UDC 371.3:629.331
DOI: 10.52534/msu-pp.8(3).2022.73-80

Viktor M. Pryimak*

Khmelnytskyi National University
29016, 11 Instytutska Str., Khmelnytskyi, Ukraine

Methodological Approaches in Training Specialists of Professional Education of Motor Transport Profile for Teaching Road Safety

Article's History:
Received: 14.09.2022
Revised: 05.12.2022
Accepted: 28.12.2022

Suggested Citation:
Horishna, N.M. (2022). Typology of social skills and their impairments in children with autism spectrum disorders. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 8(4), 73-80.

*Corresponding author

Abstract. The relevance of the study is due to the dynamism of changes in all areas of activity, including the automotive industry. The purpose of this paper is to investigate the main ways of providing professional education in the field of motor transport, considering the current needs of the digital society. Among the methodological techniques used, theoretical and functional approaches, logical analysis, synthesis, deduction, and comparative methods are notable. In the course of the study, it is determined that now the intensity of the educational process and the activation of cognitive activity require new forms of training from future specialists, which provide an opportunity to learn a lot of material in a short period of time. It is proved that the need for new productive approaches to learning is due to the fact that today the amount of information and knowledge that students should possess has increased. The main reasons leading to an insufficient level of road safety in Ukraine in comparison with the countries of the European Union are highlighted. An important aspect of the work conducted is the identification of the main ways and methods to improve this indicator, primarily during the training of specialists in the professional education of the motor transport profile for teaching road safety. The main problems of training future specialists of this profile are investigated, in particular, the competence indicator is analysed. The use of modern innovative tools in the process of training future specialists is considered to overcome certain negative aspects. Features and prospects of digitalisation of the educational process are considered. The practical value of the results obtained lies in the fact that they provide an opportunity to improve the quality of knowledge provided in specialised disciplines and change the training system for higher education applicants in Ukraine

Keywords: professional development, labour market, information competence, multimedia, digitalisation

INTRODUCTION

One of the main problems in Ukraine is the unsatisfactory state of road safety, which makes it necessary to ensure a high level of quality in the process of training specialists in the field of motor transport. In October 2020, the Cabinet of Ministers of Ukraine approved a Strategy for Increasing the Level of Road Safety in Ukraine for the Period until 2024 [1]. An important aspect to implement this Strategy is defined as human resourcing, which requires the training of future specialists who have a certain amount of knowledge and skills in the segment of traffic organisation and safety issues.

A group of researchers led by S. Reza emphasise that one of the areas of solving problems in the field of ensuring high-quality traffic activities is the introduction of intelligent management of the transport system, which would allow for solving traffic problems simultaneously in several directions and monitoring road safety [2]. For example, the Euro Contrôle Route implements such activities in the European Union [3]. If a similar state body is created in Ukraine, a problem with providing the structure with highly qualified employees will arise. It would be appropriate to analyse the experience of European countries that have implemented an active and successful policy to reduce road accidents over the past 10 years to solve possible problems.

As A. Trifunović notes, an example of this experience is the policy of the Republic of Serbia, which has a similar level of GDP per capita to the Ukrainian indicator [4]. According to D. Pešić, the peculiarity of policy of Serbia is that it conducts highly qualified training of future specialists of the motor transport profile for teaching road

safety by introducing a wide range of different academic disciplines into the educational process [5].

At present, there is a problem related to the training of future specialists in the field of road safety in Ukraine. The educational process is conducted within the framework of a single speciality "Transport technologies (by types)". Therefore, the list of disciplines that are mandatory for bachelor's degree training consists of those related to passenger and cargo transportation technologies. The opportunity to correct this problematic aspect is provided by the Law of Ukraine No. 1556-VII "On Higher Education" [6]. According to the provisions of this Law, higher education institutions are allowed to independently choose and introduce specialities, determine their training programme and content. Therefore, higher education institutions can teach the specialisation "Road safety".

According to the Letter of the Ministry of Education and Culture of Ukraine No. 1/9-507, specialisations were introduced within the speciality "Transport technologies (by types)", among which "Transport technologies (in road transport)" is notable [7]. As noted by M. Song, due to such conditions, the permissible weekly training load on one of the future specialists decreases, which, in turn, leads to a reduction in the list of disciplines and the number of credits, especially selective disciplines of the curriculum [8]. Since there is not a single one in the list of mandatory disciplines of the speciality "Transport technologies" that would consider in more detail the problematic aspects of road safety, the introduction of such disciplines as selective is a rather complicated process.

Based on this, it can be argued that graduates of higher educational institutions in Ukraine in the speciality "Transport technologies" have a lower level of education in road safety compared to the bachelors of educational institutions in Europe. According to J. Shen, this aspect will have a negative impact on the quality level of planning and implementation of any national programmes and projects for traffic safety management [9].

Thus, the issue of investigating the main approaches to training future road transport specialists in teaching road safety in Ukraine, identifying the main problems and ways to overcome them is particularly relevant. One of the most important issues is the study of the prospects for introducing a separate specialisation into the educational process in the speciality "Transport technologies (by types)", which would be used to train highly qualified specialists in the field of road safety. The purpose of the study is to investigate the main ways to ensure professional education of motor transport profile, considering the needs of modern digital society. The scientific originality of the study can be defined as the selection of educational approaches with a focus on educational standards in the European Union countries.

MATERIALS AND METHODS

The conducted investigation, the field of which is the definition of methodological approaches in the training of specialists of professional education of motor transport profile for teaching road safety, was conducted using various methodological approaches that cover the theoretical and practical aspects of this work. The theoretical approach helped to determine the main methodological techniques and methods in providing professional education for motor transport specialists. Due to the application of the functional approach, the effectiveness of modern methods of the educational process of students of motor transport profile was clarified; it was determined that now the intensity of the educational process and the activation of cognitive activity require new forms of training from future specialists, which provide an opportunity to learn big amounts of material in a short period of time; this is explained by the fact that today the amount of information and knowledge that students should possess has increased. The method of comparative analysis helped to identify the main reasons for the insufficient level of road safety in Ukraine compared to the European Union countries. Using the method of logical analysis, the main methods and techniques for improving this indicator were identified, especially when training specialists of professional education of motor transport profile for teaching road safety. The method of system analysis helped to investigate the main problems of training future specialists of this profile, in particular, the competence indicator was analysed; also, to overcome certain negative aspects, the use of modern innovative tools in the process of training future specialists was considered. The induction method uncovered the essence and prospects of introducing innovative tools into the educational process based on the described problems. Applying the method of deduction, based on the investigated problems related to providing professional education to future specialists of the motor transport profile, innovative ways to overcome these negative aspects were considered. Due to the use of the synthesis method, based on the identified results of theoretical and practical nature, the prospects for introducing innovative means of obtaining education into the educational process were determined, in connection with which it was determined that this provides an opportunity to increase the quality of education and change the system of training applicants for higher education in Ukraine.

The study was conducted in several stages.

1. The first stage consisted in covering the theoretical content of the work, namely, the main methodological approaches and methods in providing professional education for motor transport specialists were identified.

2. The second stage is based on the analysis of methodological approaches and their effectiveness; in this regard, the main reasons that serve the insufficient level of road safety in Ukraine compared with the level of the European Union countries, are clarified.

3. Due to the third stage, the main ways to improve the indicator of road safety in Ukraine were identified, including ways to overcome the considered problems, in particular, the introduction of innovative means of providing education into the educational process; it was determined that this provides an opportunity to improve the quality of

education and change the system of training applicants for higher education in Ukraine.

RESULTS

The process of training future specialists of the motor transport profile should be based on an in-depth study of the scientific foundations and technologies of the chosen type of area, the education of the necessary qualities of a moral, psychological, and aesthetic nature for future work, the development of special practical skills. Based on this, the determining level of training is technical education based on secondary general education; provides the development of professional knowledge, skills, and abilities; is provided by accredited vocational educational institutions; ends with the assignment of a certain level of qualification and obtaining a document confirming the acquisition of vocational education [10]. That is, professional education is the type of education that covers the knowledge, practical skills, and abilities that are necessary to perform work in the right field of work.

Now in Ukraine, there are urgent problems related to the modernisation of vocational training. Among the main factors, it is worth highlighting the political component, which is that in modern conditions Ukrainian education is part of the Soviet one, which focused on the training of the labour force, not qualified specialists; the financial component, which consists in the unstable state of financing the educational process, the low level of funding for science, which results in the destruction of scientific schools, the reduction of researchers, the insufficient level of remuneration for their work; the organisational and legal component, which consists in the active implementation of the main provisions of the credit-modular system in higher educational institutions, in connection with which, the educational process has become more complicated and the level of knowledge of students has become much lower; focus on general education, neglecting vocational and technical, since the cycle of professional and practical training is 4266 hours, while the cycle of humanitarian-social, general education and mathematical-natural training is 3926 hours (Fig. 1).

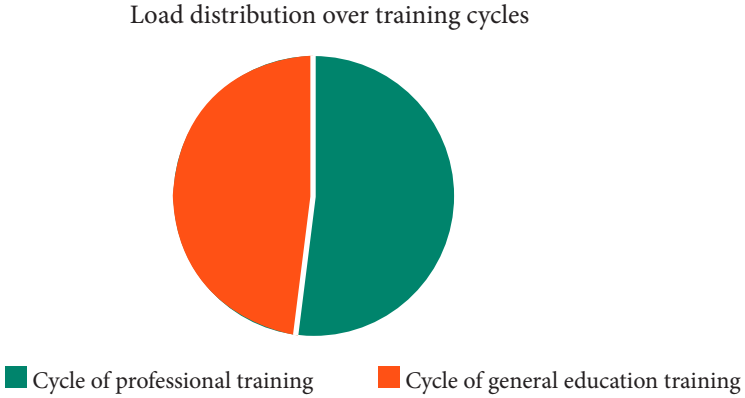

Figure 1. Load distribution over training cycles

Source: Standard of higher education in speciality 275 "Transport technologies (by types)" for the second (master's) level of higher education [11]

Based on the above diagram, the cycle of general education training occupies approximately 48% of the educational process. According to these data, it is possible to assert the fact that the state of the educational process does not meet the modern conditions of demand in the labour market, since modern methodological approaches to training do not correspond to technological processes in enterprises.

Another substantial problem is the lack of focus in the educational process at universities on developing the competence of future specialists, namely knowledge, skills, and abilities to perform tasks. The consequence of this is a tendency to reduce the number of students every year. One of the ways to solve the problem is a competent approach to training future specialists of the motor transport profile. The basis of this approach is three components, namely: competence, expertise, and competence approach. In general, competence is a set of qualities of a business and personal nature, skills, and knowledge that provide the student with the opportunity to act in the implementation of the obligations assigned to them successfully; it also serves as a range of powers of an official, within which he must have the necessary range of knowledge and is entitled to make responsible and adjusted decisions. Considering the concept of competence, it is worth noting that it is the ability of an employee to perform certain types of work professionally within a specific work activity while achieving successful and high results based on inherent skills and knowledge; it should also be defined as an existential property of a person, which is the result of their own human activity of a life-creating nature, initiated by the learning process [12]. In general, the competence approach is the one in which the results of education are defined as substantial outside of it. The introduction of this approach to the educational process is a key methodological tool for training future specialists, which provides an opportunity to build the content and goals of education in a different way, determine the results of training, increase the level of systematic professional

training of future specialists, and their readiness to solve the main tasks of social and professional activities.

Notably, in Ukraine, there is an insufficient level of ensuring traffic safety compared to the indicator of the European Union countries. Among the main reasons that serve this, it is worth noting such as a rather low percentage of road discipline of traffic subjects and awareness of the danger of the consequences of its violation; a low level of coordination of the activities of state bodies to solve road safety issues; insufficient level of practical ensuring the inevitability of punishment for violating traffic safety rules and the implementation of this by traffic participants; a low indicator of funding for measures aimed at reducing the occurrence of accidents on the roads; lack of consistency in approaches to analysing the effectiveness of current funding; insufficient level of use of modern methods of training and improving the skills of drivers, training in traffic rules of citizens; insufficient indicator of the effectiveness of a set of actions organisational, planning, and engineering areas, the purpose of which is to improve the organisation of traffic and pedestrians, and create safe traffic conditions, etc. [13].

The problem of low quality of professional training of drivers is one of the most urgent since qualified training of drivers guarantees safe driving. According to statistics, about 92% of road accidents occur due to disregard for traffic rules, which results in an increase in the death rate in Ukraine [14].

The issue of investigating future specialists of the motor transport profile for teaching road safety in more modern ways is of particular importance in overcoming this problem. For example, computer software products are the most effective for implementing the informatisation process for training drivers of motor vehicles. These include demonstration programmes that help illustrate certain objects, phenomena, or situations using traffic rules; training programmes that aim to develop and consolidate acquired skills, abilities, and knowledge; monitoring programmes that implement the function of controlling knowledge and skills, thereby saving teachers time and effort; reference programmes that provide quick access to additional information; programmes that can simulate phenomena and processes related to the operation and construction of cars and typical real-world cases that may occur for drivers with little experience [15].

Notably, the study of information and technical training tools by future specialists of the motor transport profile for teaching road safety is quite important, as it will help to activate the process of their work using a complex of audio, video, and multimedia textbooks and equipment. The use of these tools provides an opportunity to provide future specialists with a figurative perception of the material being investigated and its concretisation of a visual nature in the form that is most favourable and effective for processing and memorisation.

Due to the development of information and communication technologies, it is becoming possible to combine visualised learning with verbal methods, as, for example, in animation classes, which can be applied even during distance learning. Now modern multimedia training programmes have been able to include the entire component of the theoretical driver training course using a fairly simple and accessible form – visualised. Situational modelling also serves as a substantial decision-making factor for future drivers, as it provides an opportunity to use various methods of solutions in conducting research and play different scenarios with any input data [16]. Notably, changing the development options and finding appropriate solutions provides an opportunity to increase motivation for training and develops the ability to assess road safety.

Distinguishing dynamic visualisation with elements of machine graphics and animation helps to increase the level of mental activity and substantially reduces the passivity of students. Models of familiar intersections through which driving training was previously conducted can be used to make the created situation more realistic. Using situational modelling methods and visualised demonstration tools allows switching to driving earlier on roads with high traffic intensity. The main means for the educational process in modern conditions are electronic textbooks, presentations, and internet resources.

The introduction of information and communication competence into the educational process is becoming a priority in modern education. Thus, the use of animation allows visually conveying the training material and also provides a perspective to look at the situation from different angles, show it in dynamics. During the implementation of the educational process of road safety, the main emphasis is placed on practical exercises, namely, mastering the correct technique for using controls, modelling possible situational events in theory classes, investigating first aid methods, practical driving, and maintenance. That is, the main goal of practical classes is to develop students' practical skills and abilities, using verbal, practical, and visual teaching methods.

Among other ways to improve the effectiveness of the educational process, future specialists of the motor transport profile should mention involvement in innovative forms of methodological work of collective and group, such as involvement in research activities, creative groups, pedagogical, or psychological trainings, forums for developing solutions to problems, methodological discussions, auctions, debates, business role-playing games, etc. The establishment of a flexible education system for the future teacher, which provides for an innovative approach of a specialist to improve the level of professional competence in the certification and inter-certification periods, and self-development, self-educational activities, and purposeful systematic methodological work is important [16]. An important aspect is the creation of an information and educational space with equal access of teachers and future specialists to information and educational resources, namely libraries, video libraries of pedagogical experience, media libraries, and a register of educational software tools. The readiness of the future specialist for innovative activities and the priority

of educational technologies is critical; in this regard, it is necessary to highlight the psychological support of educational activities, the development of a methodological basis for building a model of competence formation, the effective combination of theoretical and practical in the content of modules of educational programmes, the individualisation of the educational process based on the personal and professional potential of the teacher, the training of future specialists in technologies of competence formation, the creation of a reflexive environment that provides an opportunity for the development of subjects of the educational process. The motivation of students to publish scientific papers recorded in leading international scientometric databases provides an opportunity for specialists to be more competitive in the labour market.

The simulated situation requires urgent measures that will contribute to the radical improvement of the educational process system, including accelerating the process of creating a new training methodology, which will provide an opportunity to ensure the appropriate level of readiness of applicants for higher education of theoretical and practical content. It is important for future specialists to investigate the basics that will allow them to implement their work activities properly and efficiently, namely, to investigate the basic principles of conducting the training process for drivers. In addition, the use of modern information and communication tools in the educational process will not only reduce the number and severity of road accidents in Ukraine but also introduce qualitative changes in the educational process of applicants for higher education in motor transport for teaching road safety.

DISCUSSION

Events taking place in the modern world are increasingly characterised by a direct relationship between the information competence of subjects and their life. The changes that are formed in the creation of the goal of the modern educational process of a technical area are correlated with the goal of providing future specialists in the professional environment and their adaptation to it. This aspect is caused by a number of contradictions, primarily the educational requests of students in obtaining information of an educational and professional nature and the activities of the university, which are not sufficiently oriented to the needs of future specialists in the effective search for new sources of information.

It is necessary to improve and introduce into the educational process some methodological approaches aimed at developing the information competence of future specialists of the motor transport profile for teaching road safety to eliminate these problematic aspects.

As R. Elvik notes, information competence is one of the most important and contains a large number of components, namely: knowledge, skills related to ways to obtain new information, knowledge of modern information, and communication tools and technologies [17]. In modern conditions, the formally substantial paradigm has been replaced by a personal activity paradigm, which is based on a competent approach. Therefore, the main goal of the modern training process is to help future specialists master various ways of activity that provide an opportunity to act with a focus on the position of a highly qualified specialist in a particular labour field.

Defining the concept of "information competence", A. Toriumi notes that it should be distinguished as a combination of digital literacy, library communication skills, ethics, critical perception, technological literacy, and communication [18]. Analysing the papers of A. Gounaridou, he defines this as the quality of an integrative personality, which is the result of reflection of assimilation, selection, and transformation, enabling the production, making, prediction, and implementation of optimal decisions in various aspects of professional activity [19]. Depending on the development of information competence indicators, productive, reproductive, and professional levels are distinguished.

Analysing another category, namely personality-oriented learning, it should be defined as an educational environment where the main positions are placed on the self-value and identity of the student, uncovering first their subjective experience and subsequently coordinating with the content of professional education. In this area, the development of information competence is the embodiment of a complex system of variable activities, namely cognitive, informational, value-motivational, technological etc, in the process of implementation of which skills and abilities are developed that contribute to professional education and the establishment of the student's personality.

In general, the effectiveness of implementing information competence depends on the fulfilment of certain conditions. According to A.M. Ngoc, these include content, which consists in highlighting the components of the content of professional disciplines that are focused on the development of competence in the information area, focus on organising the process of mastering information aspects, developing and testing methods during classes on the auto department; organisational, the purpose of which is to familiarise future specialists with the tasks of activities on the auto department, conducting tests of initial, intermediate, and final nature to identify the levels of information competence among students and spread scientific experience; material and technical, for the implementation of which there should be a constant update of the material base of laboratories, the use of multimedia tools and the high-speed internet [20].

Providing a technological direction is teaching students how to operate in the information area, their introduction in the activity, which will contribute to the consolidation of the provided skills and the development of competence. Analysing the structure of information competence through the prism of an activity-based approach, it is worth highlighting such stages as the search, collection, and storage of Information; its perception, understanding, selection, and analysis; organisation of the obtained data and their presentation; creation of an information object

based on the internal representation of the student; communication; modelling; design; information management. In the process of developing information competence through a personality-oriented approach, a variety of technologies are used, namely the project method, the educational process in cooperation, multi-level, developmental, and problem-based training, STEM and mobile learning technologies, and attracting future specialists to extracurricular activities using digital technologies, etc.

During the educational process for future specialists of the motor transport profile, ready-made multimedia products, such as educational and methodological complexes, should be used for teaching road safety. According to F. Bin, the advantage of these complexes is that they contain methodological, control and diagnostic, alternative search, training, information-reference, and training blocks [21]. This provides an opportunity to explain new material by selecting graphic and textual material on various subjects, create an educational and didactic presentation, etc.; use multimedia tools to model and explain various situations that may occur during traffic; organise control over students' assimilation of educational material by developing independent and control tasks or tests; organise project activities, prepare students for creative and scientific competitions.

A necessary component in the course of training for students in this area is also the use of visual aids. As C. Sarango-Lapo notes, their advantage is that they allow consolidating and generalising the main material for students of different courses; contain auxiliary materials for investigating particularly complex subjects and performing experimental laboratory work; contain schemes and algorithms that provide an opportunity to process and remember educational material rationally; store additional information with a list of educational literature, scientific papers intended to provide information support for the subjects of the educational process and self-education [22]. That is, it contributes to the development of students' skills to organise, conduct, and implement the results of information-oriented activities, and to perform introspection and self-control.

The use of multimedia products and computer textbooks serves as a powerful tool for creating individualisation of the educational process, as it provides an opportunity for the student to form the ability to self-organise their activities from the acquired knowledge and skills and use them in practical activities. Examples of this type of multimedia products are lectures in video format, training in traffic rules in an interactive format, videos of physical phenomena, animated videos that illustrate various traffic situations, video experiments and tasks, digital encyclopaedias, practical tasks for independent modelling of various traffic situations, etc.

As H. Shim notes, an equally important means of forming such a crucial methodological approach in the educational process of future specialists of the motor transport profile for teaching road safety, as information competence, is the use of digital resources to search for new ways of data in the process of implementing project preparation and research work [23]. This provides an opportunity to ensure the establishment of a common culture at a high-quality level and introduce new technologies to training, which contributes to social adaptation and professional development of future teachers in a modern digitalised society. Therewith, special attention should be paid to the development of their ethical attitude to the information provided by future specialists, the importance of preventing academic plagiarism and preserving the principle of academic integrity.

Thus, information competence as a modern methodological approach in the educational process serves as an integral means of training highly qualified future specialists. However, it is worth noting that one of the components of its implementation is the creation of a special educational environment. Further research work will focus on investigating the prospects for introducing new digitalised approaches to the educational process.

CONCLUSIONS

The results of the study demonstrated that now in Ukraine there is a problem with the lack of a separate specialisation in this area in institutes, in connection with which there is a low level of driver education and an increasing number of road accidents.

It was analysed that the current level of ensuring traffic safety in Ukraine is insufficient compared to the indicator of the European Union countries. The main reasons for this problematic aspect were identified; these include the low level of providing funding for measures that allow reducing the level of accidents on the roads, creating the safest traffic conditions, organising the movement of pedestrians and vehicles, the low level of coordination of state bodies in the field of solving road safety issues, insufficient level of discipline of traffic participants, and the realisation of the danger of the consequences of its violation, etc.

In the course of the study, a way to overcome this problem was identified, namely, the introduction into the educational process of more modern and digitalised ways of investigating road safety by future specialists of the motor transport profile. Computer software products are among the most susceptible to informatisation for training motor vehicle drivers. This enables the activation of the process of their work, which is implemented through the use of a complex of various tools. The use of these tools allows students to provide an opportunity to ensure an imaginative perception of the material being investigated and its concretisation of a visual nature in the form that is most optimal for investigating educational material.

An urgent issue is a study by students of the basics that will provide an opportunity to implement future work activities efficiently, namely, the study of the basic principles of the educational process for future drivers. It is worth paying attention to the use of modern digitalised tools in the educational process. This provides an opportunity to introduce effective changes in the educational process for applicants for higher education in motor transport for teaching road safety, and will also have a positive impact

on the severity and number of road accidents in Ukraine, namely, its reduction. These recommendations will have a positive impact on the current situation in Ukraine related to the number of road accidents.

Further research will be aimed at investigating the use of information and communication tools in the educational process of students of motor transport profile, identifying their main shortcomings and benefits.

REFERENCES

[1] Order of the Cabinet of Ministers of Ukraine No. 1360-p "On the Approval of the Strategy for Increasing the Level of Road Safety in Ukraine for the Period until 2024". (2020, October). Retrieved from https://zakon.rada.gov.ua/laws/show/1360-2020-%D1%80#Text.

[2] Reza, S., Oliveira, H S., Machado, J.J.M., & Tavares, J.M.R.S. (2021). Urban safety: An image-processing and deep-learning-based intelligent traffic management and control system. *Sensors*, 21(22), article number 7705. doi: 10.3390/s21227705.

[3] Official website of the Euro Contrôle Route. (n.d.). Retrieved from https://www.euro-controle-route.eu/.

[4] Trifunović, A., Čičević, S., Pešić, D., Samčović, A., & Marković, V. (2022). Surveying disadvantaged children's traffic safety education in a comparison between paper and electronic methods: A case example for the expanded use of educational technology. *Transportation Research Record*. doi: 10.1177/03611981221106477.

[5] Pešić, D., Trifunović, A., & Petrović, M. (2019). Road safety education for children: Results of children's behavior on the traffic playground and simulated traffic situations. *Facta Universitatis. Series: Teaching, Learning and Teacher Education*, 3(1), 1-10. doi: 10.22190/FUTLTE1901001P.

[6] Law of Ukraine No. 1556-VII "On Higher Education". (2014, July). Retrieved from https://zakon.rada.gov.ua/laws/show/1556-18#Text.

[7] Letter of the Ministry of Education and Culture of Ukraine No. 1/9-507 "On the Entry into Force of the Law of Ukraine "On Professional Advanced Education". (2019, Augest). Retrieved from https://mon.gov.ua/ua/npa/list-mon-ukrayini-vid-09082019-19-507-shodo-nabrannya-chinnosti-zakonu-ukrayini-pro-fahovu-peredvishu-osvitu.

[8] Song, M.H, & Han, T.I. (2019). A study on the learning satisfaction and work utilization of the teacher safety e-learning. *International Journal of Information and Education Technology*, 9(12), 909-917. doi: 10.18178/ijiet.2019.9.12.1326.

[9] Shen, J., Liu, Y., Ma, G., Qi, J., & Zheng, C. (2018). Outcomes-based evaluation of graduation requirements for traffic engineering education: An example of road traffic safety course. *Educational Sciences: Theory & Practice,* 18(5), 2254-2265. doi: 10.12738/estp.2018.5.124.

[10] Zare, H., Niknami, S., Heidarnia, A., & Fallah, M. (2019). Traffic safety education for child pedestrians: A randomized controlled trial with active learning approach to develop street-crossing behaviors. *Transportation Research Part F: Traffic Psychology and Behavior*, 60, 734-742. doi: 10.1016/j.trf.2018.10.021.

[11] Standard of higher education in specialty 275 "Transport technologies (by types)" for the second (master's) level of higher education. (2020, November). Retrieved from https://mon.gov.ua/storage/app/media/vishcha-osvita/2022/Standarty.Vyshchoyi.Osvity/Zatverdzheni.Standarty/01/31/275-Transp.tekhn-za.vyd-mah.31.01.22.pdf.

[12] Winter, S.M., Caldwell, K.R., Brumback, B.A., Jeghers, M.E., & Classen, S. (2021). Fidelity of a traffic safety education intervention for combat veterans. *Occupational Therapy in Health Care*, 35(4), 363-379. doi: 10.1080/07380577.2021.1923106.

[13] Kim, K.-H., & Rhee, D.-W. (2019). A development of traffic safety education application using mixed reality. *Journal of the Korea Institute of Information and Communication Engineering*, 23(12), 1602-1608. doi: 10.6109/JKIICE.2019.23.12.1602.

[14] Road accidents in Ukraine: How many people are injured and killed on the roads. (2021). Retrieved from https://www.slovoidilo.ua/2021/07/21/infografika/suspilstvo/dtp-ukrayini-skilky-lyudej-travmuyetsya-hyne-dorohax.

[15] Lee, H.-C., Jang, P., & Kim, J.-H. (2021). School safety education status and the awareness and practice of safety among middle school students. First aid, disaster safety, traffic safety, and daily life safety. *The Korean Journal of Emergency Medical Services*, 25(2), 129-143. doi: 10.14408/KJEMS.2021.25.2.129.

[16] Mohan, D. (2019). Traffic safety: Rights and obligations. *Accident Analysis & Prevention*, 128, 159-163. doi: 10.1016/j.aap.2019.04.010.

[17] Elvik, R. (2021). Legislation, enforcement and education for traffic safety: A brief review of the current state of knowledge. In *Transport and safety* (pp. 67-83). Singapore: Springer. doi: 10.1007/978-981-16-1115-5_4.

[18] Toriumi, A., Abu-Lebdeh, G., Alhajyaseen, W., Christie, N., Gehlert, T., Mehran, B., Mussone, L., Shawky, M., Tang, K., & Nakamura, H. (2022). A multi-country survey for collecting and analyzing facts related to road traffic safety: Legislation, enforcement, and education for safer drivers. *IATSS Research*, 46(1), 14-25. doi: 10.1016/j.iatssr.2022.01.004.

[19] Gounaridou, A., Eleni, S., & Charalampos, D. (2021). A serious game for mediated education on traffic behavior and safety awareness. *Education Sciences*, 11(3), article number 127. doi: 10.3390/educsci11030127.

[20] Ngoc, A.M., & Thanh, T.T.M. (2020). Towards the development of traffic safety strategies in developing countries: analysis of road users' perspective. *Transportation Research Procedia*, 48, 1278-1287. doi: 10.1016/j.trpro.2020.08.149.
[21] Bin, F., Xi, Z., Chen, Y., & Ping, W.G. (2019). Construction safety education system based on virtual reality. *IOP Conference. Series: Materials Science and Engineering*, 563(4), article number 42011. doi: 10.1088/1757-899X/563/4/042011.
[22] Sarango-Lapo, C., Juanjo, M., & Ramírez-Montoya, M. (2021). Evidence-based educational innovation model linked to digital information competence in the framework of education 4.0. *Sustainability*, 13(18), article number 10034. doi: 10.3390/su131810034.
[23] Shim, H., & Lee, H. (2022). The effect of design education using virtual reality-based coding on student competence and educational satisfaction. *Education and Information Technologies*, 27(4), 4577-4597. doi: 10.1007/s10639-021-10730-w.

Віктор Миколайович Приймак

Хмельницький національний університет
29016, вул. Інститутська, 11, м. Хмельницький, Україна

Методологічні підходи в підготовці фахівців професійної освіти автотранспортного профілю до викладання безпеки дорожнього руху

Анотація. Актуальність проведення дослідження зумовлено динамічністю змін усіх сфер діяльності, зокрема й автомобільної галузі. Мета цієї роботи – вивчити основні способи надання професійної освіти автотранспортного профілю з урахуванням сучасних потреб цифрового суспільства. Серед використаних методологічних підходів варто зазначити теоретичний підхід, метод логічного аналізу, функціональний підхід, метод синтезу, метод дедукції, порівняльний метод та інші. У процесі дослідження визначено, що нині інтенсивність навчального процесу та активізації діяльності пізнавальної спрямованості вимагають від майбутніх фахівців нових форм навчання, які надають можливість засвоїти багато матеріалу в короткий проміжок часу. Обґрунтовано, що потреба в нових продуктивних підходах до навчання пов'язана з тим, що сьогодні зріс обсяг інформації та знань, якими повинні володіти студенти. Виокремлено основні причини, що призводять до недостатнього рівня безпеки дорожнього руху в Україні порівняно з країнами Європейського Союзу. Важливий аспект проведеної роботи – визначення основних способів та методів щодо підвищення цього показника, насамперед під час підготовки фахівців професійної освіти автотранспортного профілю до викладання безпеки дорожнього руху. Вивчено основні проблеми підготовки майбутніх фахівців названого профілю, зокрема проаналізовано показник компетентності. Задля подолання визначених негативних аспектів розглянуто використання сучасних інноваційних засобів у процесі підготовки майбутніх фахівців. Розглянуто особливості та перспективи цифровізації навчального процесу. Практична цінність отриманих результатів полягає в тому, що вони надають можливість підвищити якість надання знань з профільних дисциплін та змінити систему підготовки здобувачів вищої освіти в Україні

Ключові слова: підвищення кваліфікації, ринок праці, інформаційна компетентність, мультимедіа, цифровізація