РОЗДІЛ 1. ЗАГАЛЬНА ПЕДАГОГІКА ТА ІСТОРІЯ ПЕДАГОГІКИ

СТРАТЕГІЯ ОСВІТИ «G.I. BILL OF RIGHTS» (1944–2025 PP.): ДОСВІД США ДЛЯ УКРАЇНСЬКОГО ОСВІТНЬОГО ПРОСТОРУ EDUCATION STRATEGY "G.I. BILL OF RIGHTS" (1944–2025): US EXPERIENCE FOR THE UKRAINIAN EDUCATIONAL SPACE

International cooperation of Ukraine in the sociocultural sphere, military and public spheres, the need to integrate into the European and world educational space involve taking into account the general trends in the development of STEM education and innovation of domestic higher education, one of the directions of which is the receipt of education by military personnel and veterans. In this context, we consider it appropriate to study the bill of the United States of America, known as the G.I. Bill. in the context of its existence from 1944 to 2025, which has undergone a number of revisions over the past 70 years, and the educational benefits and advantages that it provides to veterans and military personnel of the United States who wish to obtain higher education, to use this experience in the realities of modern Ukraine. The purpose of the article is to analyze the features of obtaining education after returning from military service to civilian life and to substantiate the possibilities of using innovative ideas of the American experience in determining the prospects for the development of this direction in the context of global and national trends in Ukraine. The study used specific-search and logical-synthetic analysis (for collecting, analyzing, systematizing and generalizing the provisions of historical, scientific-pedagogical, periodical, methodological, reference literature, regulatory documentation); system-structural analysis (for systematizing scientific facts about education and STEM education); chronological analysis; statistical analysis (collection, processing, analysis of data); comparative analysis; theoreticalgeneralizing method and interpretation method. It was established that the adopted draft law "G.I. Bill of rights", which is the result of intensive study of hundreds of bills and various proposals to the committees responsible for US legislation, taking into account the exhaustive description of measures and the speed of their development aimed at returning servicemen to civilian life, introduced revolutionary changes in the sphere of higher education in the US in the period from 1944 to 2008. It has been established that discipline. motivation, inspiration, and the desire to pass on one's knowledge to the next generation became the main feature of the pedagogical profile of the then teacher of a higher education institution in the USA. The G.I. Bill became the starting point for changing the educational environment in the USA, which led to the adoption of a number of educational bills in the next 70 years. Benefits under the G.I. Bill program are still in effect, helping veterans and military personnel to obtain a degree, study a certain profession, or achieve other educational and career goals, the opportunity to choose an educational program that includes not only an academic focus, but also the involvement of the student in a research project and experience, which is an effective modern STEM educational strategy for increasing the student's interest and perseverance in studying

in STEM fields. Military personnel and their family members in Ukraine have the right to free education at the expense of the state, but the enrollment of a person in an educational institution is carried out in accordance with the typical rules for admission to vocational or technical education institutions without a large number of benefits and monetary state support, unlike the G.I. Bill. The conducted research shows that obtaining STEM education by student veterans and military personnel, regardless of citizenship, creates additional challenges for them compared to the challenges faced by ordinary students. In the modern realities of Ukraine, the regulatory framework, universities and teachers must be ready to ensure reasonable and appropriate provision of educational services to military personnel and student veterans, taking into account their skills, abilities and wishes, in order to form the knowledge and professional competence necessary to perform both current and potential professional duties.

Key words: STEM education, education, Ukraine, USA, martial law, higher education, students, student veterans, military personnel, Bill.

Міжнародна співпраця України в соціокультурній сфері, військовій та громадській сфері, необхідність інтеграції до європейського та світового освітнього простору передбачають урахування загальних тенденцій розвитку STEM-освіти та інновації вітчизняної вищої школи, одним із напрямків яких є отримання освіти військовослужбовцями та ветеранами. В цьому контексті вважаємо доречним дослідити законопроект Сполучених Штатів Америки, відомий як G.I. Bill, в контексті його існування з 1944 по 2025 рік, який пройшов через низку переглядів за останні 70 років, та освітні пільги та переваги які він надає ветеранам та військовослужбовцям США, які бажають здобути вищу освіту, для використання цього досвіду в реаліях сучасної України. Мета статті полягає в аналізі особливостей отримання освіти після повернення з військової служби до цивільного життя та обґрунтуванні можливостей використання інноваційних ідей американського досвіду у визначенні перспектив розвитку цього напрямку в контексті глобальних та національних тенденцій в Україні. У дослідженні були використані конкретно-пошуковий та логіко-синтетичний аналіз (для збирання, аналізу, систематизації та узагальнення положень історичної, науково-педагогічної, періодичної, методичної, довідкової літератури, нормативної документації); системно-структурний аналіз (для систематизації наукових фактів про освіту та STEM-освіту); хронологічний аналіз; статистичний аналіз (збір, обробка, аналіз даних); порівняльний аналіз; теоретико-узагальнюючий метод та метод

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інтерпретації. Встановлено, що прийнятий законопроект «G.I. Bill of rights», який являє собою результат інтенсивного вивчення сотень законопроектів і різноманітних пропозицій до комітетів, відповідальних за законодавство США, враховуючи вичерпний виклад заходів і швидкість їх розвитку, направлених на повернення військовослужбовців до цивільного життя, приніс революиійні зміни в сферу вишої освіти США в період з 1944 по 2008 рр. Встановлено, що дисципліна, вмотивованість, натхнення, бажання передати свої знання наступному поколінню, стали основною рисою педагогічного профілю тогочасного викладача закладу вищої освіти США. Законопроект G.I. Bill став відправною точкою зміни освітнього середовища США, що призвело ухвалення ряду освітніх законопроектів в наступні 70 років. Пільги за програмою G.I. Bill діють досі, допомагаючи ветеранам та військовослужбовцям в отриманні наукового ступеня, навчання певної професії або в досягненні інших освітніх та кар'єрних цілей, можливості вибрати освітню програму, яка включає не тільки академічну спрямованість, но і залучення здобувача освіти до дослідницького проекту та досвіду, що є ефективною сучасною STEM-освітньою стратегією для підвищення інтересу та наполегливості здобувача у навчанні в галузях STEM. Військові та члени їхніх родин в Україні мають право на безоплатну освіту за рахунок держави, але зарахування людини до закладу освіти здійснюється відповідно до типових правил прийому до закладів професійної або профтехнічної освіти без великої кількості пільг та грошової державної підтримки, на відміну від G.I. ВіІІ. Проведене дослідження показує, що отримання STEM-освіти студентами-ветеранами та військовослужбовцями, незалежно від громадянства, створює для них додаткові виклики порівняно з викликами, з якими стикаються звичайні студенти. В сучасних реаліях України, нормативно-правова база, університети та педагоги повинні бути готові забезпечити розумне та відповідне надання освітніх послуг військовослужбовиям і студентам ветеранам з урахуванням їх навичок, умінь та побажань, з метою формування знань та професійної компетентності, необхідних для виконання як актуальних, так і потениійних професійних обов'язків.

Ключові слова: STEM-освіта, освіта, Україна, США, військовий стан, вища освіта, студенти, студенти-ветерани, військовослужбовиі, законопроект.

Formulation of the problem in general form.

Ukraine's international cooperation in the socio-cultural, military and public spheres, the need for integration into the European and global educational space, require taking into account general trends in the development of STEM education in the modernization of domestic higher education, one of the areas of which is education for military personnel and veterans [15], [36]. The primary state documents that determine the conceptual approaches, content and organization of education in Ukraine are the Law of Ukraine «On Education» [13], the Law of Ukraine «On Higher Education» [12], the Order of the Ministry of Education and Science of Ukraine «On the implementation of an innovative educational project of the all-Ukrainian level on the topic "Scientific and methodological support of STEM education in educational institutions" in September 2024 – December 2027» [25], the Order of the Cabinet of Ministers of Ukraine «On approval of the action plan for the implementation of the Concept for the development of natural sciences and mathematics education (STEM education) until 2027» [14], the Decree of the President of Ukraine «On the Regulations on military service by citizens of Ukraine in the Armed Forces of Ukraine» [37], the Order of the Ministry of Defense of Ukraine «On approval of Changes to the Features of training of applicants for the degree of Doctor of Philosophy and the degree of Doctor of Sciences in higher military educational institutions, military educational units of higher education institutions, scientific institutions of the Ministry system of Defense of Ukraine» [21], Order of the Cabinet of Ministers of Ukraine «On approval of the Strategy for the formation of a system of return from military service to civilian life for the period until 2033 and approval of the operational plan of measures for its implementation in 2025–2027» [16].

The above-mentioned documents emphasize the need to modernize higher education and develop STEM education in Ukraine, to form a balanced policy in the educational space of the country under martial law, and to form a system of return from military service to civilian life. In this context, it is important to study the positive experience of the leading developed countries of the world and, in particular, the USA, which is a multicultural state that has some experience in implementing a policy of supporting the education of military personnel and war veterans.

Analysis of recent research and publications. In modern domestic comparative pedagogy, considerable attention is paid to the study of the problems of the functioning of the educational system in Ukraine and the USA.

Issues of student education at universities in Ukraine and the USA are covered in the studies of P. S. Atamanchuk [1], S. F. Luk'yanchuk [20], A. V. Ocheretyanyi [29], K. V. Rybachuk [30], M. Rostoka [31], T. V. Tron [35], etc.

Aspects of the functioning of higher education in the USA are devoted to the works of M. Bratko [4], S. V. Burdina [5], M. V. Nagach [24], O. I. Kozmenko [18], Ya. S. Slutsky [32], I. F. Sulym-Karlil [34], etc.

Issues of education in Ukraine during martial law are studied by O. S. Duschenko [11], E. Nikolaev, et al. [28], N. Nychkalo, et al. [27], [23], etc.

Issues of scientific-historical, pedagogical and theoretical-methodological functioning of American higher education in the USA were covered in the works of foreign scientists: P. G. Altbach, et al. [38], C. Beck

& C. Kosnik [42], T. A. Campbell [51], B. Bernstein [44], J. Engler [59], P. A. Brady [46], W. C. Purdy [77], L. Roy, et al. [79], F. Rudolph [80], etc.

The development of STEM education in Ukraine and the United States was studied by P. Atamanchuk [1], N. R. Balyk & G. P. Shmyger [2], N. V. Valko [6], I. P. Vasylashko & T. Biluk [7], S. E. Volyanska [9], T. Godovanyuk [10], O. S. Kuzmenko [19], O. E. Stryzhak, et al. [33], L. M. Hrynevych, et al. [67], M. Fitzgerald, et al. [60], L. Hobbs, et al. [66], Z. Lavicza, et al. [71], K. Beswick & S. Fraser [45], L. M. Burke & J. B. McNeill [49], M. Caprile, et al. [52], A. Z. Macalalag, et al. [73], etc.

The issue of obtaining higher education by veteran students and military personnel was studied in the works of S. G. Brint & J. Karabel [47], C. J. Lucas [72], V. Schiavone & D. Gentry [81], B. Jenner [69], W. R. Spadoni [83], etc.

Analysis of recent research and publications shows that, like ordinary college and university students, many veteran and military students in Ukraine face obstacles to higher education, such as the need for financial aid, difficulties in combining studies with other aspects of social and civic life. In addition to these problems, these students also face a number of unique barriers to higher education, including mental health issues, lack of information about military bills of rights, benefits upon discharge from military service, educational benefits, additional difficulties during the transition from the military to civilian life. Finally, bureaucratic problems, such as the lack of clear information about educational benefits and difficulties with obtaining loans, also become an obstacle to obtaining higher education. In this context, we consider it appropriate to examine the United States bill, known as the G.I. Bill of Rights which has gone through a series of revisions over the past 70 years in the context of its existence from 1944 to 2025, and the educational benefits and advantages it provides to veterans and US military personnel who wish to obtain higher education for use this experience in the realities of modern Ukraine and eliminate the gap in educational and other services provided for in the Order of the Cabinet of Ministers of Ukraine dated December 31, 2024 No. 1350-r. «Strategy for the formation of a system of return from military service to civilian life for the period until 2033».

Highlighting previously unresolved parts of the overall problem. The analysis of domestic and foreign sources confirms the multifaceted nature of the problem under study and proves that, despite a number of works that highlight the issue of providing STEM education in Ukraine, under martial law, and in the post-war period, this study has not yet become the subject of systematic study and separate consideration. The feasibility of scientific study of the scientific-historical, pedagogical, and theoretical principles of providing education to military personnel

and veterans in higher education institutions in the United States and Ukraine is due to the need to overcome a number of contradictions in the development of the domestic higher education system between the growing requirements of modern society for the quality of STEM educational services and the insufficient level of their satisfaction in the domestic higher education system; the need to improve STEM education and approaches to student education under martial law; the need to train teachers and scientists with a high level of STEM educational training for professional activity in higher education institutions in Ukraine. To address educational, social, economic, and other issues regarding students veteran and military students in Ukraine, and to identify points of convergence and divergence that need to be addressed, researchers, policymakers, and educators would benefit from a deeper understanding of the processes that adult students go through when they come out of the military and enter higher education institutions. The insufficient pedagogical, theoretical and methodological development of the indicated problem, its social and practical significance determined the need to clarify the features of the education of military personnel and veterans in US universities after returning from military service in order to extrapolate American experience into the practice of higher education institutions in Ukraine.

The purpose of the article is to analyze the features of receiving education after returning from military service to civilian life and to substantiate the possibilities of using innovative ideas of the American experience in determining the prospects for the development of this direction in the context of global and national trends in Ukraine. The study was carried out in accordance with the theme of a comprehensive scientific research of the Department of Educational Sciences and Innovative Pedagogy of the G.S. Skovoroda Kharkiv National Pedagogical University "Scientific foundations and educational and methodological support of the pedagogical process in educational institutions: historical and pedagogical, comparative, prognostic aspects" (registration number 0121U107474) [26].

Presentation of the basic material. The rise of the US economy, which began during World War II, in some way affected all areas of life of the Americans of that time, and education was no exception. Higher education, which at the beginning of the 20th century was exclusively available only to the elite part of the population of the United States, suddenly became a necessary component of the country's successful development in the international arena [41]. At the beginning of the 20th century, obtaining higher education in the USA meant obtaining any professional-oriented education in two years of study or less, within the framework of continuing education after graduation. World War II posed dozens of difficult issues for

American society, in particular, participation in the fight against fascism, the issue of eugenics and the use of genetic engineering, the use of atomic energy, the development of military space programs, the development of computer language and the development of artificial intelligence, the development of industrial robotics, etc. All these issues required highquality specialists who could directly participate in solving such problems. Large federal appropriations during the war period gave a powerful impetus to the development of science in higher education institutions based on research departments, which caused a "research explosion" and required additional research sites and laboratories, as well as leading modern scientists and teachers. Research came to the fore in the field of higher education and became an indicator of the criterion of the academic capacity of universities and an indicator of the rating of teaching activities [68]. Academic teachers could not help but respond to general trends, moving from a strictly academic orientation in the presentation of their subjects to new ways of interacting with the classroom, research laboratory and the outside world, becoming more open in both educational and scientific activities. In the post-war years, the concept of "high technology" in the USA became a universal slogan of the economic viability of individual states of the country on a holistic map of the state. This created a favorable climate for public opinion, and as a result, almost every state provided many incentives for the promotion and development of universities and colleges on its territory, which essentially became a revival of higher education in the 20th century, which took place in parallel with several historical transformations in American higher education, each of which was the result of far-sighted state policy that took into account the processes of development, strategic planning and, in fact, constant changes in the higher education environment. The issues of educational development, a new formation in education, became a fundamental link and the basis of academic and scientific research on the development of American higher education by such scholars as R. L. Geiger [61], W. H. Jeynes [70], P. Conway, et al. [55], M. Crossley [56], L. Darling-Hammond & P. Youngs [57], B. C. Duke [58], J. Hannaway & J. Mittleman [64], R. A. Ingersoll [68], Ya. M. Belmaz [3], I. V. Kozubovska, et al. [17], N. I. Varga [8] etc.

After World War II, for the first time in American history, "education became the economic, cultural, and political locomotive of the country" [54], which was facilitated by a clear and well-founded policy of Congress and the Federal Government in the US educational system. Thanks to the Servicemen's Readjustment Act of 1944, passed by the United States Congress in 1944, which soon became popularly known as the «G.I. Bill of Rights» (officially the Servicemen's Readjustment Act of 1944) [85], [62],

[82], [84], social and financial assistance in obtaining education was provided for servicemen upon their return to their homeland [43].

The bill that was passed represents an intensive study of hundreds of bills and various proposals to the committees responsible for the legislation – the Senate Finance Committee and the House Veterans Affairs Committee. The Senate Committee's report describes the bill as "a fundamental bill of rights to facilitate the return of service men and women to civilian life. The committee does not contend that it is or can be the last word on the subject. We do assert that it is a comprehensive statement of the measures presently necessary and that it represents the very least that should be done at this time both in justice to the veterans and in enlightened self interest for the remainder of the country . . ." [85].

The term G.I. or GI is a term that can be traced back to World War I. American soldiers fighting in Europe, known at the time as doughboys, received supplies and military ammunition in containers marked «GI» (an abbreviation for «Government Issue»). During World War II, the term was used to describe soldiers in the «ground infantry» of the United States Army: Army infantry were often called GI Joe, something like John Q. Public is the general name for a male citizen. At that time GI stood for Government Issue or General Issue, depending on the source of the order for military operations. Over time, the term began to be used loosely as slang to describe ordinary servicemen in the United States armed forces, which also connected it to the household origin of the word [43]. The common origin of the term is that many household items that were delivered to the front and that were on the US Army's books, as well as the records of the supply of these items to the US Army, starting with galvanized iron, garbage cans and buckets were marked GI («Galvanized Iron»). Some servicemen saw this term as a sarcastic reference, symbolizing their belief that they were simply a mass-produced product of the government, which it was not a pity to use and forget about it. «GI» became a rather cynical term, meaning that soldiers were something like equipment issued by the United States government for temporary use.

The Servicemen's Readjustment Act of 1944 was carefully crafted and approved by the U.S. Congress, and signed by President Franklin Roosevelt on June 22, 1944.

John H. Stell (commonly referred to as the «Father of the G.I. Bill»), the Democratic Governor of Illinois, and Chairman of the Executive Committee of the American Legion, commonly known as the Legion (an organization of U.S. war veterans headquartered in Indianapolis, Indiana, that was formed in March 1919 in Paris, France, by officers and soldiers of the American Expeditionary Force (AEF) and includes U.S. state, territorial, and foreign departments [50]

mobilized public opinion to bring the Veterans Bill to President Roosevelt's desk on June 22, 1944 [39].

President Roosevelt initially proposed a much smaller program [75], focused on "part-time employment" rather than educational opportunities for service members and veterans, which became a key feature of the bill [39] This changed in the fall of 1944, when Roosevelt's special representative in the European Theater of Operations Anna M. Rosenberg, returned with a report on the postwar expectations of GI. From her hundreds of interviews with servicemen then fighting in France, it became clear that they wanted educational opportunities that had previously been unavailable to them. President Roosevelt "lit up", Rosenberg recalled, and subsequent amendments to the bill included provisions for higher education in the United States [63]. In addition, the final version of the bill provided immediate financial compensation for virtually all World War II veterans, thereby avoiding the highly controversial deferred payment of life insurance policies for World War I veterans that had caused political upheaval in the 1920s and 1930s [39].

Harry W. Colmery, chairman of the Republican National Committee and former national commander of the American Legion, is credited with writing the first draft of the GI Bill, jotting down his ideas on a stationery and napkin at the Mayflower Hotel in Washington, D.C. [84]. Massachusetts Republican Congresswoman Edith Nurse Rogers, who helped write and was co-sponsor the bill, can be called the «Mother of the GI Bill». But, as with Colmery, her contribution to the bill's writing and passage has been forgotten by history [74].

Most of the veterans of World War II came from middle-class families. Devastated and exhausted, they could not find their place in public life in peacetime. The jobs in the factories, the rural jobs, where they had worked before the war were either taken or technologically advanced and technologically improved by the influence of technological developments of industry and innovations. The G.I. Bill not only promised social assistance to members of the armed forces after World War II, it promised financial assistance for higher education and support for their studies. At the time of applying for assistance, 30% of servicemen were married, 10% had children. Former servicemen believed that a college degree would improve their chances of getting a good job in the postwar economy. Some went to liberal arts colleges, others to technical and vocational schools, many of them entered universities. Their academic success forced everyone involved in higher education to rethink its goals. By 1956, 7.8 million veterans had received education benefits under the Act, about 2.2 million had received college or university benefits, and another 5.6 million had received some other type of educational program.

Historians and economists consider this bill a major political and economic success, especially compared to the medical benefits for World War I veterans. This bill made a significant contribution to the preservation of America's human capital, which contributed to the country's long-term economic growth. But the law was criticized for the inability of some for-profit educational institutions to ensure the bill's effect on African Americans [76].

In just a few years, American war veterans changed the image of the applicant for higher education. Many of these students would not have otherwise received a university education [48]. Discipline, motivation, inspiration, and the desire to pass on their knowledge to the next generation thanks to this bill became the main feature of the pedagogical profile of the then teacher of a higher education institution in the United States. Over the next decade, the U.S. federal government significantly increased its investment in scientific and technological research and in public education, largely in response to the United States' international competition with the Soviet Union. Colleges and universities began to benefit from the new educational policies; this was evident in higher enrollments, more valuable physical facilities, and more prestigious faculty at many schools [78].

The G.I. Bill of Rights provided for the expansion and strengthening of hospital facilities (Title I); educational and training opportunities for servicemen and veterans; special tuition and living expenses for attendance at high school, college or vocational school, or university (Title II); loans to assist in the purchase of a home or in the renovation and construction of a home for residence and loans to purchase farms or business property (Title III); assistance in obtaining employment in the United States from the Employment Service (Title IV); rehabilitation assistance, and one year of unemployment compensation until the veteran was employed (Title V). These benefits, most of which were limited to certain periods after the veteran's discharge or release from the armed forces or the end of the war, were in addition to the various benefits now provided by existing law to veterans and their dependents or survivors. These benefits were available to all veterans who had been on active duty during the war for at least 90 days and had not been dishonorably discharged.

In signing the bill, President Franklin Roosevelt declared that the "a well-rounded program of special veterans' benefits" had been completed, including the provision of credits to the Federal Old Age Insurance System and the yearly expenses of all military service members, personnel and for women, for the period of their military service. The new law, in its words, "gives emphatic notice to the men and women in our armed forces that the American people do not in tend to let them down. . . . This bill . . . and the former legislation provide the special benefits which are due to the

members of our armed forces – for they 'have been compelled to make greater economic sacrifice and every other kind of sacrifice than the rest of us, and are entitled to definite action to help take care of their special problems.' While further study and experience may suggest some changes and improvements, the Congress is to be congratulated on the prompt action it has taken" [85, p. 3].

In addition to World War II veterans and service members (49%), Vietnam War veterans (72%) and Korean War veterans (43%) have also used the G.I. Bill for educational purposes [40]. The G.I. Bill's initial term expired in 1956.

Although blacks faced many obstacles in their pursuit of G.I. Bill benefits, the bill significantly increased the number of African Americans attending college and graduate school. In 1940, black college enrollment was 1.08% of the total enrollment in all other colleges in the United States. By 1950, the number of students who took advantage of the bill and enrolled in college had reached 3.6%. However, these gains were limited almost exclusively to Northern states, and the educational and economic gap between whites and blacks nationally widened under the influence of the G.I. Bill [86]. Because 79% of the black population lived in Southern states, educational achievement was limited to a small portion of black Americans. [65].

The next step in the use of the G.I. Bill was in 1981, when the bill was rewritten and Bill became known as the Montgomery G.I. Bill. The bill was then revised several times, expanding the list of benefits, such as in 2007, when Senator Hillary Clinton introduced the «21st Century GI Bill of Rights Act of 2007». This bill provided the right to basic educational assistance (totaling 36 months) to military or reservists who, after September 11, 2001: (1) were overseas; (2) or served at least two years and/or were discharged from service for health reasons [53]. And in December 2010, Congress US passed the Act, often called GI Bill 2.0, to improve assistance to veterans in education and reservists in education. This program provides about 50 months of educational benefits. But the possibilities are even greater. Benefits can be used for degree and certificate programs, apprenticeships, and training while serving in the military. Wife of veterans and ex-wife are sometimes offered free courses.

It was thanks to the G.I. Bill, the student enrollment increased dramatically after World War II compared with the first half of the 20th century. Universities and colleges felt the brunt of the increased enrollment in the postwar years; for example, in Colorado, enrollment in colleges and universities jumped 51% from 1951 to 1963, actually increasing to 16,650 students in 1948 and 18,143 students in 1960. The University of Arizona recorded a similar increase: in 1945 the number of students was 3,445; in 1950 there were 6,227, and in 1958 the number of students was 13,000.

In the postwar era, new types of institutions did not appear, but existing types were adapted to serve groups of students who first gained access to higher education. Changes in the field of higher education in the mid-twentieth century, became "revolutionary", if we take into account the scale and speed of their development. By 1940, there were about 1,700 universities and colleges in the United States, where almost 120 thousand teachers worked and 1.4 million undergraduates and graduate students studied, which was 14% of the "college-age" population. In 1970, the number of higher education institutions increased to 2,850, the number of teachers was over half a million, and the student contingent exceeded 8.5 million people, which corresponded to 50% of university-age youth.

The G.I. Bill became the starting point for changing the educational environment in the United States, which led to the adoption of a number of bills, namely, starting in 1958, the American Association of University Unions (AAUU) began issuing annual reports under the title "Economic Status of the Profession", trying to draw public attention to economic problems in the academic environment and contribute to their solution. The National Defense Education Act is passed, which provided significant government subsidies for doctoral students totaling almost \$ 450 million. Most of the funds came in the form of fellowships, teaching and laboratory assistantships through national science foundations and institutes. As a result, enrollment in post-baccalaureate programs increased by 305% between 1938 and 1958 and reached about 278 thousand people in 1965, and 350 thousand people in 1970, and 510 thousand people in 1980.

In 1963, the Higher Education Facilities Act appeared, which provided for the allocation of significant state funds to colleges and universities to create educational facilities, laboratories, and libraries. The Economic Opportunity Act (1964) allowed universities to develop and establish various types of scholarships and financial assistance programs for students from the state grant fund.

In this regard, consistent to STEM education G.I. Bill of Rights benefits are help assist in:

- I. Work for Degree, namely
- 1) Earning a bachelor's and master's degree, which includes assistance with tuition, books, and housing at an institution of higher education (e.g., a 4-year university, community college, or graduate school).
- 2) National Test and Preparatory Course Assistance, which includes reimbursement of national test (or exam) costs and covering the cost of education for preparatory courses.
- 3) Participation in overseas programs, namely funding for tuition and housing at a school located outside the United States.

- 4) Tuition Assistance, namely additional funds to pay for tuition if the cost of tuition exceeds the amount covered by the Military Tuition Assistance Program.
- 5) Tuition Assistance, namely, assistance with paying for tutoring services if you are having difficulty with coursework.
- II. Training in a specific career, specialty, or field, namely
- 1) Licensing and certification tests and preparatory courses, namely, reimbursement of the costs of licensing and certification tests (exams) and preparatory courses.
- 2) Accelerated payments for high-tech programs, namely, a one-time payment that helps cover the cost of courses in high-tech programs with or without a degree.
- 3) Non-college degree programs, namely, funding for specialized training programs (such as HVAC repair, truck driving, or first aid training).
- 4) Summer training, namely, assistance with pilot training.
- 5) On-the-job training and apprenticeships, namely, money to pay for tuition, supplies, and housing while learning a trade or skill (such as plumbing, hospitality, or firefighting).
- 6) Entrepreneurship training, namely, access to training that will help you start your own business.
 - III. Work While You Study, namely
- 1) Cooperative Education, which includes assistance with tuition, books, and housing if you are a member of a college or university cooperative education program
- 2) Work-study, which includes the opportunity to receive part-time pay while attending a college, vocational school, or vocational school.
 - IV. Homeschooling, which includes
- 1) Distance Learning, which includes funding for distance learning (coursework submitted by mail, online, or through another device) if you want to attend classes from home or live far from schools.
- 2) Self-paced and distance learning, which includes assistance with online courses.

In Ukrainian society, the concept of the Strategy for the Formation of a System for Returning from Military Service to Civilian Life for the Period Until 2033, was recognized in the Resolution No. 1350-r of the Cabinet of Ministers of Ukraine dated December 31, 2024. Unfortunately, in two main points of this strategy, namely 1) To approve the Strategy for the Formation of a System for Returning from Military Service to Civilian Life for the Period Until 2033 (hereinafter referred to as the Strategy), attached, and 2) To approve the operational plan of measures for the implementation in 2025-2027 of the Strategy for the Formation of a System for Returning from Military Service to Civilian Life for the Period Until 2033 (hereinafter referred to as the Operational Plan), attached [15], the question about receipt of education by veterans and servicemen is not given appropriate or significant importance; the concept of obtaining or assisting in obtaining STEM education by veterans and servicemen is not thought out. The implementation of the Strategy in Ukraine according to Order No. 1350-r is carried out in three stages, namely, the first stage (2025–2027), the second stage (2028–2030); the third stage (2031–2033). It is at the second stage that it is planned to ensure the availability of rehabilitation services, social, psychological, educational and other services provided for by reintegration programs and territorial development programs. However, there is currently no information on how exactly the availability of services will be implemented, whether state support is planned.

Today, the following rights and educational opportunities are available to the Ukrainian military:

- choose a military profession and get the opportunity for career growth, taking into account personal wishes;
- enter institutions of pre-higher military education, higher military educational institutions and military training units of higher education institutions to obtain higher education;
- receive a bachelor's degree and a tactical level of military education;
- enter a Higher Military Educational Institution, enter a Military Training Unit of Higher Education Institutions to obtain the first level of higher education (bachelor's degree) in a specialty related to civilian (without separation from service) after signing a second contract;
 - learn foreign languages for free if necessary;
- receive a priority referral for training to training centers of NATO member states;
- receive the right to professional adaptation in case of discharge from military service;
- to undergo preparatory programs and advanced training and professional level courses to obtain new military specialties from training centers by decision of the commander.

Members of military personnel's families receive, among other things, the following social guarantees:

- children of military personnel have the priority right to enroll in general and preschool educational institutions and children's health camps regardless of ownership;
- family members studying in state educational institutions may be transferred to state educational institutions closest to the new place of military service or place of residence;
- family members studying in state educational institutions have the opportunity to be transferred to study at places of state order (at state expense), if they studied at their own expense [22], [37].

Military personnel and their family members in Ukraine have the right to free education at the expense of the state, but enrollment in an educational institution

is carried out in accordance with the standard rules for admission to vocational or technical education institutions without a large number of benefits and monetary state support, which is recognized in the United States Bill, known as the G.I. Bill.

Conclusions. The study shows that the education of veteran students and military personnel, regardless of citizenship, creates additional challenges for them compared to the challenges faced by ordinary students. In the current realities of Ukraine, the regulatory framework, universities and educators must be prepared to ensure the reasonable and appropriate provision of educational services to military personnel and veteran students with some minor adaptations specific to veteran students. These students can gain more equal access to all the benefits of education, because the visible and invisible disadvantages associated with combat operations place a significant burden on veteran students that most of their classmates do not have to face and may not fully understand.

The scientific and pragmatic interest in the STEM education system of student veterans and military personnel in the United States is explained by the fact that the regulatory and legislative framework of the United States has implemented modern innovative practice-oriented learning technologies, created an extremely developed educational and material base and ensured a high level of training of future STEM specialists. The G.I. Bill of Rights, for 70 years, has ensured the right to education for people who have completed their military career and are adapting to civilian life, unlike many other military bills designed for active duty. Most public and private higher education institutions in the United States help military personnel and veterans in their education, and the G.I. Bill, in addition to providing social, medical and household benefits, covers most of the cost of training and improving professional qualifications.

In Ukraine, a concept aimed at ensuring long-term effectiveness of professional support for veterans and military personnel is just beginning to be implemented. We hope that this concept will function as a continuous process of professional improvement and will provide an opportunity for future veteran students to receive STEM education, taking into account their skills, abilities, and wishes, in order to form the knowledge and professional competence necessary to perform both current and potential professional duties.

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