



REFORMS IN HIGHER EDUCATION INSTITUTIONS AND PHILOSOPHICAL ASPECTS OF FORMING YOUNG PEOPLE'S MATHEMATICAL COGNITION

Kilichev Farkhod Davlatyarovich

Researcher, Urgench State University

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ABSTRACT

This article highlights the reforms in higher education institutions and philosophical aspects of forming young people's mathematical cognition. Furthermore, increasing the intellectual potential of young people, developing creative activity in them, involving them in the effective solution of socio-economic problems through the formation of digitization skills are discussed.

KEY WORDS: *education, Third Renaissance, personnel, mathematics, cognition.*

In our country, there is an increasing demand for highly educated personnel and the high interest of young people in getting higher education. According to the accounting books of experts, the total demand for vacancies (as of April 29, 2022) with higher education is 49.3%.

Also, higher education plays an important role in the creation of the knowledge needed for the future, known as research and development, in addition to the economy in relation to human capital competence. Higher education institutions are the main factor determining the scope of scientific research in the country, and the rate of return on investments in scientific development is 80 percent". It is known that 80 percent of our investments are made in the training of highly educated specialists. It is less than that of advanced countries, of course. It seems paradoxical to invest at a time when employment of even highly educated personnel (up to 30% in some sectors) remains a problem. However, our people do not spare their money in order to raise their children to be educated, professional and beneficial to the country. No matter how much our state invests, it will still be the responsibility of parents to educate their children and give them higher education. We found out during the interviews how much the families spend on their children every month (in US dollars), and we came to the opinion that they can be divided into three groups. Low-income families spend about 200-300 dollars for their children, middle-income families spend 500-700 dollars, rich families spend 1000-1200, even 1500 dollars. Even low-income families try to save money for their children's higher education. "More than half of the cars collected around universities belong to young students, so it is not difficult to understand how big the investment of parents is. What is interesting for us is that the investments made by families in finance, economics, polytechnic, architecture universities, which require mathematical thinking, are almost equal to the investments made by their families, as well as the investments made by students in the fields of jurisprudence and diplomacy (1,000, 1,200, even 1,500 US dollars per month). Investments made by

families to students in the social and humanitarian direction are around 400-500 US dollars. Investments made in developed countries, for example, one dollar should return to four or five dollars in the future" [1]. Unfortunately, it has not been determined how much the investments are in general and how much profit or loss they bring. The researcher poses a valid question: "Are the financial indicators in higher education being analyzed practically? Let's say what is the cost of educating one student for four years? In which university, in which direction, teaching is more expensive and why? How much is it costing a student to use all the resources if he has 5 teachers during the semester? Is the learner paying the appropriate contract? It is worth noting that if a master's student studies on the basis of a state grant and graduates from the university with at least an additional burden, how much can the educational institution "sell" it for? Are similar questions being answered in the system, and therefore highly informed situational analytics being implemented? What analytical data are educational reforms based on?" [1].

No one has calculated how much the "burden" is on the society and the state if the personnel are unable to find work or are engaged in activities completely contrary to their specialization. It is true that the market economy requires a free choice of activities, but this does not mean that market investments are included. In this case, it is necessary for the state to intervene in the processes of employment of young people, especially young highly educated personnel. A single family cannot decide whether the investments made by parents will benefit the state and the people, it requires measures at the national level. Despite the fact that the admission quotas for mathematics and scientific and technical universities are not filled, the fact that families allocate the highest investments and spend funds to their children who enter this direction makes us think and search. Another interesting aspect is that almost one fifth (21%) of the dissertations defended in the scientific councils of the universities correspond to mathematics and exact sciences. Here too, it is observed that the share of family investments is



large. For example, Tashkent State Pedagogical University has three academic councils. 160-170 dissertations are defended in them every year. But dissertations supported in mathematics and exact sciences, according to our accounting books, are only 4-6%. Every year, more than 600 pedagogues are trained at the university in the fields of mathematics, algebra, and geometry, however, only 27-30% of highly educated specialists in these fields are in our schools. The university cooperates with about 200 different organizations, provides methodical didactic support, but there are no institutions focused on mathematics and exact sciences (for example, the scientific research institute of mathematics and cybernetics, the digitalization agency, the University of Information Technologies, the Academy of Finance). Although the main goal is to spread pedagogical experiences and new pedtechnologies, isn't it necessary to connect them to the above institutions in order to prepare young students, especially students in the fields of mathematics and concrete sciences, for real life?

The third Renaissance is the idea of confidence in the future. There is great hope for science and innovative research. Therefore, in the center of the idea of the Third Renaissance, increasing the intellectual potential of young people, developing creative activity in them, involving them in the effective solution of socio-economic problems through the formation of digitization skills is the main task of the President's speeches. According to the director of the Institute of Mathematics of the Academy of Sciences of Uzbekistan, Hero of Uzbekistan, academician Shavkat Ayupov, the development of mathematics and the improvement of the institute's activities have become a task for the leader of our country in recent years. By the decree of the President, the Institute of Mathematics named after V. Romanovsky was re-established within the Academy of Sciences. A new building for the institution was built and commissioned in the town of Talabala. According to the President's Decision "On measures to improve the quality of education in the field of mathematics and develop scientific research" (May 7, 2020), a fund to support the development of mathematics science and education was established, and institute departments were opened in the Republic of Karakalpakstan and the regions. Although these units belong directly to the Mathematics Scientific Research Institute, the fact that they were opened at local universities connects them with real-life, educational, educational and economic problems. "The institute's research is recognized at the world level, there are scientific schools in functional analysis, algebra, differential equations, probability theory and mathematical statistics, computer technology, and it is a large scientific center for training highly qualified personnel for the needs of the country. 7 of our employees were elected full members of the Academy of Sciences of Uzbekistan and 5 members of the prestigious World Academy of Sciences (TWAS). [2].

On the initiative of our President, the Ministry of Higher Education and Innovation was established in our Republic in 2020. The goal was to combine higher education with practical, innovative research. The Department "Implementation of innovative educational technologies and teaching methods in the higher education system" was also opened at the Ministry.

Specialists of this department use "Blended learning" as innovative teaching methods for higher education. Models such as "Flipped Classroom", "Tactile Education" and "Keywatch Education" have been proposed. "Blended education" methodology is a method created by the University of Strasbourg in France. The result of its use, that is, students' creative activity and desire for innovative research, was 90%. The "flipped classroom" model was invented by Brunel University in Great Britain. According to the results, this method made 92.5% of the students' mastery of the subject by doing their homework voluntarily, with innovative research. "Tactile education" is an invention of the University of Dusseldorf, Germany. This method involves absorbing the lectures by physical activity instead of listening silently. According to the results, students' mastery of subjects is 87.3%. The last one is an educational method of explaining lectures and topics through video materials. It is used in Singapore universities. The level of students' mastery of the subject and scientific, innovative activity is 91% [3]. The methods "Flipped Classroom" and "Blended Learning" are used more often in 63 educational institutions. In recent years, the emergence of innovative educational methods and tools, such as artificial intelligence, platforms such as ChatGPT, means that the period of great changes in education has come. These tools and methods, which are products of mathematical thinking, make great demands on the fields of personnel training. "How this issue is solved literally determines the tomorrow of the society". Therefore, whether the personnel preparing for higher education will not be "hunters" in the labor market, or how many percent the "army" of the unemployed that exists today will increase or decrease in the future depends on the strategic decisions made at the moment. The only difference is that now the unemployed will have a diploma. Importantly, the state and families invested in them. Unless human resources enter the market as new value-added creators, increasing education's share of GDP, or as new tax payers, the state loses in this area. Any work done, change will end ineffectively like water sprinkled on sand" [1]. According to the researcher, due to artificial intelligence, 80% of personnel or courses being trained in the higher education system today will not meet the requirements of the labor market tomorrow [1]. Another serious problem is related to digitization. Today, our government is trying to digitize all areas, various documents and measures are being taken in this regard. Planning to fully digitize the economy by 2030 risks increasing the number of unemployed graduates. Doctor of Economics, Professor B. Sanakulova expresses it as follows: "How to solve the problem of unemployed personnel that may arise as a result of the planning of state systems? In this regard, what is being done in the higher education system today? After all, the army of unemployed people with diplomas poses a serious threat to the state from a political point of view, because they have a lot of ideas... If they are the victims of changes in the system, initiatives that have been put forward without deep thought, if they cannot study and provide for their families, if they cannot meet the needs of their child who is staring at them, who will take their pain from?" [1]. Therefore, it is necessary and necessary to start training specialists who have a wide range of thinking and provide non-standard, easy and cheap solutions in problematic situations.



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