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SOCIOLOGICAL ANALYSIS OF THE DEVELOPMENT OF TECHNICAL AND VOCATIONAL EDUCATION IN KAZAKHSTAN OVER THE YEARS OF INDEPENDENCE

This article presents a sociological analysis of the development of technical and vocational education (TVE) in Kazakhstan during the period of independence.

Due to the extensive nature of the research topic, this article presents the results of the secondary data analysis based on the processing of official statistics and national reports on the status and development of the education system in the Republic of Kazakhstan. The following methods were used in this study: the statistical comparative, analysis and synthesis, forecasting method.

There are several factors that contribute to the problems in the area under this study. These include the low prestige of technical training among Kazakhstani youth, a mismatch between the skills acquired through TVE and the requirements of the labor market, low interest of employers (business) to participate in the process of developing of TVE content, and a lack of analysis and tools for assessing the effectiveness of implementation of the government measures.

The results of the analysis showed that, despite the measures taken by the state, the issues of the quality of education, its focus on applied competencies in the acquired specialty, which could contribute to the employment of a future graduate, have not yet been resolved; business is poorly focused on social partnership with colleges, but there is a long-term demand for technical specialties. The conducted research has theoretical and practical significance for the further development of technical and vocational education in Kazakhstan.

Key words: technical and vocational education, network and contingent of TVE, state order, material and technical base, human resources, business and TVE.

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Тәуелсіздік жылдарындағы Қазақстандағы техникалық және кәсіптік білім берудің дамуына әлеуметтік талдау

Бұл мақалада Қазақстандағы техникалық және кәсіптік білімнің (ТЖКБ) тәуелсіздік жылдарындағы дамуына әлеуметтік талдау берілген.

Зерттеу тақырыбының ауқымдылығына байланысты бұл мақалада Қазақстан Республикасының білім беру жүйесінің жай-күйі мен дамуы туралы ресми статистика мен ұлттық есептерді өңдеуге негізделген қосымша деректерді талдау нәтижелері берілген. Жұмыста келесі әдістер қолданылды: статистикалық салыстырмалы, талдау және синтез, болжау әдісі.

Зерттелетін саладағы мәселелер бірқатар факторларға байланысты: қазақстандық жастар арасында техникалық мамандықтар бойынша оқыту беделінің төмендігі; ТЖКБ бойынша алынған дағдылар мен еңбек нарығының талаптары арасындағы сәйкессіздік; жұмыс берушілердің (бизнес өкілдерінің) ТЖКБ мазмұнын дамыту үдерісіне қатысуға төмен қызығушылығы; мемлекеттік іс-шараларды іске асыру тиімділігін бағалаудың талдау құралдарының болмауы.

Мемлекет қабылдаған іс-шараларға қарамастан, білім беру саласындағы өзекті мәселелер бүгінгі күнге дейін өз шешімін таппады. Талдау нәтижелеріне сәйкес: болашақ түлектің жұмысқа орналасуына ықпал ететін білім сапасы және техникалық мамандықтарға бағдарлануы мәселелері шешілмеген; бизнес субъектілері колледждермен әлеуметтік серіктестік орнатуға қауқарсыз, алайда, техникалық мамандықтарға деген сұраныс азайған емес. Жүргізілген зерттеулердің Қазақстанның техникалық және кәсіптік білім беруді одан әрі дамыту үшін теориялық және практикалық маңызы бар.

Түйін сөздер: техникалық және кәсіптік білім, ТЖКБ желісі және контингент, мемлекеттік тапсырыс, материалдық-техникалық база, кадрлық ресурстар, бизнес және ТЖКБ.

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Социологический анализ развития технического и профессионального образования в Казахстане за годы независимости

В данной статье представлен социологический анализ развития технического и профессионального образования (ТиПО) в Казахстане за годы независимости.

Ввиду обширности темы исследования, в данной статье приведены результаты вторичного анализа данных, проведенных на основе обработки данных официальной статистики и национальных докладов о состоянии и развитии системы образования Республики Казахстан. В работе использованы следующие методы: статистический сравнительный, анализ и синтез, метод прогнозирования.

Проблемы в исследуемой сфере обусловлены целым рядом факторов: низкий престиж обучения на технических специальностях среди казахстанской молодежи; несоответствие полученных навыков в ТиПО требованиям рынка труда; низкая заинтересованность работодателей (бизнеса) к участию в процессе разработки содержания ТиПО; отсутствие анализа и инструментов оценивания эффективности реализации государственных мер.

Результаты анализа показали, что, несмотря на предпринимаемые государством меры, до сих пор не решены вопросы качества образования, его ориентации на прикладные компетенции в приобретаемой специальности, которые могли бы способствовать трудоустройству будущего выпускника, бизнес слабо ориентирован на социальное партнерство с колледжами, но спрос на технические специальности сохраняется в долгосрочной перспективе. Проведенные исследования имеют теоретическую и практическую значимость для дальнейшего развития технического и профессионального образования в Казахстане.

Ключевые слова: техническое и профессиональное образование, сеть и контингент ТиПО, государственный заказ, материально-техническая база, кадровый потенциал, бизнес и ТиПО.

Introduction

Over the years of its independence, Kazakhstan's economy has experienced positive changes. However, these changes have not been substantial enough to significantly impact the development of the technical and vocational education system (TVE). The mid-1990s saw a trend towards economic recession, which had a profoundly negative impact on TVE. As a result, we can say that it will take more time and effort to make significant improvements in this area.

The reason why the topic is important is that there is a need to examine the condition of TVE since the country gained its independence, analyze its progress so far, and evaluate its future prospects while considering the objectives set by the government.

This article uses secondary data on the following main criteria: network and contingent of TVE, state order, material and technical base, human resources, business and TVE.

From the moment of independence to the present day, the system of TVE has been going through a phase of restoration and progressive development to reduce the demand of the new market environment. However, over the past 32 years, the issue of the

shortage of qualified personnel, such as engineers, builders, teachers, doctors and others, has not been resolved, and the level of their training remains low.

In a meeting with business representatives at the start of 2022, Kassym-Jomart Tokayev suggested that instead of complaining about the lack of qualified personnel in technical specialties, big businesses should take responsibility and help colleges by joining their board of trustees, providing young people with practical experience and equipping laboratories and workshops.

This would significantly increase the importance of technical professions in the education of a new generation of specialists who need appropriate professional skills.

Emile Durkheim, one of the founders of sociology, believed that the essence of the educational process was to maintain social stability. He argued that education should instill basic moral principles in the new generation, and create a sense of solidarity and belonging to a group. Durkheim thought that education should establish a model of secular morality that aims to preserve national unity and solidarity. He believed that the educational process transmits the values of the dominant culture to young people (Gorbunova, 2002). Besides, according to Karl Marx vision, there is a correlation between

the content and functions of education and the class structure of society. Later, R. Collins demonstrated the influence of various socially significant groups on the level of education and the creation of its fundamental principles (Babosov, 2014).

Therefore, the purpose of this scientific article is to search for the main problems and directions for the development of TVE in the country since independence. Currently, it is evident that Kazakhstani youth do not consider studying technical specialties prestigious enough, there is a mismatch between the skills acquired in TVE and the labor market requirements, employers ignore the opportunity to participate in the process of TVE content development, and there is a lack of analytical tools to assess the reasonableness of government measures implemented.

The presented sociological study aims to answer the following research questions: *“Is there a shortage of personnel in technical specialties at present, and how effectively does the current TVE system address this issue?”* *“What changes has the TVE system undergone after gaining of independence?”* *“What are the primary trends in its development?”* and *“What are the persistent problems that the Kazakhstan TVE system is facing, and what is causing them?”*

The research hypothesis is that the ineffective management of the TVE system results in several issues in its functioning. By addressing existing problems, TVE would play a crucial role in supplying high-quality technical personnel to the labor market and ensure the development of the economy of Kazakhstan at the required level. This, in turn, would have a multiplier effect, leading to increased employment opportunities for TVE graduates and satisfying the demand for technical specialties among domestic companies.

Materials and Methods

Due to the vastness of the research topic in this article, the sociological analysis was carried out based on the following main criteria:

1. TVE network.
2. TVE contingent.
3. State order of TVE.
4. Technical base of TVE.
5. Human resources potential of TVE.
6. Social partnership between business and TVE.
7. Social projects/programs in TVE.

This work is based on secondary data using statistical, comparative, analysis, and synthesis methods.

Quantitative research allows data to be quantified, and since samples are usually large and considered representative of the population, results are taken as if they portray a general and reasonably complete picture of the entire population (Martin, 2012). In this case, it pertains to statistical data on TVE.

Sociological analysis is based on the use of statistical methods and comparative analysis to determine the potential for growth in the quality indicators of technical education. To study the historical and contemporary factors affecting the development of the technical and vocational education, analysis and synthesis were employed.

These methods can aid in future research by reflecting strategic principles of TVE development. They can provide ways for strengthening of institutional support for social partnership of private companies and educational institutions in this area. Furthermore, they can help to determine the institutional and socio-economic bases needed for the business to join government projects aimed at developing the technical and vocational education.

This study involves three stages:

- 1) Collecting statistical data and studying reports of TVE in Kazakhstan.
- 2) Conducting sociological analysis and assessing the information received.
- 3) Drawing conclusions.

Literature review

Improving the quality of TVE is crucial challenges for the Kazakh economy. Achieving these goals is essential for ensuring a high percentage of employment and successful career adaptation.

In their study, Y. Zhang and C. Yang (2023) propose to improve the employability of college graduates by considering the following three aspects: enhancing graduates' cognitive level, enhancing employment information, and strengthening decision-making skills.

The career adaptability is a social psychological construct (Savickas, 2012) that is a key competency for long-term career success (Hirschi, 2009) and has a positive predictive effect on future employment status (Koen et al., 2010; Guan et al., 2010). al., 2014), employment quality (Guan et al., 2013), career development (Ebberwein et al., 2004), and promotion (Tolentino et al., 2013). Therefore, identifying the foundations for developing career adaptability of university students is necessary for their further career growth (Lu et al., 2022).

A recent study has examined an undergraduate vocational education curriculum that was designed to increase student motivation and engagement in learning. The teachers emphasized the importance of the student's needs, which resulted in the creation of individual learning paths. To foster student development, teachers utilized peer group dynamics, sports, and career guidance. The teachers saw themselves more as coaches, sport experts, and group managers. The study has identified two key features that contribute to a positive learning experience: (1) a fair and equitable relationship between student and instructor and (2) a curriculum that fits the needs of the students. (Fix et al., 2019).

Positive teacher-student relationships have been found to have many beneficial effects, such as increased student engagement (Ryan et al., 2001), motivation (Ryan et al., 2000), and academic performance (Ryan et al., 2001).

Soo Jung Choi, Jin Chul Jeong, and Seung Nam Kim (2019) conducted a study based on an applied multilevel analysis of the International Assessment of Adult Competencies (OECD Program).

The study concluded that TVE graduates will lack literacy skills, which will impact employment in the long run. With this in mind, states need to develop clear policies to ensure the long-term impact of acquired knowledge among TVE students.

After analyzing the existing literature reviews, it can be observed that there are numerous examples of successful social partnerships in TVE across the globe. However, one cannot ignore the challenges faced in acquiring professional skills and subsequent employment in each country, which needs to be considered separately.

Results and Discussion

Since Kazakhstan gained its independence, several reforms were implemented in the field of TVE. Figure 1 shows government measures in the field of TVE development, divided into 2 groups:

- 1) programs to improve the TVE system;
- 2) significant social projects of TVE, starting from 1992.

In 1992, the Education Law was adopted, where articles 15 and 16 define vocational schools and secondary specialized educational institutions (colleges). The difference is that vocational schools provide primary vocational education, while colleges provide specialized secondary education based on complete secondary education for the professional training of mid-level specialists.

In 1991, Kazakhstan had a total of 693 colleges, comprising 449 primary vocational schools and 244 secondary vocational education colleges. By 1998, the number of colleges had decreased to 610 organizations, mainly due to an economic crisis that led to the closure of many enterprises that previously had TVE on their balance sheets.

The first 11 private colleges were established in Kazakhstan in 1994, which paved the way for competition in the field of TVE. The number of private colleges grew steadily, with the largest peak occurring in 2012 when there were 389 private colleges (JSC Information and Analytical Center, 2017).

Over a period of 30 years, the number of colleges in Kazakhstan has increased from 693 units in 1991 to 770 units in 2021. The share of private colleges in 2022 amounted to 326 units (42%). The largest increase in the number of colleges occurred in 2011, which saw an increase of 213 colleges or 31%.

In 1999, a new education law was adopted, and the Government of the Republic of Kazakhstan issued a decree aimed at developing primary and secondary vocational education. The country's rapid economic growth has also contributed to the growth of colleges. In order to reduce shortages of quality personnel from business, the government has adopted various programs, including the one aimed at developing the technical and vocational education.

Since 2008, four state programs have been adopted 2008-2012, 2011-2020, 2016-2019, and 2020-2025. Additionally, a National Project called "Quality Education: Educated Nation" has been introduced since 2021.

Total number of students has shown a positive increase of 25 thousand people in 2021 when compared to 1991. Furthermore, the share of students studying in private colleges in 2021 was 44%.

The share of students studying in the state language has increased more than 2.5 times from 23% in 1991 to 59% in 2021.

Also, the share of graduates has increased 2.4 times during the analyzed period, from 61.8 to 146.3 thousand people, respectively.

Between 2000 and 2021, the percentage of employed graduates under government orders decreased significantly from 83.4% to 66%. The period from 2003 to 2004 witnessed the highest employment rate of 98.8%. The lowest employment rate of 60.3% was observed in 2011. Unfortunately, there are no statistics available for this indicator from 2005 to 2006.

Below, Table 1 provides an analysis of key indicators of TVE development.

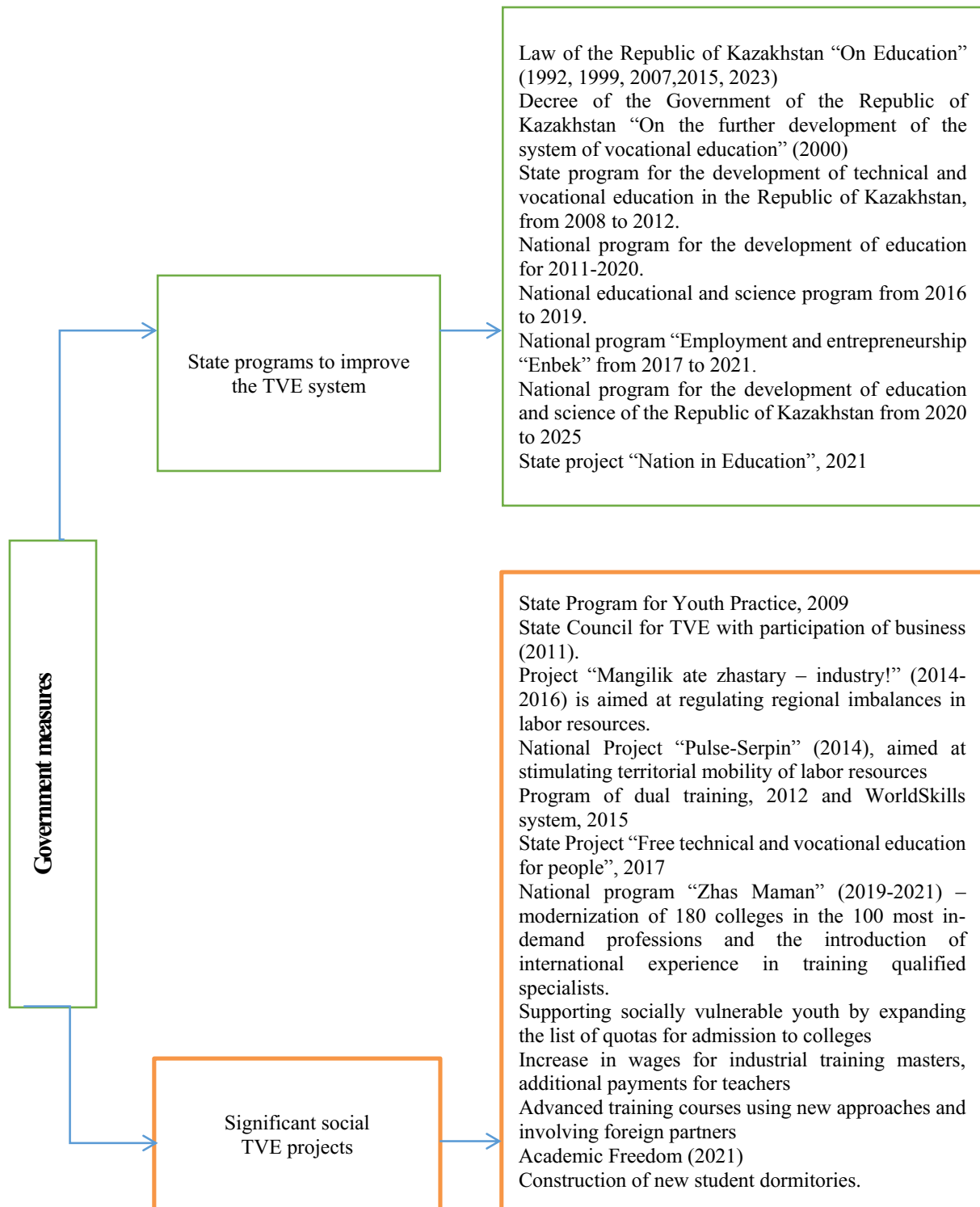


Figure 1 – Government measures in the field of TVE development

Table 1 – Key indicators of TVE development

Key indicators	Years		Deviation
	1991	2021	
1. TVE network			
1.1. Dynamics of the college network, units	693	770	77
1.2. Including a network of state colleges, units	693	444	-249
1.3. Including a network of private colleges, units	0	326	326
2. TVE contingent			
2.1. Students, thousand people	464,0	488,9	24,9
2.2. Including the population in state colleges, thousand people	433,8	272,2	-161,5
2.3. Including the contingent in private colleges, thousand people	0	216,7	216,7
2.4. Dynamics of the population studying in the state language, %	23	59	36
2.5. Dynamics of graduates, thousand people	69,1	146,3	77,2
2.6. Dynamics of the share of employed and employed graduates under government orders, 2000-2021, %	83,4	66	-17,4
3. State order of TVE			
3.1. Dynamics of admission of TVET students, 2015-2021, thousand people	163,1	166,9	3,8
4. Technical TVE base			
4.1. Classrooms, 2008-2021, units	20 632	22 028	1 396
4.2. Workshops, 2008-2021, units	2 327	2 669	342
4.3. Computers, 2008-2021, units	29 247	110 384	81 137
5. Human resources potential of TVE			
5.1. Number of EPW, 1995-2021, people	30 289	39 962	9 673
5.2. Number of teaching staff who have improved their qualifications, 2000-2021, people	125	26 924	26 799
6. Social partnership between business and TVE			
6.1. Network of colleges introducing dual education, 2013-2021, units	176	536	360
6.2. Number of students engaged in dual education, 2013-2021, thousand people	2,4	68,2	65,8
6.3. Number of enterprises engaged in dual training, 2016-2021, thousand units	2,4	6,4	4,0
6.4. Number of TVE students paid for by employers, 2019-2021, people	1 270	1 251	-19

Data source: State report on the state and development of the education system of the Republic of Kazakhstan (for 30 years of Independence and 2021). – Astana: Ministry of Education of the Republic of Kazakhstan, Ministry of Science and Higher Education of the Republic of Kazakhstan, JSC “IAC”, 2022; On approval of the Concept for the development of education of the Republic of Kazakhstan for 2022 – 2026. Decree of the Government of the Republic of Kazakhstan, 24/11/2022, № 941.

As of 2021, there were 166,921 students enrolled, which is 3,822 more than in 2015. The number of students enrolled on a budget basis increased by 10,919 while the number of students enrolled on a paid basis decreased by 7,097. This happened due to the growth of budget places, the elimination of the entrance exam, and an increase in quotas for socially vulnerable categories of youth.

During the period 2008-2021, there was an increase in technical base indicators, such as classrooms, workshops and computers. Specifically,

growth of 1,396 classrooms, 342 workshops, and 81,137 computers.

In the period of 1995-2021, the number of engineering and pedagogical workers (EPW) has increased by 9,673 people from 30,289 to 39,962 people. However, a decline of 44% of employees was observed in the year 1997, with a decrease of 17,197 people. This was due to unbalanced social policies, aging, and feminization of the teaching staff, as reported by Boribekov K. et al. in 2011.

There was a big jump in the number of EPW in 2012, with 45,684 people being added. This year had the largest number of private colleges.

One of the aims in reforming the VET system was to improve the qualifications of teaching staff. After the national TVE program development was adopted for 2008-2012, the workers quantity who improved their qualifications increased significantly and maintained this upward trend in subsequent years.

When comparing the years 2000 and 2021, there was a growth of 26,799 employees, despite only 125 teaching employees improving their qualifications in 2000. The creation of NJSC “Talap” in 2012 was of decisive importance in this growth. This institution aimed to introduce the best foreign TVE practice and conduct advanced training courses for EPW using new approaches while attracting foreign partners.

Regarding the relationship between businesses and TVE, the network of colleges offering dual education has increased by three times to 536 units over the period of 2013-2021.

The number of students taking part in dual education has increased more than 28 times.

If we keep track of the total quantity of students, studying under state orders, the percentage of students engaged in dual education is only 14% in 2021.

The number of enterprises involved in dual training has only increased by 4,000 units from 2016 to 2021.

Furthermore, the number of students paid for by employers accounts for only 0.3% of the total student population, and this trend has continued for the last three years.

Currently, many experts talk about a chronic shortage of technical personnel. A striking example of the current situation is the numerous accidents at thermal power plants in various cities of Kazakhstan.

According to S. Rakhmetullina, being the rector of the East Kazakhstan Technical University, the shortage of personnel directly affects the ability to expand the training and production infrastructure. The recent incidents in Ekibastuz and Ridder have highlighted the importance of paying attention to this industry and personnel training.

However, Mazhilis deputy Y. Kuchinskaya has emphasized that the shortage of skilled workers is not limited to the heat and power sector. The lack of professional personnel also exists in agriculture, mining, the industrial sector, and other areas of economy.

The representatives of employers and workers in the real sector have also highlighted the issue of a shortage of technical personnel. S. Baysarinov, a shop manager at the Ust-Kamenogorsk thermal power plant, stresses that this is a problem, as experienced people are gradually leaving the industry. He believes that it is essential for young specialists to learn from the basics and start as an electrician or technician and gradually gain experience to fill the gap (Ezhelev, 2023).

Ainur Bekdairova, the Deputy General Director for Human Resources at Polymetal Eurasia LLP (Polymetal), points out that there is a shortage of highly specialized technical specialists. Educational institutions provide knowledge in a general area without specializing in work on gold ores and do not train unique specialists such as a concentrator in a gold recovery and processing plant. Graduates have to gain experience and study enrichment processes in more depth during the work process.

According to the management of Aquatoria-Aktobe LLP, the demand for technical specialists is huge. The company provides additional training courses because newly arrived employees lack specialization. The company has to send new employees for internships even abroad. The company considers it expedient to train students in technical specialties for which there is acute demand.

In the country, along with the problem of a lack of technical specialties, there is a situation with a negative balance of the outflow of such specialists abroad, associated with higher wages and better working conditions.

In the long-term policy document for the development of the labor market, the inadequacy of qualifications corresponding to the demands of the labor market is a fundamental problem. A systemic solution for this is strengthening TVE.

In our opinion, the TVE system requires a radical reboot in order to meet current realities in the labor market. The reason lies in the low quality of presentation of professional knowledge in colleges and the immediate and long-term monitoring of labor market requirements.

Based on our analysis, we will be conducting further research to identify best practices in TVE. This will help us to introduce effective TVE practices in Kazakhstan.

Conclusion

The problem of quality education in TVE has remained unresolved since independence. In the domestic practice of TVE development, there

is a picture of an overabundance of some labor specialties over others. At the same time, technical specialists are on the wave of demand in the national labor market.

This trend is long-term in nature and business representatives are accustomed to solving this problem on their own, which is fundamentally wrong and does not reflect the interests of the state in the sustainable growth of the country's economy.

After analyzing the situation, we can answer the main research questions and draw the following conclusions:

- The government of Kazakhstan is taking diligent steps to adequately develop TVET, and a number of fundamental reforms have been carried out, including an increase in the state order for free education and a doubling of the level of scholarships. The positive aspects are the introduction of a system for accounting for long-term demand in the labor market and an emphasis on the development of production infrastructure.

Based on the analysis, priority directions in the development of TVE have been identified – the development of measures to match the balance of demand and supply of TVE graduates in the labor market and the global reorientation of the existing educational system that meets the requirements of the labor market in the long term.

Moreover, the professional level of college teachers needs constant development. The teaching staff should improve their qualifications at existing enterprises and transfer the experience and knowledge gained to students. To achieve this, the policy of the relevant ministry and college leadership should focus on creating appropriate incentives for teachers in this direction.

College graduates often struggle to qualify for high-paying jobs due to insufficient qualifications and a lack of necessary knowledge. Eventually, the level of professional competence among college graduates is low. Additionally, there are not enough incentives for students to pursue a college education.

The level of collaboration between colleges and businesses in the development of dual education and employment opportunities for graduates is also quite low. Furthermore, there is no government support for businesses that invest their own funds in training technical specialists in colleges.

Another challenge is the need to provide clear information about the potential benefits and drawbacks of pursuing technical professions in Kazakhstan.

In summary, adjustments need to be made to existing government policies regarding TVE system, taking into account the issues mentioned in this article.

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