, in particular, criteria, indicators and levels. The results of the study and generalization of scientific publications on the research topic allow us to conclude that the criterion should be understood as an assessment tool. This is the feature that is used as the basis for classification. It is proposed to choose the structure of leadership competence, which combines its main components, as the basis for the classification to define the criteria. Based on the results of summarizing the conclusions of scientific publications, it has been found that the criteria must meet certain requirements. Since there are four components in the structure of the leadership competence of future specialists in navigation and ship handling, it is advisable to choose the following as the criteria for the formation of this competence: cognitive-conceptual (correlates with the cognitive component; its definition is due to the fact that leadership involves the possession of certain information, certain knowledge understood by the individual; one can influence other components of the competence only on the basis of knowledge); practical-behavioral (correlates with the practical-activity component; allows to determine the compliance of the personality's actions with the components of leadership behavior); occupational-psychological (correlates with the occupational-personal component; allows to determine the correspondence of the characteristics, traits and abilities of the personality to the components of leadership competence); axiological-motivational (correlates with the value-motivational component; the criterion refers to the system of personal values and motivation). Taking into account the theoretical analysis and generalization of the requirements of regulations for assessing the academic achievements of higher education students in maritime higher education institutions, it is determined that the formation of leadership competence of future specialists in navigation and ship management should be determined by the four levels: critical level – the formation of leadership competence does not meet the requirements; low level – the formation of leadership competence partially meets the requirements; sufficient level – the formation of leadership competence meets the requirements above the low level; high level – the formation of leadership competence meets the requirements.

Keywords: criteria, indicators and levels; leadership competence; diagnostics; specialists in navigation and ship handling; cadets and students; structure of leadership competence, professional training.

Problem statement. The relevance of forming and developing the leadership competence to navigation and ship handling specialists is beyond doubt, since one of the important conditions for ensuring the safety of ship crew and passengers, the security of ship property and cargo, and the protection of the marine environment from the negative impact of shipping is the systematic training of river and maritime transport specialists to act in everyday activities and in extreme navigation conditions. In the event of such conditions and situations, it is important that the master of the vessel and their assistants, through their effective managerial actions, ensure proper order on the vessel, effective interaction of all crew members in order to prevent panic and incompetent actions. Given this, the role of the captain as a leader is particularly important. Effective managerial actions of the master (or a person replacing him) and their orders, instructions and directives are binding on all crew members, regardless of whether the vessel is on the high seas or in port.

Leadership competence of navigation and ship handling specialists is considered as a complex and integrated concept that includes the ability to think strategically, effectively manage crew members, analyze and make decisions in typical and atypical shipping situations, to ensure communication, optimally solve professional and social problems, carry out effective planning, management and control of the activities of the crew to solve professional tasks, as well as the ability to work in a team. To diagnose the formation of the level of leadership competence, it is necessary to define criteria and indicators, as well as characterize the levels.

Analysis of relevant research. Various aspects of the problem of improving the training of future specialists in maritime higher education institutions on the basis of activity, competence, technological and systemic approaches are revealed in the works by O. Bezbakh, S. Voloshynov, S. Yehorova, V. Klindukhova, M. Musorina, O. Tymofieiev, V. Smelikova, O. Frolova, M. Sherman.

As for the development of leadership qualities, leadership formation and the development of leadership competence of water transport specialists, these important issues have also been the subject of attention of some scientists, but have not been studied sufficiently. In particular, the works of O. Bezlutska describe the theoretical aspects of the formation of leadership qualities of a navigating officer, as well as the psychological foundations for the development of leadership qualities of future navigators in a higher education institution [1]. The peculiarities of leadership development in the ship's crew were the subject of attention of Ye. Kostyria, V. Topalov, L. Pozolotin i V. Torskyi [5].

Important aspects of psychological support for the development of leadership qualities of maritime transport specialists were the subject of attention by H. Kryvorotko [6] and P. Kryvoruchko [7]. However, the solution of the scientific task of determining the criteria, indicators and levels of leadership competence of future specialists in navigation and ship handling was not the subject of a particular research.

The aim of the article is to define the criteria, indicators and levels of formation of leadership competence of future specialists in navigation and ship handling.

Presenting main material. The results of studying and summarizing scientific publications that deal with the diagnosis of competence or professionally important qualities of future specialists have allowed us to conclude that the criterion should be understood as a means, an assessment tool, and not as an assessment itself. This is the feature that is used as the basis for classification [10, p. 305].

In the study, we assume that it is advisable to choose a structure of leadership competence that combines its main components as the basis for classification to determine the criteria. This is quite logical, as it will allow to ensure the quantification of the basic components of leadership competence.

As noted by O. Yezhova [3], and we share her opinion, some researchers often choose only descriptive results of pedagogical research in publications and studies on pedagogical diagnostics and avoid their statistical processing, analysis and unification. Such approach does not ensure the objectivity of the results obtained.

In view of this, we support the idea that the attribute used as a criterion should be represented not only by a qualitative characteristic, but also by quantitative (numerical) values. Thus, a criterion is an objective feature by which enables to make a comparative assessment of the degree of development of the phenomenon under study for individuals, or to classify the pedagogical factors and processes under study [3, p. 313].

The results of generalizing the findings of scientific publications suggest that the criteria should meet certain requirements. This refers to reliability (the requirement to ensure minimal discrepancies in cases of repeated assessment), additivity (when applying the criterion to the components of the phenomenon, its full measure is obtained when adding up individual results, for example, indicators), unambiguity (the same interpretation and understanding by all research participants in the process of diagnosis or measurement), adequacy (correspondence to the essence of the phenomenon being measured), quantitateness (the criterion must be expressed in terms of a numerical value), validity (it is legitimate to differentiate the levels of development of the phenomenon and show all its components), reliability (the criterion must meet its purpose, characterize the phenomenon or process being measured), simplicity and easy application (the criterion should be measured by simple means, for example, through questionnaires, observation, expert assessment or using simple equipment/apparatus, if necessary), interdependence of the criterion with its indicators (presence of indicators in the criterion (characteristics, parameters or indicators that provide a logical

substantive description of its individual aspects), repeatability (the criterion can be used repeatedly in different conditions), effectiveness (the criterion should take into account the factors that affect a specific parameter of the measured phenomenon), reliability (the results obtained with the help of the criteria should provide complete information about the formation of the phenomenon being measured).

Thus, a criterion is a feature that is used as a basis for classification or a standard used to evaluate research results. The criterion can be numerical, if the measurement results can be expressed in numbers, or qualitative, if the assessment results are based on qualitative characteristics.

As for the concept of «indicator», in this study we assume that it is a component of the criterion. A criterion is characterized by a certain content, which is disclosed and detailed by indicators. An indicator can be expressed in a number or a qualitative characteristic. According to O. Yezhova, an indicator (characteristic) is understood as a meaningful (qualitative) description of certain aspects of the phenomenon under study, and parameters are characteristics that acquire a numerical expression (quantitative description) [3, p. 315].

The results of the generalization of scientific publications on the problem of measuring leadership potential, diagnosing leadership competence and leadership qualities allow us to conclude that the criterion of leadership is certain signs by which the qualities and characteristics of leaders are assessed. Leadership criteria may include various characteristics, such as efficiency, emotional intelligence, communication skills, determination, ability to cooperate, and others.

A review of scientific sources allows us to conclude that a fairly wide range of criteria can be used to determine the state of formation of leadership competence, which are based on the presence of properties and character traits inherent in leaders as can be seen from the previous examples.

However, as noted above, in this study we assume that it is advisable to choose a structure of leadership competence that combines its main components as the basis for the classification for determining the criteria. These components include the abilities, skills, and attributes and character traits of leaders. This approach is quite logical, as it allows to quantify the expression of the main components of leadership competence. In particular, this approach is supported by O. Khmyzova [12]. The researcher identifies the criteria for the formation of a leadership position in accordance with the structure of this formation and uses the cognitive (knowledge about oneself and others, about leadership and leaders, about leadership skills, abilities, beliefs), motivational-emotional (leadership motives, needs, emotions, value attitudes) and activity-behavioral (actions, deeds, activities, leadership behavior) criteria [12, p. 15].

A somewhat similar approach is used by N. Marakhovska to determine the formation of leadership qualities of future teachers. The researcher identifies four criteria: motivational, which allows to find out the level of desire to become a leader in pedagogical activity, cognitive, which covers the level of assimilation of knowledge about leadership, operational – combines organizational, communicative, perceptual, predictive, creative leadership skills, and control and correction – serves to measure the leadership position [9, p. 16].

Since the structure of the leadership competence of future specialists in navigation and ship management includes cognitive, practical and activity, professional and personal, and value and motivational components, the following criteria should be chosen for the formation of this competence:

cognitive-conceptual (correlates with the cognitive component; its definition is due to the fact that leadership involves the possession of certain information, certain knowledge realized by the individual; only based on knowledge can one influence other components of competence);

practical-behavioral (correlates with the practical-activity component; allows to determine the compliance of the personality's actions with the components of leadership behavior);

professional-psychological (correlates with the professional-personal component; allows determining the compliance of personality traits, character traits and abilities with the components of leadership competence);

axiological-motivational (correlates with the value-motivational component; the criterion refers to the system of personal values and motivation).

This is an indicative list of criteria, each of which is characterized by a specific content disclosed and detailed by indicators.

The second stage of the research involved determining the indicators of these criteria. For this purpose, analytical and search actions of an empirical nature were carried out, in accordance with the recommendations of Professor Ye. Khrykov [13, p. 114]. In particular, the requirements of regulatory and legal documents standardizing the level of competence of specialists in navigation and ship handling are generalized; the content of the educational and professional program in the specialty «271 River and Sea Transport»; documents on the organization of the educational process and practical training of future navigators.

To determine the indicators of leadership competence criteria, a survey was conducted by questioning and interviewing 46 graduates of maritime educational institutions, as well as 22 representatives of the research and teaching staff of the Danube Institute of the National University «Odesa Maritime Academy» regarding their opinions on the indicators (knowledge, skills, abilities, motives, value orientations, professional and personal properties and traits, abilities, etc. that allow measuring the level of leadership competence). For

this purpose there was worked out a relevant questionnaire. Taking into account restrictions related to martial law, quarantine, and the professional activities of graduates (some of them work on floating vessels), the survey was conducted partly using paper and partly using the survey administration software – the Google Forms application.

The results obtained were generalized. This allowed us to make a table that presents the most common answers of respondents about the content of the cognitive-conceptual, practical-behavioral, professional-psychological, and axiological-motivational criteria.

At the same time, it should be noted that this is only an indicative list of indicators. According to the recommendations of scientists, in particular Ye. Khrykov, an important step is to determine the optimal number of indicators (in the range of 5 to 7, in accordance with the principle of reasonable sufficiency) using the method of expert evaluation. For this purpose, experts were selected and offered a list of indicators for each of the criteria proposed for evaluation.

Using the method of group expert evaluation, the indicators of each criterion of the formation of leadership competence to future specialists in navigation and ship handling are determined, i.e., the identifications of its components.

As a result, Table 1 shows the criteria for the leadership competence of future specialists in navigation and ship handling, as well as the indicators of these criteria determined by the experts.

Components, criteria and indicators of the formation of leadership competence of future specialists in navigation and ship handling

No	Components	Criteria	Indicators
1.	Cognitive	Cognitive-conceptual	1) knowledge of team psychology, peculiarities of team formation and behavior of subordinates; 2) knowledge of the rules and principles of professional ethics; 3) knowledge of the rules and requirements of communication; 4) knowledge of conflict management tactics and strategies, peculiarities of human resources management; 5) knowledge of the essence of leadership competence and the specifics of its manifestation in the professional activities of the master of the ship or senior assistant captain.
2.	Practical-activity	Practical-behavioral	1) ability to plan, coordinate and assign personnel; 2) ability to maintain the atmosphere of mutual understanding, goodwill, and mutual assistance among the ship's crew members; 3) leadership skills and ability to work in a team; 4) ability to communicate with the team and other related parties; 5) the ability to motivate your team and stimulate teamwork to achieve the goal.
3.	Professional-personal	Professional-psychological	1) organizational skills; 2) adherence to ethical standards; 3) concern for the well-being of team members; 4) emotional intelligence; 5) ability to self-control and reflection.
4.	Value-motivational	Axiological-motivational	1) commitment to the corporate culture and traditions of the maritime shipping industry; 2) understanding (acceptance) and adoption of leadership values and the mission of the manager-leader; 3) focus on generally recognized human and professional values; 4) motivation and desire for professional self-development; 5) the need to maintain and improve their own health and the health of ship's crew members.

Regarding the levels of leadership competence of future specialists in navigation and ship handling, the results of the analysis of scientific papers and publications that address the issues of monitoring and measuring competence or leadership qualities of this aspect in pedagogical theory have led to the conclusion that there exist different approaches. The vast majority of researchers propose a scale consisting of 3 to 5 levels. It is important for us to take into account the results of other researchers' studies, so here are some examples of the author's vision of solving the problem of measuring the leadership qualities of future professionals during their studies at higher education institutions.

In particular, in the study by O. Makovsky, the cadets' formed leadership qualities are proposed to be assessed at three levels: elementary, sufficient and high [8, p. 12]. V. Tiurina also suggests using three levels (low, medium, high) to assess leadership competence of cadets – future police officers [11].

A scale with four levels is used by D. Edemova to determine the formation of leadership qualities of students. The researcher suggests that students' leadership qualities should be assessed at low, medium, sufficient and high levels [2].

However, there are examples of other approaches to leadership assessment scales in research. For instance, A. Yermolenko proposes to differentiate the development of leadership qualities of a teacher using five levels:

the first level – a highly professional employee (contributes through the active use of their own potential);

the second level – a valuable team member (makes personal contribution to the achievement of the common goal, interacts effectively with other team members);

the third level – an effective leader (organizes people, rationally allocates resources to accomplish tasks);

the fourth level – a competent manager (forms vision of the development prospects of the unit (organization) and consistently achieves a certain result, effectively coordinates activities, ensures high standards of education quality);

the fifth level – acme leader (realizes their mission, works effectively with the team and achieves goals [4].

Therefore, the choice of a three- or four-level rating scale for assessing leadership competence depends on the number of components (criteria and indicators) to be assessed, as well as on how detailed the assessment of each component should be. According to the logic of the study, it can be assumed that if a small number of indicators need to be assessed and there is no need to describe each of them in detail, then a three-level rating scale can be chosen, for example:

«does not meet the requirements» (low or critical level);

«meets the requirements» (average level);

«meets the requirements above average» (high level).

The choice of a scale with three levels allows to quickly assess the level of competence formation according to chosen indicators. If it is necessary to evaluate a large number of indicators or describe each of them in detail, a four-level rating scale can be chosen, for example:

«does not meet the requirements» (low or critical level),

«partially meets the requirements» (medium level),

«meets the requirements above average» (sufficient level),

«meets the requirements exceptionally» (high level).

Such a scale would enable a more detailed characterization of the levels of leadership competence according to the chosen indicators.

At the same time, the scale should be as clear and unambiguous as possible, well understood by all participants in the assessment process, and not require significant resources and time to calculate each indicator. When choosing a scale for assessing leadership competence, it is also advisable to take into account the requirements of standards or other regulatory documents for assessing leadership competence. In view of this, we have taken into account the grading scale used at the Danube Institute of the National University «Odesa Maritime Academy» in accordance with the Regulations on the procedure and system for assessment of knowledge of higher education applicants. This system of assessing the knowledge of higher education applicants provides for a four-point system, where in fact an «unsatisfactory» grade is 2 points, a «satisfactory» grade is 3 points, a «good» grade is 4 points, and an «excellent» grade is 5 points.

Therefore, taking into account the above arguments, we consider it appropriate to define the formation of leadership competence of future specialists in navigation and ship handling according to four levels:

critical level – the formation of leadership competence does not meet the requirements;

low level – the formation of leadership competence partially meets the requirements;

sufficient level – the formation of leadership competence meets the requirements above the low level;

high level – the formation of leadership competence meets the requirements.

Conclusions and prospects for further research. The definition of a diagnostic apparatus for studying the formation of leadership competence of specialists in navigation and ship handling allows further

determining the state of its development for students (cadets) in a maritime higher education institution and conducting the ascertaining stage of the experiment by means of control diagnostic measurements.

Promising for further research is the collection of empirical data on the formation of leadership competence to future specialists in navigation and ship handling, their analysis and the formation of proposals for research and teaching staff to improve the quality of the educational process in the context of the formation and development of leadership competence components to higher education students.

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