

ORGANIZATIONAL ISSUES WITH TECHNICAL SPECIALITIES IN BACHELOR'S DEGREES

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<https://doi.org/10.56243/18294898-2022.3-84>

Abstract

Man-made crises in the world have become serious threats (risks) especially for the socio-economic and cultural development of small developing countries. In order to face the challenges, the Republic of Armenia and the Republic of Artsakh should accept human capital as a resource, the driving force of its preservation and development is education and science. In the post-Soviet years, as a result of repeated wars and constant tensions in the South Caucasus, the scientific and educational system in Armenia and Artsakh was also significantly affected. Not getting a high-quality secondary education, the young generation faces great difficulties especially on the way to get higher scientific and technical education. As a result, there has been a sharp decline in the number of specialists in a number of the most important professions for our countries, which threatens to develop into a deep crisis in the nearest future.

A program to be tested at the Shushi University of Technology is proposed, the implementation of which solves two important problems: In order to fulfill their mission, universities create a student body with a sufficient level of knowledge, and young people who

want to get an education, but for reasons beyond their control, did not receive a high-quality secondary education, are given the opportunity to receive a full professional higher education.

Key words: education, knowledge, exam, university, quality.

Introduction

In the XXI century, knowledge, creativity and innovation have become a guarantee of human capital development, economic and cultural sustainable progress. Education is seen as the main means of confronting entrenched poverty, deepening social polarization, jeopardizing democratic developments, disasters and risks, including new challenges emerging as a result of globalization. At the same time, the effectiveness of responding to these problems through education is often questioned and the problem of the global crisis of education comes to the fore. In the modern world, more often people talk about the right to learn, rather than the education of a person. Access to an effective environment for quality education becomes the main platform for the development of individual human abilities, which in turn ensures the realization of education as a public good. Although the right and opportunities to receive education in Armenia are comparable with similar indicators of advanced countries in the world, there are still problems related to the quality and efficiency of education, which require radical solutions [1].

Developing countries often wish to have higher education institutions comparable to traditional universities that have followed a respectable path of development. However, it is a difficult, in many cases unsolvable problem. Adding to this tension are the standards set for academic institutions. In particular, those universities that use English as the main language of teaching and research, have a wide variety of subjects and programs, and receive significant research funds from the state and other sources are particularly favored [2].

Clearly, both state and university capabilities play a key role in determining a university's ranking. This puts developing countries in a very unfavorable situation and directly affects the development of universities. However, the progress of globalization creates an opportunity to solve this problem to some extent by enabling higher education institutions to train diversified groups of professionals with the skills and knowledge necessary for the economy. Even the current global political and financial crisis, which will create problems for higher education in many countries, cannot fundamentally change the course of development of the scientific and educational system. This challenge requires authorities, university administrations and professors to rethink the structure of traditional degree-based learning processes as well as the pedagogy of the past. "Talk and chalk" alone cannot be considered adequate at present. The most prominent problem in the field of vocational education continues to be the mismatch of professional skills with the demand of the labor market. The structural mismatch between the real, dynamic needs of the labor market and the supply of specialists released by educational institutions to the labor market leads to a violation of the supply-demand balance. Addressing this issue, the Rethinking Education message considers work-based learning a strategic priority; "Work-based learning, such as the dual approach, should be a central pillar of the vocational education and training system with the aim of reducing youth unemployment, ensuring a smooth transition from study to work and developing the ability to respond to the skills demands of the labor market." In Europe, work-based learning is already considered an effective way to acquire skills in line with labor market requirements, and social partners play an important role in helping to address the skills mismatch of graduates and reduce unemployment [1, 3].

Self-regulated learning involves three components: cognition, metacognition, and motivation. Cognition is the mental process involved in acquiring and perceiving knowledge,

in other words, all the information we acquire through learning or experience. Metacognition is the process of establishing control over the knowledge acquired by a person and directing it. Motivation is a person's willingness to apply his metacognitive and cognitive skills in various processes [4].

A person learns to control his thoughts, observing the actions of people, the environment, existing problems and challenges. The amount of growth of metacognition is proportional to the growth of a person's knowledge and life experience, his strategy to achieve problems and goals, and all these factors are interrelated. Metacognition is essentially the monitoring and control of one's thoughts [4, 5].

Bandura, in contrast to cognitively based metacognition, views self-regulation as a process resulting from a person's emotions and behavior on the external environment [6].

However, the basis of the descriptions of self-regulation and metacognition are almost the same, and in a sense, the two can be seen as mirror images. Metacognition has a clear basis of cognitive orientation, and self-regulation derives from a person's actions, which in turn are indirectly dictated by the brain. Self-regulation is a person's monitoring and control of their emotions and behavior [7, 8]. Moreover, the understanding of metacognition and self-regulation should be sought in the broad context of the activities of people of all ages and developmental levels [9].

How learners become self-regulated in learning has fascinated researchers for decades. Initial attempts to assess self-regulated learning through questionnaires and interviews revealed a number of important predictors of student academic outcomes. A second wave of research involved the development of online measures of self-regulatory processes and motivational factors toward learning, including the influence of learner goal setting on self-monitoring. Finally, a clear answer should be found to the most important question: how students can become regulators of their learning processes [10].

2016 17 sustainable development goals included in the "Sustainable Development Agenda 2030", adopted by world leaders in 2015, entered into force. during the UN summit held in September. Armenia, being a member state of the United Nations and a full subject of international law, should show the necessary readiness and political will to properly develop and nationalize the 17 goals of the sustainable development of the United Nations [11]. According to the 4th goal of the document, by 2030 it is planned to greatly increase the number of young people and adults who have technical and mid-vocational skills for employment, decent work and entrepreneurship. To promote sustainable development, all learners must be supported to acquire the necessary knowledge and skills. In order to solve this problem, it is necessary to admit that the development of higher education programs based on the final results of study is still not able to effectively respond to the demands of the labor market. The degree of modernization, internationalization and resulting competitiveness of the higher education system is low [1]. In order to ensure the transfer of Armenia and Artsakh to the path of transformation and development, it is a priority to have an educated and proactive citizen by imparting knowledge and professional skills to young people. Reflecting on his academic progress, the student tries to evaluate how effective it was, how he can apply the acquired knowledge and skills in life. In case of reaching a positive conclusion, being excited by the obtained results, he will definitely increase his efforts in the cognitive process, being convinced of getting opportunities to apply them effectively in the future.

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What has been stated above provides a basis for asserting that the formation of the best ratio of effective state management and university autonomy and freedoms and the implementation of relevant measures should become the priority direction of development in the discussed field.

Conflict setting

In the post-Soviet years, as a result of repeated wars and constant tension in the region, the scientific and educational system in Armenia and Artsakh was also significantly affected. Not getting a high-quality secondary education, the young generation faces great difficulties especially on the way to get higher scientific and technical education.

The main problem is aggravated by the fact that the economic reforms carried out in the two Armenian republics led to significant changes in the economy, in the structure of the GDP, the formation of new productions, new types of activities, as well as the previously existing, widespread (eg: engineers, builders, agricultural narrow specialties, etc.) to the "elimination" of a number of specialties, as a result of which tectonic shifts took place in the labor market, after which the university system is still unable to deliver. And if we keep in mind that especially university educational and training programs are developed for at least five years, then the gap that exists between the specialists prepared by the university system for the labor market and the demand for the corresponding personnel will become obvious. In other words, the current educational system does not have sufficient professional skills and flexibility (operational) to prepare and train relevant personnel, which has become one of the main reasons for the crisis in the system.

As a result, in a number of the most important professions for the country, there has been a sharp decline in the number of specialists, which threatens to develop into a deep crisis in the nearest future. Based on the current situation, until the recovery of the secondary education system, the task is to transfer part of the functions of the high school to the universities in order to ensure the normal operation of the higher education institutions by minimizing (eliminating) the gaps and deficiencies in the secondary education system.

Research results

In the conditions of war operations and the danger of their unleashing, the natural science subjects in the secondary education system are mostly affected: mathematics, physics, chemistry, biology. As a result, the proportion of applicants in the higher education system with scientific and technical specialties is decreasing. At the same time, the percentage of applicants who did not overcome the positive threshold of the entrance exams is much higher in science subjects than in humanities.

Thus, for example, in the 2022-2023 academic year, 22 thousand places were allocated to the universities of the Republic of Armenia. The number of applicants decreased by 37% (13,887 people). 11,587 applicants took part in the joint entrance exams, 9,729 of them were admitted to universities, including 1,670 applicants in the free system. As in the last 30 years, this year the highest number of applicants was recorded in humanitarian professions. Again, natural science and value-added professions remained vacant. In particular, only 40 applicants were admitted this year at the only university that trains specialists in the agrarian sector, which is important for the country. The picture is general (except for a few specializations) in almost all technical universities. According to the authorized body of the government, the main reasons are the low level of awareness, the lack of awareness about the final results in public schools, the lack of information about the educational programs of universities [12].

Let's analyze the situation related to the admission to the bachelor's program for the academic year 2022-2023 using the example of Yerevan State University. Here, the largest number of admissions was recorded in the economics block: 435 admitted applicants (Fig. 1).

It should be noted that the block of economics specialties includes 74 and 53 persons, respectively, 74 and 53 persons admitted to the "Actuarial and Financial Mathematics" and "Applied Statistics and Data Science" educational programs (hereinafter also referred to as the specialty) for a total of 127 persons. If we subtract this number of applicants with mathematically oriented economics specialties from the number of applicants admitted to the economics block, we will get 308 admitted applicants. The number of applicants admitted to the "Jurisprudence" specialty is 144, and 97 to the block of public, religious and sociological orientation. In addition, 28 of the 97 accepted applicants want to become social workers, and 21 - public relations specialists. The number of applicants accepted in the "Service" profession is 86. Only Yerevan State University fig. The number of applicants admitted with the specialties listed in 1 is about 8% of the applicants admitted to all universities of Armenia. And if we add this to fig. The number of applicants admitted with humanitarian majors not mentioned in 1, then it will become clear that the number of applicants with humanitarian majors to Yerevan State University alone, without including languages and the fresher block, will exceed 12% of the total number of applicants admitted to all Armenian universities.

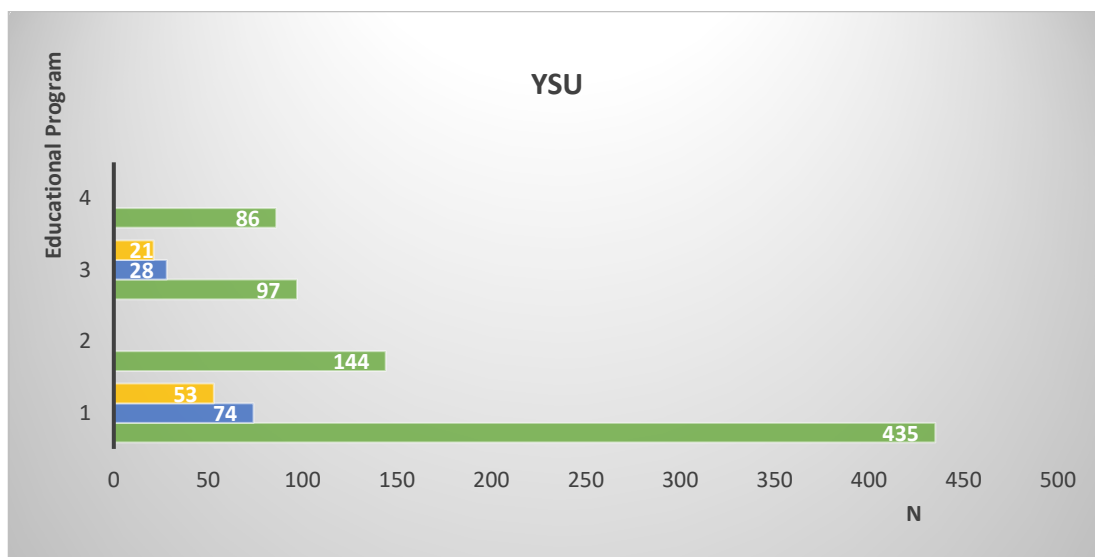


Fig. 1 Admission rates for the 2022-2023 academic year at Yerevan State University with several humanitarian educational programs

1 - Block of economic specialties, 2 - Law,
3 - Block of public, religious and sociological orientation, 4 - Service

The situation is different with regard to natural science educational programs. The numbers of applicants admitted to several natural science educational programs of Yerevan State University are given in Fig.2.

We think that there is no need to interpret the picture, let's just note that only one person was admitted to the university with the specialty of geology, which is the most relevant for the state.

A similar analysis for several universities of Armenia and Artsakh will be presented in the following works.

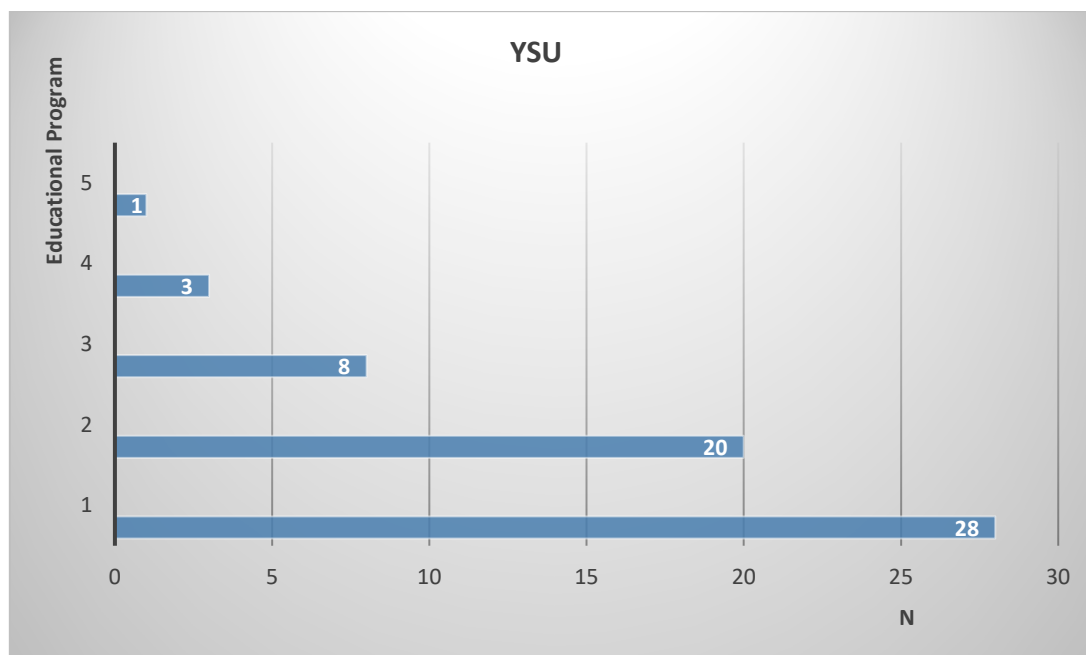


Fig. 2 Yrevan State University admission rates for the 2022-2023 academic year with several science education programs

1 - Biochemistry and biotechnology, 2 - Biology, 3 – Chemistry, 4 - Geography, 5 - Geology

In our opinion, the above assessment of the authorized body regarding the created situation, presenting as the main reasons the low level of awareness of the applicants, the lack of awareness about the final results in public schools, the lack of information about the educational programs of the universities, is not realistic. In Armenia and Artsakh, the low rate of applicants for natural science and engineering (including agrarian) educational programs is mainly due to two factors:

1. Low level of motivation to become specialists in natural science and engineering. This problem is not only the university. The state should develop and implement a program of complex measures aimed at sharply increasing the labor attractiveness of value-creating specialists and, first of all, the expected incomes.

2. In many areas of the economy, instead of highly qualified specialists, persons without appropriate education, who do not meet professional skills and qualifications are hired, which reduces the demand for specialists in higher education. For example, as is well known, one of the most important branches of the economy of the Republic of Armenia is brandy and winemaking, which was ensured in time by the successful policy of the state, including by educating and equipping the sector with specialists with appropriate qualifications. It is also not disputed that this sector provides significant revenues to the state budget, including through the consumption and export of products with high added value. It is also important to note that it is related to agriculture and manufacturing industries, which provide high employment. However, as evidenced by the results registered at the Agrarian University of Armenia for the last three years, there were no applicants in the professions of fruit growing, vegetable growing and viticulture at all. This problem has another important aspect. It is about the fact that university teaching staff in certain specialties are essentially deprived of the opportunity to work, as a result of which they lose the skills and abilities acquired over decades, and the further restoration of which will be much more "costly" for society and will require a huge time.

3. Most of the applicants are not ready to pass entrance exams in science subjects (mainly mathematics, physics, chemistry, biology). As a rule, the second component

necessary for self-regulated learning, metacognition, is also impaired in the conditions of insufficient cognition of the applicant who studied in the secondary education system, which has undergone a significant setback in the post-Soviet period.

In these conditions, motivation cannot be a sufficient factor for applying the person's metacognitive and cognitive skills in various processes, due to their absence. As a result of the incomplete secondary education system, the problems related to the assimilation of science subjects can be mitigated to a small extent thanks to the efforts of tutors, but it is not systematic and does not provide accessibility for a wide range of students. The authorized body of the government can deepen the problem, because it aims to implement distance admission in universities with the same, unified approach, transferring the function of conducting entrance exams and competition to the assessment and testing center. According to the authorized body, the planned changes are due to reforms in the field of higher education and the approach to form a unified approach. It is expected that the new regulation will make the process of university admissions more efficient and orderly [12].

We think that this is not a good idea, because one of the main reasons for the situation created over the past 30 years is the mechanism of organizing entrance exams through the assessment and testing center. It is high time to realize that the main control should be set not on the applicants, but on the level of knowledge and skills of university graduates.

In Shushi University of Technology, a pilot program was developed and implemented in 2021, with which applicants, without passing entrance exams, begin studying in undergraduate engineering or agricultural education programs.

In the first academic year, students, depending on the chosen major, complete the school course of mathematics and physics (in the case of engineering majors) or chemistry and biology (in the case of agrarian majors).

In order to transfer to the second year, the student must get a positive grade in both subjects. A student who receives an "insufficient" grade in any of the mentioned subjects is expelled from the university. An additional round is organized for students who did not appear for the exam, if the absence was considered honorable.

The exams are organized with subject programs of the science stream approved by the authorized body, on the basis of guaranteed textbooks and problem books for compulsory use in public educational institutions.

A student who successfully passes the first year of the pilot program completes the course required to obtain a bachelor's degree in three years (second to fourth year). If we take into account that three years are generally planned for obtaining bachelor's education in European universities, then the proposed program is completely realistic.

The implementation of this program solves two important problems: In order to fulfill their mission, universities create a student contingent with a sufficient level of knowledge and, what is more important, young people who want to get an education, but for reasons beyond their control, do not get a quality secondary education, are given the opportunity to get professional higher education, which, first of all, comes from the state interests.

The program should operate until the full establishment of the secondary education system in Armenia and Artsakh, after which the first year of undergraduate studies will be shortened, reserving credits in some subjects to high school, and the duration of undergraduate studies will become 3 years, becoming comparable to leading European universities.

Conclusion

The low rate of applicants with value-added educational programs in Armenia and Artsakh is mainly due to the low level of motivation to become specialists in natural sciences,

agriculture and engineering. This problem is not only of the university. The state should develop and implement a program of complex measures aimed at dramatically increasing the attractiveness of work and expected income in the specified areas.

Most of the applicants are not ready to pass entrance exams in science subjects. In the conditions of insufficient cognition of the applicant who studied in the secondary education system, which has undergone a significant setback in the post-Soviet period, the second component necessary for self-regulated learning, metacognition, is also impaired. In these conditions, motivation cannot be a sufficient factor for applying the person's metacognitive and cognitive skills in various processes, due to their absence.

One of the main reasons for the situation created in the field of science and education during the three post-Soviet decades is the mechanism of organizing entrance exams through the assessment and testing center. The organization of admission to higher educational institutions should be entrusted to universities, and state and public control should be determined not by applicants, but by the level of knowledge and skills of university graduates. In this case, it will be possible to develop and implement various programs that will enable universities to solve at least two important problems: in order to fulfill their mission, to create a student contingent with a sufficient level of knowledge and to provide an opportunity for young people who wish to get an education, but for reasons beyond their control, did not receive a high-quality secondary education, to receive a professional higher education.

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ՏԵԽՆԻԿԱԿԱՆ ՄԱՍՆԱԳԻՏՈՒԹՅՈՒՆՆԵՐՈՎ ԿՐԹԱԿԱՆ ԳՈՐԾԸՆԹԱՑԻ ԿԱԶՄԱԿԵՐՊՄԱՆ ԽՆԴԻՐՆԵՐԸ ԲԱԿԱԼԱՎՐԻԱՏՈՒՄ

Մարկոսյան Ա.Խ.^{1,2}, Միքայելյան Ն.Ա.², Հարությունյան Ա.Կ.², Երոյան Ե.Պ.²

¹Երևանի պետական համալսարան

²Շուշիի տեխնոլոգիական համալսարան

Աշխարհում տեղի ունեցող անթրոպոգեն և տեխնածին ճգնաժամերը լուրջ սպառնալիք են դարձել հատկապես փոքր երկրների համար: Հայաստանը և Արցախը առաջադրվող մարտահրավերներին դիմակայելու որպես ռեսուրս պետք է ընդունեն մարդկային կապիտալը, որի պահպանման և զարգացման շարժիչ ուժը կրթությունն ու գիտությունն են:

Հետխորհրդային տարիներին Հարավային Կովկասում պարբերաբար կրկնվող պատերազմների և մշտապես պահպանվող լարվածության հետևանքով, Հայաստանում և Արցախում էապես տուժել է նաև գիտակրթական համակարգը: Չստանալով որակյալ միջնակարգ կրթություն, երիտասարդ սերունդը մեծ դժվարությունների է հանդիպում հատկապես բնագիտական և տեխնիկական բարձրագույն կրթություն ստանալու ճանապարհին: Արդյունքում, մեր երկրների համար մի շարք կարևորագույն մասնագիտությունների մասով, առաջացել է մասնագետների թվաքանակի կտրուկ անկում, ինչն ամենամոտ ապագայում սպառնում է վերաճել խորը ճգնաժամի:

Առաջարկվում է Շուշիի տեխնոլոգիական համալսարանում փորձարկվող մի ծրագիր, որի իրականացմամբ լուծվում է երկու կարևոր խնդիր. համալսարաններն իրենց առաքելությունն իրականացնելու համար ստեղծում են գիտելիքների բավարար մակարդակով ուսանողական կոնտինգենտ և կրթություն ստանալու ցանկություն ունեցող, սակայն իրենցից անկախ պատճառներով, որակյալ միջնակարգ կրթություն չստացած երիտասարդներին հնարավորություն է ընձեռնվում ստանալ մասնագիտական բարձրագույն կրթություն:

Բանալի բառեր. կրթություն, գիտելիք, քննություն, համալսարան, որակ:

ПРОБЛЕМЫ ОРГАНИЗАЦИИ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА ПО ТЕХНИЧЕСКИМ СПЕЦИАЛЬНОСТЯМ В БАКАЛАВРИАТЕ

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Происходящие в мире антропогенные и техногенные кризисы стали серьезной угрозой, особенно для небольших стран. Армения и Арцах, в качестве ресурса для противостояния выдвигаемым вызовам, должны принять человеческий капитал, движущей силой сохранения и развития которого являются образование и наука.

В постсоветские годы в результате периодически повторяющихся войн и постоянно сохраняющейся напряженности на Южном Кавказе, существенно пострадала и научно-образовательная система в Армении и Арцахе. Не получая качественного среднего образования, молодое поколение сталкивается с большими трудностями, особенно на пути к получению высшего естественнонаучного и технического образования. В результате, по ряду важнейших для наших стран специальностей произошло резкое сокращение числа специалистов, что грозит в ближайшем будущем перерасти в глубокий кризис.

Предлагается апробируемая в Шушинском технологическом университете программа, реализация которой решает две важные задачи: для осуществления своей миссии университеты создают студенческий контингент с достаточным уровнем знаний, а молодым людям, желающим получить образование, но по независящим от них причинам, не получившим качественное среднее образование, предоставляется возможность получить высшее профессиональное образование.

Ключевые слова: образование, знания, экзамен, университет, качество.

Submitted on 06.09.2022.

Sent for review on 07.09.2022.

Guaranteed for printing on 14.10.2022.