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Content

Economic sciences

RISK MANAGEMENT TOOLS FOR SMALL AND MEDIUM-SIZED BUSINESSES IN GEORGIA

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JEL Classification: M0, M10

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Abstract

Small and medium-sized businesses with limited financial resources and a limited area of activity are sensitive to risks, in Georgia. As a result of ineffective risk management, the liquidity of assets and the amount of capital of small and medium-sized business enterprises are significantly reduced, risks are not properly managed, and small and medium-sized enterprises go bankrupt or receive significant losses.

The article discusses and analyzes the risks that hinder development of small and medium-sized business in Georgia. It is proposed to establish a modern system of risk insurance, of which will be possible to reduce losses caused by damage in small and medium-sized businesses.

აბსტრაქტი

საქართველოში შეზღუდული ფინანსური რესურსების და საქმიანობის შეზღუდული არეალის პირობებში მცირე და საშუალო ბიზნესი რისკებისადმი სენსიტიურია. რისკების არაეფექტური მართვის შედეგად მცირე და საშუალო ბიზნესის საწარმოებს მნიშვნელოვანად უმცირდებათ აქტივების ლიკვიდობა და კაპიტალის ოდენობა, არ ხდება რისკების სწორი მართვა და მცირე და საშუალო საწარმოები კოტრდებიან ან იღებენ მნიშვნელოვან ზარალს.

სტატიაში განხილული და გაანალიზირებულია ის რისკები, რომლებიც აფერხებინ მცირე და საშუალო ბიზნესის განვითარებას საქართველოში. შეთავაზებულია რისკების დაზღვევის თანამედროვე სისტემის ჩამოყალიბება, რომლის მეშვეობითაც შესაძლებელია მცირე და საშუალო ბიზნესში შემცირდეს ზიანით გამოწვეული დანაკარგების შემცირება.

Keywords: *small business, medium-sized business, risks, loss, insurance.*
საკვანძო სიტყვები: *მცირე ბიზნესი, საშუალო ბიზნესი, რისკები, ზარალი, დაზღვევა.*

Promotion policy of small and medium-sized businesses should ensure growth of the economic potential of the country, overcoming existing social poverty and improving business environment, in Georgia.

According to the data of the National Statistical Service of Georgia, "The turnover of small and medium-sized businesses is increased. The share of small and medium-sized businesses in the total turnover is also increasing" [1]. However, if we analyze the sectoral structure of small and medium-sized businesses in Georgia, we will see that almost half of the turnover comes from trading and car repairing, which is caused by lack of opportunities for the production of innovative products and by less creative initiatives.

Along with the increasing of production capacity of small and medium-sized businesses in Georgia, the capital structure of small and medium-sized enterprises is also changing significantly. According to the data of the same service, "Their share in the total capital structure has increased" [2]. Which should be considered as a positive process, although the products and services provided by the majority of them are still far from modern quality standards.

The current globalization process has essentially changed the business environment, its territorial and sectoral structure. These changes were reflected in all aspects of economic relations of small and medium-sized businesses. With limited area of activity and financial resources, small and medium-sized businesses became much more sensitive to risks. As a result of ineffective risk management, the liquidity of assets and the amount of capital of small and medium-sized business enterprises are significantly reduced.

Small and medium-sized enterprises do not have the opportunity to have a special risk management service, due to which risks are not properly managed and small and medium-sized enterprises go bankrupt or receive significant losses.

Risks that are directly related to the economic activity of a small and medium-sized enterprises belong to the category of internal risks. "The realization of this category of risks can be provoked by lack of capital, low liquidity of assets, change of price policy, limitation of marketing measures and etc." [3]. All these possible risks are typical for small and medium-sized businesses in Georgia, and therefore small and medium-sized business management should pay special attention to the management of internal financial risks. Financial risks can be grouped into two types: "risks related to the purchasing power of money and risks related to investments and capital investment". Purchasing power risks include: inflation, currency risks, asset liquidity risks and etc., but risks associated with capital devaluation and failure to receive expected profit can be attributed to investment risks" [4].

Small and medium-sized businesses, unlike other business entities, are especially vulnerable during financial crises, but it can also (due to its small scale) quickly regenerate and actively influence on the recovery and development of the economy. In order for the successful generation process of small and medium-sized businesses in Georgia, investors who are interested in such businesses need to be reliable and their investments should be diversified.

External risks of small and medium-sized businesses include: social-economic, environmental change, natural and ecological cataclysms and frequent changes in state regulations. It is clear that small and medium-sized enterprises have much less opportunities to influence such risks, however, these risks must be taken into account when making business plans and defining perspectives. Due to the variety of risks, in small and medium-sized enterprises, the necessity of risk management should be evaluated according to the economic loss. Despite the frequency of risks, if the volume of losses caused by this risk is insignificant, it is possible to ignore them.

The growth of the innovative potential of small and medium-sized enterprises and the improvement of the quality of released products in Georgia is the most important for not only to meet increased demand of the population of Georgia to these products, but also to increase potential of export of the country. The lack of a correct management strategy for innovative risks in small and medium-sized enterprises of Georgia is often one of the factors that reduce the inflow of venture capital and hinders the growth of competitiveness of such enterprises and the development of their future potential.

Small and medium-sized enterprises are also highly sensitive to reputational risks. The loss or damage of reputation directly effects on their economic situation, because of the high competition at the market.

The expansion and concentration of modern business has put small and medium-sized businesses in front of a new challenges and risks. These challenges and risks relate to the growing trend of merger of small and medium-sized businesses by large businesses, motivated by the desire to increase assets, improve capital structure and monopolize the business.

Small and medium-sized businesses cannot deal with these challenges on their own in Georgia. First of all, substantial support from the state is needed, which is primarily related to the improvement of the business environment for small and medium-sized businesses. The improvement should affect taxation regimes, state regulation mechanisms, attraction of investments, start-ups, innovative activities and etc. Creative people should be given more financial opportunities for startups and innovative activities. State grants, small and medium-sized business co-financing system and etc. should be used for this purpose.

Along with the development of small and medium-sized business, increases the volume of its capital and therefore increases such business risks which are connected with devaluation or damage of capital. Natural events such as: earthquake, flood, heavy snowfall, storm, hail and etc. should be considered like risks mentioned above. There may also be danger in the small and medium-sized business workspace, for example fire or explosion may occur.

It is possible for a small and medium-sized business to be damaged by leaking water from plumbing and drainage systems, leaking liquids such as water, oil, petroleum, etc. from boilers or pipes. There are risks that criminal activities such as theft, robbery and vandalism can also have a negative impact on small and medium-sized business operations.

The existence of all the above-mentioned business risks leads to the need to manage them. Small and medium-sized business owners can use a financial tool of risk management, such as insurance.

Unfortunately, in Georgia, many representatives of small and medium-sized businesses do not have experience and proper information about the use and need of insurance services. They do not have proper financial education and do not know that there are many different small and medium-sized business insurance products available. They need to understand that the amount paid to purchase an insurance policy is a payment for secure future and will compensate losses caused by damages occurred while operating a small and medium-sized business. It is necessary to implement the tradition of insurance of small and medium-sized business risks in Georgia, which has been actively used in Western economies for many years.

By insurance for small and medium-sized business, an entrepreneur will protect the property his business owns, the health of his business employees, and he will also be protected from expenses caused by damage to other people's property and health due to his own fault.

In the insurance companies operating on the insurance market of Georgia, list of insurance products required for entrepreneurs employed in small and medium-sized businesses should preferably look like this: property insurance, transportation insurance, cargo insurance, construction risks insurance, agro insurance, business interruption insurance, financial risks insurance, third party liability insurance, health, life and personal accident insurance for employees.

საქართველოში მცირე და საშუალო ბიზნესის ხელშეწყობის პოლიტიკამ უნდა უზრუნველყოს ქვეყნის ეკონომიკური პოტენციალის ზრდა, არსებული სოციალური სიდუხჭირის დაძლევა და ბიზნეს გარემოს გაუმჯობესება.

საქართველოს სტატისტიკის ეროვნული სამსახურის მონაცემებით, „მცირე და საშუალო ბიზნესის ბრუნვა გაზრდილია. ასევე იზრდება მცირე და საშუალო ბიზნესის წილი საერთო ბრუნვაში" *[1].* თუმცა თუ, მცირე და საშუალო ბიზნესის დარგობრივ სტრუქტურას გავაანალიზებთ, ვნახავთ, რომ ბრუნვის თითქმის ნახევარი ვაჭრობასა და ავტომობილების რემონტზე მოდის, რაც საქართველოში ინოვაციური პროდუქციის წარმოების შესაძლებლობების ნაკლებობით და კრეატიული ინციატივების სიმცირით არის განპირობებული.

საქართველოში მცირე და საშუალო ბიზნესის წარმოების მოცულობის ზრდასთან ერთად ასევე მნიშვნელოვნად იცვლება მცირე და საშუალო საწარმოთა კაპიტალის სტრუქტურაც. ამავე სამსახურის მონაცემებით „მათი წილი საერთო კაპიტალის სტრუქტურაში გაიზარდა" *[2].* რაც პოზიტიურ პროცესად უნდა ჩაითვალოს, თუმცა მათი უმრავლესობის მიერ გამოშვებული პროდუქცია და გაწეული მომსახურება ჯერ კიდევ შორს არის ხარისხის თანამედროვე სტანდარტებიდან.

მსოფლიოში მიმდინარე გლობალიზაციის პროცესმა არსებითად შეცვალა ბიზნესის გარემო, მისი ტერიტორიული და დარგობრივი სტრუქტურა. ეს ცვლილებები შესაბამისად აისახა მცირე და საშუალო ბიზნესში ეკონომიკური ურთიერთობების ყველა ასპექტზე. შეზღუდული ფინანსური რესურების და საქმიანობის შეზღუდული არეალის პირობებში მცირე

და საშუალო ბიზნესი რისკებისადმი ბევრად უფრო სენსიტიური გახდა. რისკების არაეფექტური მართვის შედეგად მცირე და საშუალო ბიზნესის საწარმოებს მნიშვნელოვანად უმცირდებათ აქტივების ლიკვიდობა და საკუთარი კაპიტალის სიდიდე.

მცირე და საშუალო საწარმოებს არ აქვთ შესაძლებლობა ჰქონდეთ რისკების მართვის სპეციალური სამსახური, რის გამოც არ ხდება რისკების სწორი მართვა და მცირე და საშუალო საწარმოები კოტრდებიან ან იღებენ მნიშვნელოვან ზარალს.

რისკები, რომლებიც უშუალოდ მცირე და საშუალო საწარმოს სამეურნეო საქმიანობას უკავშირდება მიეკუთვნება შიდა რისკების კატეგორიას. ,,ამ კატეგორიის რისკების რეალიზაციის პროვოცირება შეიძლება გამოიწვიოს კაპიტალის სიმცირემ, აქტივების დაბალმა ლიკვიდობამ, საფასო პოლიტიკის ცვლილებამ, მარკეტინგული ღონისძიებების შეზღუდვამ და სხვა" *[3].* ყველა ეს შესაძლო რისკები საქართველოს მცირე და საშუალო ბიზნესისთვის დამახასიათებელია და ამიტომ მცირე და საშუალო ბიზნესის მინეჯმენტმა განსაკუთრებული ყურადღება სწორედ შიდა ფინანსური რისკების მართვას უნდა მიაქციოს. ფინანსური რისკები შეიძლება ორ სახეობად დავაჯგუფოდ ,,რისკებად, რომლებიც ფულის მსყიდველობით უნარიანობასთან არის დაკავშირებული და რისკებად რომლებიც ინვესტიციებს და კაპიტალის დაბანდებას უკავშირდება. მსყიდველობით უნარიანობის რისკებია: ინფლაცია, სავალუტო რისკები, აქტივების ლიკვიდობის რისკები და სხვა. საინვესტიციო რისკებს კი შეიძლება მივაკუთნოდ ის რისკები, რომელიც კაპიტალის გაუფასურებასთან და მოსალოდნელი მოგების მიუღებლობასთან არის დაკავშირებული" *[4].*

მცირე და საშუალო ბიზნესი სხვა ბიზნეს სუბიექტებისგან განსხვავებით განსაკუთრებით მოწყვლადია ფინანსური კრიზისების პერიოდში, მაგრამ მას ასევე (მცირე მასშტაბიდან გამომდინარე) სწრაფად შეუძლია ახლიდან გენერირება და აქტიური ზემოქმედება ეკონომიკის გაჯანსაღებასა და განვითარებაზე. იმისათვის, რომ გენერაციის პროცესი საქართველოში წარმატებით განხორიელდეს საჭიროა მცირე და საშუალო ბიზნესით დაინტერესებული ინვესტორები იყვნენ საიმედოები, ხოლო მათ მიერ განხორხციელებული ინვესტიციები დივერსიფიცირებული.

მცირე და საშუალო ბიზნესის გარე რისკებს მიეკუთვნება: ,სოციალურ - ეკონომიკური, გარემოს ცვლილება, ბუნებრივი და ეკოლოგიური კატაკლიზმები და სახელმწიფო რეგულაციების ხშირი ცვლილება. აქ ცხადია მცირე და საშუალო საწარმოებს რისკებზე ზემოქმედების გაცილებით ნაკლები შესაძლებლობები გააჩნიათ, თუმცა ბიზნეს გეგმების შედგენისა და პერსპექტივების განსაზღვრის დროს ეს რისკები აუცილებლად გასათვალისწინებელია. რისკების მრავალფეროვნებიდან გამომდინარე, მცირე და საშუალო საწარმოებში, რისკების მართვის აუცილებლობა საბოლოო ჯამში ეკონომიკური ზარალის მიხედვით უნდა შევაფასოთ. თუ რისკების სიხშირის მიუხედავად მათგან დამდგარი ზარალის მოცულობა უმნიშვნელოა, შესაძლებელია მათი იგნორირებაც.

საქართველოში მცირე და საშუალო საწარმოების ინოვაციური პოტენციალის ზრდა და გამოშვებული პროდუქციის ასორტიმენტის ხარისხის გაუმჯობესება უმნიშვნელვანესია არა მარტო ამ პროდუქტებზე საქართველოს მოსახლეობის გაზრდილი მოთხოვნილების დასაკმაყოფილებლად, არამედ ასევე ქვეყნის საქსპორტო შესაძლებლობების გასაზრდელად. საქართველოს მცირე და საშუალო საწარმოებში, ინოვაციური რისკების სწორი მართვის სტრატეგიის უქონლობა ხშირ შემთხვევაში არის ერთ - ერთი ფაქტორი რომელიც ამცირებს ვენჩერული კაპიტალის შემოდინებას და აფერხებს საწარმოების კონკურენტუნარიანობის ზრდას და მათ სამომავლო პოტენციალის განვითარებას.

მცირე და საშუალო საწარმოები ასევე უაღრესად სენსიტიურები არიან რეპუტაციული რისკებისადმი, ვინაიდან ბაზარზე მაღალი კონკურეცციის პირობებში რეპუტაციის დაკარგვა ან მისი შელახვა პირდაპირ აისახება მათ ეკონომიკურ მდგომარეობაზე.

თანამედროვე ბიზნესის გამსხვილებამ და კონცენტრაციამ მცირე და საშუალო ბიზნესი დააყენა ახალი გამოწვევებისა და რისკების წინაშე. ეს გამოწვევები და მათგან მომდინარე რისკები უკავშირდება მსხვილი ბიზნესის მიერ მცირე და საშუალო ბიზნესის ობიექტების შერწყმისა და შთანთქმის მზარდ ტენდენციას, რომელიც მსხვილ ბიზნესში აქტივების ზრდის,

კაპიტალის სტრუქტურის გაუმჯობესების და ბიზნესის მონოპოლიზაციის სურვილითაა მოტივირებული.

საქართველოში ამ გამოწვევებს დამოუკიდებლად მხოლოდ მცირე და საშუალო ბიზნესი ვერ გაუმკლავდება. აქ პირველ რიგში სახელმწიფოს არსებითი მხარდაჭერაა საჭირო, რაც პირველ რიგში მცირე და საშუალო ბიზნესისთვის ბიზნეს გარემოს გაუმჯობესებასთან არის დაკავშირებული. გაუმჯობესება უნდა შეეხოს დაბეგვრის რეჟიმებს, სახელმწიფო რეგულაციის მექანიზმებს, ინვესტიციების მოზიდვას, სტარტაპებს, ინოვაციურ აქტიურობას და სხვა. კრეატიულ ადამიანებს მეტი ფინანსური შესაძლებლობი უნდა მიეცეთ სტარტაპებისთვის და ინოვაციური აქტიურობისთვის. ამ მიზნით გამოყენებული უნდა იქნას სახელმწიფო გრანტები, მცირე და საშუალო ბიზნესის თანადაფინანსების სისტემა და სხვა.

მცირე და საშულაო ბიზნესის განვითარებასთან ერთად იზრდება მისი კაპიტალის მოცულობა და შესაბამისად მატულობს ის ბიზნეს რისკები, რომელთა რეალიზაცია კაპიტალის გაუფასიურებასთან ან დაზიანებასთან არის დაკავშირებული. აქ გასათვალისწინებელია ბუნებრივი მოვლენები, როგორიცაა: მიწისძვრა, წყალდიდობა, დიდთოვლობა, ქარიშხალი, სეტყვა და სხვა. ასევე შეიძლება საფრთხე შეიქმნას მცირე და საშუალო ბიზნესის სამუშაო სივრცეში, კერძოდ შეიძლება მოხდეს ხანძარი და აფეთქება.

შესაძლებელია მცირე და საშუალო ბიზნესმა მიიღოს დაზიანება წყალგაყვანილობისა და სადრენაჟო სისტემიდან გამონადენი წყლით, საქვაბეებიდან ან მილებიდან ისეთი სითხეების გამოჟონვით, როგორიცაა: წყალი, ზეთი, ნავთობი და სხვა. არსებობს რისკები, რომ კრიმინალურმა ქმედებებმა: ქურდობამ, ძარცვამ, ყაჩაღობამ და ვანდალიზმმა ასევე უარყოფითი გავლენა იქონიოს მცირე და საშუალო ბიზნესის საქმიანობაზე.

ყველა ზემოთ ნახსენები ბიზნეს რისკების არსებობა იწვევს მათი მართვის საჭიროებას. მცირე და საშუალო ბიზნესის მესვეურებს შეუძლიათ ისარგებლონ რისკის მართვის ისეთი ფინანსური ინსტრუმენტით, როგორიცაა დაზღვევა.

მცირე და საშუალო ბიზნესის ბევრ წარმომადგენელს საქართველოში სამწუხაროდ არ აქვს გამოცდილება და არ ფლობს სათანადო ინფორმაციას სადაზღვევო მომსახურების გამოყენებასა და საჭიროებაზე. მათ არ აქვთ სათანადო ფინანსური განათლება. ხშირად არ იციან, რომ არსებობს მცირე და საშუალო ბიზნესის დაზღვევის სხვადასხვა პროდუქტები. მათ უნდა ესმოდეთ, რომ სადაზღვევო პოლისის შესაძენად გადახდილი თანხა წარმოადგენს უსაფრთხო მომავლის საფასურს, რომელიც დააკომპენსირებს მცირე და საშუალო ბიზნესის ოპერირებისას მომხდარი ზიანით გამოწვეულ დანაკარგებს. საჭიროა საქართველოში დაინერგოს მცირე და საშუალო ბიზნესის რისკების დაზღვევის ტრადიცია, რომელიც მრავალი წელია აქტიურად გამოიყენება დასავლეთის ეკონომიკებში.

მცირე და საშუალო ბიზნესის დაზღვევით მეწარმე დაიცავს საკუთრებაში არსებულ უძრავ და მოძრავ ქონებას, მის ბიზნესში დასაქმებულების ჯამრთელობას, ასევე დაცული იქნება საკუთარი ბრალეულობით სხვისი ქონების და ჯანმრთელობის დაზიანებისგან გამოწვეული ხარჯებისაგან.

საქართველოში სადაზღვევო ბაზარზე მოქმედ სადაზღვევო კომპანიებში, მცირე და საშუალო ბიზნესში დასაქმებული მეწარმეების საჭიროებებზე მორგებული სადაზღვევო პროდუქტების ჩამონათვალი სასურველია ასე გამოიყურებოდეს: ქონების დაზღვევა, ტრანსპორტის დაზღვევა, ტვირთების დაზღვევა, სამშენებლო რისკების დაზღვევა, აგროდაზღვევა, საქმიანობის შეჩერებით გამოწვეული ზარალის დაზღვევა, ფინანსური რისკების დაზღვევა, მესამე პირის წინაშე პასუხისმგებლობის დაზღვევა, დასაქმებულთა ჯანმრთელობის, სიცოცხლის და უბედური შემთხვევის დაზღვევა.

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Historical sciences

ENTREPRENEURSHIP IN KAZAKHSTAN

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Abstract

The development of entrepreneurship took place in the history of Kazakhstan since the day of independence. Establishment of small businesses in the Republic from early days of economic reform was one of the priorities in the state's economic policy. The entrepreneurial class was an integral attribute of the market economy, an independent subject of economic relations. Most of entrepreneurs belong to the so-called middle class, whom ensured the stability of not only the state economy based on a market economic system, but also influenced political processes in society, preventing a departure from liberal and market values. The research aim was to study directions of the state policy in transforming society and its implementation in Kazakhstan mainly in the process of forming entrepreneurship in 1991-2020; from the view of historical knowledge. This study was conducted using the Systematic Literature Review (SLR). Different types of common reviews on entrepreneurship research of Kazakhstan were examined. In a nutshell, this paper summarised the entrepreneurship development in Kazakhstan.

Keywords: Entrepreneurship, history, economic, development, Kazakhstan

Introduction

The process of forming market relations in Kazakhstan has a huge impact not only on the economy, but also on politics, social relations, culture and mentality of its society. Historical science is no exception in this respect, like all spheres of life, is obliged to react when changes taking place. Under their influence, in modern historiography, there is a significant shift in research topics and methods of theoretical comprehension of the material in the light of modern social requests for historical works. Thus, interest in the problems of the history of market development and entrepreneurial practice has grown immeasurably, which is due to prevailing social situation, and on the other hand, to its falsification, deformation of positive potential of market in Soviet times. Conclusions about the purely capitalist, private property, exploitative nature of market system in the works of Soviet historians had a canonized meaning. The roots of this aberration of the vision of the past lay in the dominant ideology at time [1].

Methods and Materials

This study was conducted using the Systematic Literature Review (SLR). Different types of common reviews on entrepreneurship research of Kazakhstan were examined.

After the collapse of socialist system, radical political and economic changes had occurred in most former socialist countries. According to Hesse, former socialist countries have a number of common characteristics:

1) a transition from one party rule to the multi-party, pluralist system with democratic and accountable government;

2) the de-concentration and de-centralisation of political power;

3) the creation of distinct spheres of economics and politics;

4) economic liberalisation [2].

No socialist country has yet completed full process of economic liberalisation. This is mainly due to task of transforming a former socialist economy is significantly more complicated than the issues facing a typical developing country. Even rudimentary institutions that can easily converted to market concepts and terminology. The process was characterised not simply by a transition to a new economic system but also as a fundamental transformation of whole society and all of its institutions in line with market philosophy.

The collapse of Soviet totalitarian system significantly shaken such approaches and led to de-ideology of historical science. Modern researchers of market and entrepreneurship, studying the prospects of market economy, are trying to show that they are very significant in comparison with Soviet planned system based on excessive centralisation of the economy. Today, many works are devoted to the history of market and entrepreneurship. Some of them are of scientific value due to introduction of new *factual material into scientific circulation, development of original conceptual approaches. Other part of the works suffers from an extremely emotional approach, an unconditionally enthusiastic tone in assessing the phenomenon of the market, which is no less dangerous for science than previous ideological dogmas. Such an influx of works on topic of market, undoubtedly, actualises study of this problem in historian aspect [3].*

The pre-revolutionary official historiography dedicated to problem of development of market relations and entrepreneurship in Kazakhstan characterised by an obvious tendentiousness. Most of Russian researchers inflated the 'civilizing' role of the tsarist government, trying to ascribe positive phenomena to it. Official historiography limited itself to throwing remarks to express its contempt for the peoples of the national borderlands. The studies of tsarist officials praised the colonial policy of 'Tsarism'.

Nowadays in modern historiography goes a productive process of overcoming the ideology approach, in assessing importance and role of market and entrepreneurship in history of the development of society.

Kazakhstani scientists emphasised that there are number of historians today have a penchant for myth-making [4]. One of the reasons for this situation is the weakness of the theoretical and methodological foundations of historical science. Many modern historians are engaged in solving this problem. In the article "Some aspects of theoretical and methodological problems of the historiography of Kazakhstan" K.R. Nesipbaeva clearly outlined the tasks of modern historiography: 'to establish the basic theoretical and methodological principles characteristic of this period, struggle of opinions around them, replacement of some prevailing theories and concepts with others' [5].

A review of theoretical and methodological literature indicates that scientists are actively developing the problem of the specific of transformation of traditional society and transition to market model. Nowadays, they are widely introducing into scientific circulation works that previously considered reactionary, pseudoscientific. Works of foreign scientists, where access was previously limited and intensively studied. Under the influence of foreign researcher's works, the theory of modernisation is becoming widespread in modern historiography. Proponents of the theory of modernisation are sought to prove that "modernisation" is a certain type of steadial changes that are a consequence of industrialisation and urbanisation, development of institution of private property and entrepreneurial activity. From logic of reasoning of the supporters of this concept, it follows that whole complex of measures carried out by the metropolis in relation to the colonial national periphery is positive.

Therefore, there is a need to use methods of related sciences, an interdisciplinary approach in scientific research. We can study problem and prospects for development of market and entrepreneurship in modern Kazakhstan, as well as its role in solving the economic, political, social and other problems facing modern civilization.

Zh. B. Abylkhozhin says that there are still many unexplored horizons in front of the historical science of Kazakhstan: 'It cannot be said that degree of penetration of scientific knowledge into the essence of ongoing socio-economic processes and phenomena has reached limiting parameters, i.e. rather clear prospects for growth are seen here. The prerequisites for this were formed against background of the priority inclusion of moments of the intensive series and deepening of the theoretical and methodological context of problem, complication of cognitive tools. It is in the outlined plan that strongest impulses are localized, capable of stimulating process of real increment of historical knowledge [6].

M.K. Kozybayev has a number of works where determined the vector of scientific research in modern historiography on qualitative new conceptual basis. His works are most interested today not only from the viewpoint of specific content of works that have turned into historiographical facts, but the spirit of the times has also been preserved in his works. 'History and Modernity', 'Problems of Russian history: methodology, historiography and sources' in 2 volumes and many other researches defines a number of key problems of modern historiography. He identified following problems related to the topic of our research: history of the formation of the entrepreneurial elite of the Kazakh society; development of Kazakh entrepreneurship proper in the pre-revolutionary period; problems of international capital in the mining and manufacturing industry of Kazakhstan in the second half of the XIX - early XX century [7].

In H.M. Abzhanov's works, there were a very wide range of problems in Russian history being generalised and determined promising lines of research, which impetus for the renewal of the problems of historical research and the acquisition of a new quality. Particular attention paid to the study of the Kazakh history of second half of XIX - early XX centuries, when there was a large-scale process of adaptation of the Kazakh society to the market. According to the scientist, this process was not (as it still *seems to some researchers) a passive adaptation of the degrading traditional society. It was a promising process of socio-historical adaptation, in which there was a positive civilisational dynamics. In the course of this process, the internal preconditions of market relations developed in Kazakh society, and their social carriers appeared in a certain amount. In general, the Kazakh society gradually began to take new starting positions for development in the XX century [8].*

It is important to note that there were specific features of entrepreneurial activity, mainly innovation (innovativeness) and ownership factors of production, among economists (before there is still no unity in approaches). They identified four main approaches.

The first approach (J.B.Say, Austrian school, Soviet economic school) describes characteristic features of business activities where entrepreneur has ownership of means of production and innovative Nature of activity. Representatives of Soviet economic school consider the formation and development of concept of 'entrepreneurship' in its close connection with concept of property, where entrepreneurship and property considered as two sides of same process developing during time and space.

According to the second approach, entrepreneurial activity requires ownership of the means of production, but the innovative nature of activity is not necessarily required. Such views held by and adhered to by most scientists and economists such as A.Smith, J.Baudot, I.Lipsits, A.Busygin.

A proponent of the third approach (R. Catillon) believes that an entrepreneur can be the owner of a business, or maybe only a manager, where innovative character activity is optional. This approach is the largest in terms of coverage of economic units.

Representatives of the fourth approach (J. Schumpeter, P. Drucker, V.I.Kushlin) believe that the main thing in entrepreneurship is an innovative activity, where ownership of the enterprise is not an essential feature of entrepreneurship, thus how entrepreneurship is possible without own capital (for example, with using borrowed funds or at the expense of government subsidies). Innovation as J. Schumpeter clearly separates the specific entrepreneurial function from the functions of the owner and the factors of production and the manager [9].

Second approach evidenced by the definition of entrepreneurial activity enshrined in the Legislation of the Republic of Kazakhstan. Entrepreneurial activity is a type of economic activity that is an independent, proactive activity of a business entity aimed at making a profit (income). In turn, economic activity is one of the types of economic activity for the production of goods, the performance of work and the provision of services, carried out in accordance with the rules established by state authorities and management, as well as by economic entities [10].

Analysis

In the legislation of the Republic of Kazakhstan, instead of the concept of 'entrepreneurial activity', the term 'entrepreneurship' has been introduced (according to which state and private entrepreneurship are distinguished). Thus, 'private entrepreneurship' is understood as an initiative activity of private entrepreneurship entities aimed at generating income, based on the property of the private entrepreneurship entities themselves and carried out on behalf of private entrepreneurship entities, for their risks and under their property responsibility. Consequently, the legislator names as signs of private entrepreneurship: 1) initiative; 2) receiving income; 3) the presence of property; 4) the risk of entrepreneur; 5) independent property liability of entrepreneur. Therefore, the following should be attributed to number of legislative features of entrepreneurial activity: 1) initiative and independence of entrepreneurial activity; 2) presence of property; 3) risky nature; 4) focus on making profit (income).

Some representatives of the neoclassical direction of economic thought that interpreted entrepreneurship as a special and rare factor of production, the main function of which is the coordination of other factors. In this regard, within the framework of this direction, the following definition is used: entrepreneurial activity is a form of realization of special abilities of an individual, expressed in a rational combination of factors of production based on a risk approach in order to obtain entrepreneurial income.

The innovative concept of entrepreneurship defines it as a special type of activity that differs from traditional labor activity in an innovative way of implementation, scope and criteria.

The institutional concept interprets entrepreneurship as a socio-economic institution, i.e. a complex of specific norms and rules ensuring the coordinated behavior of business entities.

Generally, the formation and development of entrepreneurship in Kazakhstan after independence (1991-2001) can be identified in 4 stages, where each stage has its own peculiarities.

The first stage (1991-1992) was price liberalization. This period characterised the emergence of small businesses and become a widespread in the field of goods and services. In order to distribute their products to the market, large enterprises have opened several small enterprises, which have also led to *concentration of profits in hands of individuals and groups. This period was considered to be the beginning of the 'shadow economy' in Kazakhstan. During this period, about 34.5 thousand business entities were registered to start operating in the country. The cost of goods and services produced in them was 7% of GDP. In addition, at the end of 1992, the first Entrepreneurship Forum held with participation of President and Government of the Republic of Kazakhstan and for the first time a programme for the development of entrepreneurship among the CIS countries was adopted. The number of enterprises operating in the market decreased by 2 times from 1992 to 1995 and the cost of products and services produced by enterprises decreased from 7% to 4.7% of GDP. This, in turn, led to an increase in unemployment.*

The second stage (1993-1995) is government's strict fiscal policy. At the same time, tax incentives were created to achieve macroeconomic stability in the country. In 1994, number of workers in the manufacturing sector began to decline, and due to the heavy tax burden, entrepreneurship became inefficient. In this regard, the government forced to introduce tax incentives for development of small and medium enterprises. Lack of goods in the market, inflation considered as main reason for growth of entrepreneurship and unemployment. At that time, only banking and trade sectors were functioning well.

The third stage (1996-1997) is an implementation of privatisation policy. At the end of 1996 and the beginning of 1997, a number of macroeconomic stabilities began to establish in the country. In order to support small businesses, a decree of the President of the Republic of Kazakhstan was adopted on March 6, 1997. According to the decree, 1520 vacant buildings and places in the Republic were sold to entrepreneurs and 1334 vacancies leased. Entrepreneurs received 5664 permits to open shops on the first floor of residential buildings to engage in private business. With implementation of such measures in 1996-1997, small businesses had increased 2.4 times and their turnover amounted to 8.5% of GDP.

The fourth stage (1998-2001) was characterized by the qualitative development of the economy. During this period, country's economy was well developed mainly in financial and industrial sectors. Main sources of financing for business development were mostly second-tier banks, funds allocated from the local budget, the Asian Development Bank, the European Bank for Reconstruction and Development. During this time, entrepreneurship had been developed very rapidly. However, the programmes aimed at supporting and developing entrepreneurship adopted in 1999-2000 did not achieve the planned results. At the end of 2000, the plan to increase number of business facilities to 500 thousand, with a turnover of 15% of GDP (gross domestic product) not fulfilled. The next decade (2002-2012) brought new changes in the development of entrepreneurship in Kazakhstan. From 2000 to 2010, the number of business entities increased by 6 times, and in 2011 the number of registered enterprises amounted to 675 thousand.

Government Resolution for 2010-2014 Entrepreneurship development established in the industrial development programmes for 2012. In 2010, a special program namely "Business Road Map 2020" was created, according to which support service provided to small businesses. The main operator of this programme was the State Fund 'Damu'. There were a number of NGOs and relevant associations in Kazakhstan that supported entrepreneurship. An exemplary association namely the National Chamber of Entrepreneurs of the Republic of Kazakhstan was uniting trade unions across the country. One of the oldest business support institutions in Kazakhstan is the Kazakhstan Entrepreneurs Forum, established in 1992.

On June 25, 2014 the first Congress of the National Chamber of Entrepreneurs of Kazakhstan organized by the National Chamber of Entrepreneurs of Kazakhstan 'Atameken'. The National Chamber of Entrepreneurs was calling all business people in the country to work together to resolve any issues related to entrepreneurs. In 2015, more than 1.2 million enterprises operated in the country, employing about 3 million people in the field of small and medium business.

During the five-year period of implementation of the Business Road Map 2020 (2015-2019), total funding amounted to $836,3 million including from the republican budget – $466,6 million, from the local budget – $272,7 million, from the National Fund – $95,4 million were allocated. The implementation of programs to support small and medium-sized businesses has led to a significant increase in their lending. Currently, second-tier banks have issued loans totaling more than $3 billion, using interest rate subsidy on loans to participants of government programmes.

The State Programme of Industrial and Innovative Development of the Republic of Kazakhstan for 2015-2019 was developed in accordance to the long-term priorities of the Strategy Kazakhstan-2050: to implement the main direction of the Strategic Development Plan of the Republic of Kazakhstan until 2020, 'Acceleration of economic diversification'. The programme was a logical continuation of the state *programme for enforcing the industrial-innovative development of the Republic of Kazakhstan for 2010-2014, taking into account the experience of implementation and part of the industrial policy of Kazakhstan.*

When analysing inward investments to the entrepreneurship in Kazakhstan during 2010-2020, the European Bank for Reconstruction and Development (EBRD) identified to provide significant assistance to small and medium enterprises. In 2010, Kazakhstan was recognised as the first country to receive EBRD-funded small business support programme. In 2013, it implemented 10 projects under the Business Advisory Services Programme and 14 measures to develop the Module 1 market for the Damu Fund. In 2014, the EBRD implemented 142 projects in Kazakhstan with the involvement of local consultants from all regions. In 2015, the EBRD launched another 148 projects in Kazakhstan. The support from EBRD had contributed to the maximum development of private and small businesses in the regions of Kazakhstan and pursued a policy of accelerating the process of economic diversification. In addition, in 2016, the European Bank for Reconstruction and Development allocated $23.2 million for micro, small and medium enterprises and women's business in Kazakhstan. Meanwhile, the Organization for Economic Cooperation and Development (OECD) constantly monitors the development of entrepreneurship in the participating countries. The OECD Country Profile had provided information on trends and policies of SME finance in 48 countries over the period 2007-2018.

In the country, OECD standards successfully implemented in all areas of businesses and SME sectors. Kazakhstan had entered the top five in 2018, in terms of growth rates of lending to SMEs, which growth was 7.17%. In 2013-2019, the Government through the Damu Fund ensured the volume of concessional financing for SMEs comparable to those in the OECD countries: the budget for SME support programmes for this period amounted to $2 billion. These measures made it possible to finance 85.6 thousand SME projects totaling $9.4 billion. Over 7 years, the portfolio of SME loans in banks has grown to $10.8 billion, and the share of SMEs in the portfolio has grown to 26.9% [11].

In order to develop entrepreneurship, the Government in 2010 had subsidized interest rates on loans to entrepreneurs, whereby banks acted as a financial agent for guaranteeing loans to entrepreneurs, while the Fund "Damu" appointed as the operator of training and consulting programs under the state programme "Business Road Map 2020". In 2015, the Fund "Damu" was officially appointed as a financial agent of the 'Business Road Map 2020' which implemented and monitored financial support (subsidising interest rates on loans to entrepreneurs and guaranteeing loans to entrepreneurs to banks) under the Unified Programme of Business Support and Development. The fund had established 18 service centers and 14 mobile support centers in all regions of the country in 2012-2014.

For the period 2010-2017, the Damu Fund approved 11,852 projects worth $5 billion. The most active regions were: East Kazakhstan region, Pavlodar region, North Kazakhstan region, Aktobe region and Kostanay region.

Results

Nowadays, small and medium enterprises in Kazakhstan face a number of difficulties in their developments. The lack of professionals who know the ins and outs of entrepreneurship, poor quality of its training in higher education have led to a shortage of strong professionals in this field. The globalised developed countries are conquering world markets and building a strong economic system by bringing innovation to entrepreneurship. If this trend continues in Kazakhstani businesses, then the share of entrepreneurship in the economy will increase. Conversely, the low level of innovation directly related to the poor quality of this knowledge.

Thus, the predominance of exports of raw materials, the low share of SMEs in Kazakhstan's GDP, the relative underdevelopment of enterprises is producing added products. The share of small and medium-sized businesses in GDP averaged 20.6%, in 2019 was 30.8%, and in January-March 2020 reached 27.7% in 2010. According to the World Bank, the share of SMEs is ranging between 62-63% in most developed countries. The highest rate among the EAEU countries is in the Kyrgyz Republic, which is 39.3%. In modern globalisation, developed countries are building a strong economic system by conquering world markets through innovation in entrepreneurship. By improving education system, we receive high quality specialists in the field of entrepreneurship. New ideas will create new business opportunities for citizens where they can raise their income, hence a transparent support from government will be very important.

According to statistics, Kazakhstan's innovative products in 2018 were at 1.9% of GDP. Entrepreneurship development, which is the basis of a market economy, is currently a strategic priority for Kazakhstan, and it is planned to increase the share of small and medium-sized businesses in the *country's economy to 36% by 2030 and 50% by 2050. Thus, entrepreneurship is an important element of Kazakhstan's economy. From this point of view, measures to support entrepreneurship by the state are very appropriate, and development of domestic entrepreneurship, improving the structure of various business sectors and their effective use will allow Kazakhstan becoming a stable, industrialised country.*

In 2006, the Forum of Entrepreneurs of Kazakhstan and Almaty Association of Entrepreneurs with the support of the Center for International Private Entrepreneurship CIPE conducted a research to understand the current situation of small and medium-sized businesses and improve the situation in the business environment. The objectives of this survey were: to study the opinions of entrepreneurs on the existing problems associated with the "shadow" economy and corruption in the Republic of Kazakhstan; study of the reasons for entrepreneurs leaving the "shadow"; identification of economic, legislative and administrative measures to reduce the size of the "shadow" economy.

According to the survey, representatives of small businesses in Kazakhstan did not feel ready to compete with imported goods. It was noted that almost a third of the interviewed entrepreneurs, 31.7%, are unequivocally sure that they will not be competitive. The study showed that special forms of state support for the development of entrepreneurship are undeveloped. Thus, 59% of entrepreneurs believe that such a form of support as business incubators is not sufficiently developed. 53% of respondents believe that techno-parks need special attention due to insufficient development.

Entrepreneurs are confident that shadow economy has penetrated into all spheres of public life and is an integral part of the state's economy. Moreover, 53.2% of respondents believe that the level of development of the shadow economy in the country undermines its national security. More than a third of entrepreneurs believe that the level of the shadow economy is 40 to 50 percent of GDP. Only 9.9% of entrepreneurs agree with the official statistics, estimating the level of the shadow economy at 20-30% of GDP.

The researchers found that from the entrepreneurs' perspective, the state needed to implement a comprehensive programme of protective measures in order to maintain the competitiveness of small and medium-sized businesses and successfully enter the 50 most competitive countries in the world. There is a need to remove administrative barriers; fight smuggling; ensure transparency in public procurement; to form a new customs and tariff policy. Only with such integrated approach is it possible to change the situation for the better and take a worthy place in the international community.

Moreover, 82.1% of respondents believe that entrepreneurs do not have opportunity to protect themselves from corruption. The majority of entrepreneurs 69.2% are sure that government officials are interested in maintaining corruption, which complicates the solution of this issue. With regard to VAT, 48.7% of the respondents identified 5% as the most acceptable rate. 12.5% of entrepreneurs expressed the opinion that in order to increase business transparency, VAT should totally cancelled. Entrepreneurs had expressed unanimity regarding the corporate income tax (CIT). 90.1% of respondents believe that for the full legalisation of a business, the optimal CIT rate should be 15-20% [12].

Kazakhstan also has conditions for the development of 'social entrepreneurship'. In particular, a number of social enterprises operate on basis of Soviet social enterprises. For example, in Aktobe there is the 'Kazakh Society of the Deaf', which produces special clothing that is in demand to the market. As part of the activities of the State Fund for Entrepreneurship Development 'Damu' informed entrepreneurs with disabilities about the available resources for their problems (on the basis of a special programme 'Damu-Komek' to support, financial assistance, property, consulting support, other services).

The data below shows that the development of entrepreneurship in Kazakhstan has achieved a success. This evidenced by the achievements of Kazakhstan in the World Bank Report 2020 in doing business. It has dramatically improved from 37th to 25th place in last 3 years [Table 1].

Table 1

Kazakhstan	***2020***	***2019***	***2018***	***2017***
Doing Business	*25*	*28*	*36*	*37*

On the other hand, as shown by Kazakhstan's experience on transformation, the destruction of the old office of the state apparatus does not automatically lead to the birth of a new system of governance and public service; it needs a package of measures and aims at radical staffing update. It is clear that an economy could not be competitive without the state apparatus and transparent national companies. Therefore, as international experience shows that any 'administrative reform' usually begins for several reasons, this may be due to financial and economic problems, public awareness of the inefficiency, existing management system and interaction between state and society. At times, this awareness comes to the country's leadership, which sees that the bureaucracy did not have time to respond to the objective needs of economic and political development. The result of maturing internal bureaucratic tension, when *the lower-level bureaucrats can no longer get richer and the upper does not want to share. Furthermore, the voltage should somehow remove, including through 'administrative reform'.*

In order to avoid any crisis, there is a difference between systems of different countries. In this case, substantial assistance to the state apparatus can have numerous non-state actors, such as non-governmental organizations and political parties. Cooperation between NGOs, political parties and government agencies in conjunction with the mechanism of e-government would help to solve many existing problems in the functioning state apparatus. On the other hand, transparency, accountability to society, many social elevators for career growth through professional data will help the administrative reform. Factors hindering the development of entrepreneurship in Kazakhstan maybe due to a lack of information about the production, high interest rates on business loans, administrative barriers and other issues.

However today, there are many critics of the ineffectiveness of these programs. Pradumna Bikram Rana, an expert at the Asian Development Bank and a scientist at Nanyang Technological University, wrote in 'Strategic Reforms in Transition Economies: The Case of Asian Countries' that 'a market economy planning policy cannot immediately replace a centralized system'. It is a mistake to think that an independent market develops at the same time and destroys the centralized system. But it is one of the necessary steps in a market economy. The development of the market in the economy will be difficult and long if the institutions of the state not ensure the development of the market [13].

When summarising the results of the programme, the following system errors occurred:

1) Inefficient mobilisation of available resources;

2) Lack of connection with other individual intersectoral programmes;

3) Lack of speed of action between local authorities and development institutions;

4) Lack of a common methodology for data collection, monitoring, aggregation.

On the other hand, the World Bank global rating of quality of governance could not be the ultimate truth. The World Bank chief economist Philip Kiefer has mentioned that we should always bear in mind that management is a very multi-dimensional concept. Flatten it even to the six parameters can be difficult. It is not so easy to determine the good governance, because for some people, it is democratic governance, while for others – a stable economic growth. German expert Florian Villerhauzen believes that authoritarian regimes can be successful in economic terms [14]. In addition, political scientists have traditionally argued that economic growth leads to the growth of democracy and vice versa. On the contrast, Aurel Croissant a political science professor from Heidelberg believes that the level of welfare is not a sufficient condition for the transition to democracy. However, it contributes to the fact that the political system remains stable. That is, economic growth strengthens any regime, regardless of whether it is democratic or authoritarian.

Thus, market economy policy and planning mechanisms have not yet replaced the previous systems. 'It is wrong to presume that a free market will develop overnight if central planning is eliminated and the market freed. Scrapping the central planning system is obviously a necessary step toward the evolution of a market economy, but unless existing institutions can readily be converted to facilitate production and distribution under market conditions, the transition process will be difficult and lengthy'.

To sum up, a good government must have a firm belief and stable continuously practiced professional staff to achieve great goals in order to be an efficient, effective and non-corrupt. There is a need to shift from 'public administration' to 'public management'; the emphasis should be placed more on the managerial functions, rather than representational. This means more independence and opportunities in the manifestation of initiatives for government agencies, which creates a high level of responsibility of public sector and leads for further development of entrepreneurship. It is essential to improve governance in Kazakhstan, which provides an accurate diagnosis of the political situation in order to identify options for optimising the control system as well as to meet the requirements and expectations of the current situation.

Therefore undoubtedly that it seems some reforms never intended to achieve the ideal-typical structure. The Robinson's intuition that politicians often have other goals besides improving the quality of policy makes it clear [15]. In addition, when designing the bureaucratic reform programmes, politicians are often interested in building the state they want to govern but not necessarily the state one would want to live in. Since the beginning of the twentieth century 90s, many countries in the world have moved to a market economy, whereby each country had its own path of development. A number of countries have made remarkable progress in this area. Learning from the past, Kazakhstan should strive to implement the development strategies, correct mistakes and implement effective reforms.

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Mathematical sciences

IN THE 9TH GRADE OF SECONDARY SCHOOLS "REAL NUMBERS" TECHNOLOGY OF MASTERİNG MATERİALS FOR THE EDUCATİONAL UNİT

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Abstract

In the article, the content of the skills intended to become the subject of students in the process of teaching materials for the "Real numbers" educational unit, which is included in the content of the Mathematics subject in the IX classes of general education schools, is presented. Attention is focused on the place of the content elements that perform the "enabling function" in the formation of the mentioned skills in the "Real numbers" educational unit and the technology of turning them into action in the students' cognition. "Real numbers" of the transformed elements in the teaching unit "Real numbers","Cube root of a number", "n – root of the th degree and its properties", "Rational force and its properties"it is considered appropriate to make it into a system on topics. It should be noted that the task system, which serves as a means of organizing and managing the educational process for mastering the content elements presented by the students, should contain verbs that are required to be performed in the topics. Examples of tasks of that kind are included in the content of the work.

Keywords: *Teaching process; teaching unit; content lines; standard; system; methodological system; "system-structure" approach; paradigm; real numbers; natural numbers; integers; rational numbers, irrational numbers, cubic parabola; n- th degree root; cubic root; superior force; rational superior force.*

The actuality of the subject. There are recommendations that are useful to be adopted for guidance in the teacher's activity in the currently used textbook complex and various educational literature about mathematics teaching units, basic standards, substandards, and defined topics. This is very useful in terms of teaching the process of teaching mathematics according to the curriculum model. It is not denied that continuous improvement of the teaching process in the subject is logical, most didactic problems are eternal. Of course, as the experience of using the curriculum is formed, the methodical system of the teaching process adequate to it should be improved. Based on this logic"Real numbers"We claim the relevance of the study of the topic "Methodical system of teaching the specified subjects for the realization of the sub-standards for the educational unit (IX class).

Interpretation of generalizations based on information obtained on the basis of research.

Scientific sources indicate that "training" and "educational activity" are one of the main concepts of pedagogy. Although training is an important characteristic of educational activity, it does not cover all aspects of it. By the way, let's emphasize that to get to the essence of these and many other pedagogical concepts, to give an honest scientific interpretation, based on L. Bertalanfi's idea is a successful approach, in our opinion, the "system-structural approach" is a branch of dialectics that has developed and gained the "status" of independence. [13; 8]

Training, in the broadest sense of the word, involves the acquisition of new knowledge, skills and habits. However, learning and learning activities are essentially different events. Appropriation is an integral part not only of the learning process, but of every field of activity.[2;150]

The analysis of the materials obtained from scientific sources leads us to the conclusion that training is a way of implementing education, and the real spiritual reflection, memorization of what has been replaced, and the acquisition of the experience of creative activity based on it depends on the way of implementing education (dialectic of the content and form of cognitive action). Forming a model of educational implementation in didactics is a perennial problem. [14]

The technology of education implementation (methodology in the traditional approach) has its own system [1]. The expected result in the mentioned technological system is determined by the state of movement of the selected content. A technological system is available for each educational unit. It is not accidental that the selection of the educational unit is brought to the center of attention in the design of the system in question.[3; 282-283]

In general education schools, the teaching unit on "Real Numbers" in Mathematics occupies a special place. [7; 575-588] In the teaching unit "Real Numbers," the content standards covered in the teaching process include:

1.1.1. Reads and writes real numbers.

1.1.2. Compares and orders real numbers.

1.1.3. Approximates the point corresponding to a real number on the coordinate axis.

1.1.4. Applies the properties of union and intersection of sets to solve problems related to sets of real numbers.

1.2.3. Simplifies expressions involving nth (n > 2) roots.

1.2.4. Applies the fundamental laws of exponents to expressions involving nth (n > 2) roots.

1.3.1. Determines the approximate values of expressions involving square roots and cube roots and maintains a focus on the application of the techniques of calculating results by comparing them with obtained results. [6; 1184-1196]

The acquisition of materials in this teaching unit enables the enrichment of students' active mathematical vocabulary and the development of their understanding of concepts such as real numbers, natural numbers, whole numbers, rational numbers, irrational numbers, cubic parabola, nth degree root, and rational exponent, along with the relationships between them.

"Real numbers"virtual tools (important links for teaching the course)https://mathway.com/graph;https://go/hrw/com/math/midma/gradecontrnt/manipulatives/GrapCalc/graphCalc.html) and various worksheets are recommended. [10-11]

It is concluded from the research that it is enough to spend 2 hours teaching the subject of the same name "Real numbers" in the "Real numbers" educational unit, and it is logical to formulate the student skills that are expected in the teaching of this subject as follows:

– classifies the set of real numbers;

– represents real numbers on the number line;

– compares real numbers;

– applies the properties of union and intersection of sets to the set of real numbers.

In the process of teaching the subject, students are involved in the training activity on assimilation of the information included below.

Rational numbers and irrational numbers form the set of real numbers. A real number can be expressed as an infinite decimal fraction. For any real number a, the equalities a + a and a · 1 = a hold true.

Only real numbers that differ in sign are called opposite numbers. a and (-a) are opposite numbers. The sum of opposite numbers is equal to zero: a + (-a) = 0.

The product of reciprocals is equal to 1. The sum, difference, product, and ratio of two real numbers (with a non-zero divisor) is a real number.

Each number corresponds to a specific real number and its opposite, and every real number can be represented on the number line using a point. For two real numbers a and b, one of the relationships a > b, a = b, or a < b is true. The number corresponding to the point on the right on the number line is greater than the number corresponding to the point on the left. There are infinitely many real numbers between any two real numbers. The largest whole number that does not exceed a given number is called the integer part of that number. The absolute value of a real number represents the distance of the point corresponding to that number on the number line from the origin.

$$|a| = \begin{cases} a, \text{əgər } a > 0 \\ -a, \text{əgər } a < 0 \\ 0, \text{əgər } a = 0 \end{cases}$$

The distance between points a and b on the number line is found as |a-b|, and |a-b|=|b-a| holds true.

A set whose elements are all real numbers is called a numerical set. [10-11]

In the teaching of the subject, tasks related to the skills of writing the set of real numbers with inequality and interval are performed, the properties of combination and intersection of numerical sets, the similarities and differences between these properties and the properties of addition and multiplication on numbers are clarified.

In scientific and methodological sources, it is recommended to establish the first activity according to the following scenario. Numbers such as -7/3, п, √3, 0.1(3), -3, and 5 are written on the board. Students are encouraged to classify these numbers based on the set they belong to. During this process, the definition of a rational number is introduced or reinforced: numbers that can be expressed in the form m/n (where m is an integer, and n is a natural number) are called rational numbers; the set of rational numbers includes fractions, natural numbers, and integers.

The question "To which set do п and √3 belong?" is answered. Numbers that cannot be expressed in the form m/n, such as the ratio of two integers, are called irrational numbers. But what is the term for a set that includes both rational and irrational numbers? This question necessitates student activities focused on comparing and expressing numbers in various forms and determining their absolute values within the set of real numbers.

Here, the necessary information mentioned above is brought to the attention of the students and the training process is continued by engaging them in the tasks of comparing the numbers included in the set of real numbers, expressing them in different forms, and determining their absolute value.

It is known that prior to the teaching of this subject, the ability to compare real numbers has already been given a place on rational and irrational numbers. It is necessary to aim for further development of these skills.

The following content and recommended assignments for the second lesson (in a general classroom or with small groups) and as a homework assignment are as follows:

-Describe the set of numbers that satisfy inequalities on the number line (e.g., $-2 \le x \le 6$; $-1 \le x < +\infty$) and represent them in interval notation.

-Write inequalities that correspond to given statements (e.g., m is not greater than 3; a can be at least -10 but no more than 22).

-Find the union and intersection of intervals (e.g., a) $(-2;4] \cap [0;9]$; b) $(-2;4] \cup [0;9]$).

-Describe a given interval (e.g., (-3;0)) on the number line and identify rational and irrational numbers within that interval.

-Given the subsets A = [-2;1], B = [0;3], and C = [-1;2] of the set of real numbers R, verify the following inequalities using descriptions on the number line:

1) $A \cup B = B \cup A$;

2) $A \cap B = B \cap A$;

3) $(A \cup B) \cap C = (A \cap C) \cup (B \cap C)$;

4) $(A \cup B) \cup C = A \cup (B \cup C)$; and so on. [6;1184-1186]

The general conclusion drawn from the compilation of the materials is as follows: Devoting 3 hours to the teaching of the "Cubic Root of a Number" topic within the "Real Numbers" teaching unit is sufficient, and the intended student skills for this topic can be formulated as follows:

-Construct the graph of the function $y = x^3$.

-Perform precise and approximate calculations for square roots and cube roots.

-Calculate the cubes and cube roots of certain numbers through written calculations.

-Calculate the cubes and cube roots of numbers using a calculator.

-Estimate cube roots of numbers.

-Apply various calculation methods (provided in the textbook) to calculate cube roots.

The teaching process can begin by engaging students in practical activities (such approaches are provided in textbooks used in general education schools). The practical task involves exploring the graph of the $y = x^3$ function and developing students' skills in constructing the graph, understanding its shape, and estimating the approximate values of cubes and cube roots based on the coordinates of points on the graph (in mathematics-oriented classes, the teaching process for this topic may also include tasks related to graphing the $y = x^3$ function using graphing calculators and conducting more extensive investigations).

For instance:

Construct the graph of the $y = x^3$ function. Use this graph to construct the graphs of $y = ax^3$ and $y = ax^3 + n$, $y=a(x-m)^3+n$ functions.

Construct the graph of the $y = \sqrt[3]{x}$ function and compare it with the graphs of $y = a\sqrt[3]{x}$ and $y = a\sqrt[3]{(x-m)} + n$ functions.

Analyze and compare these graphs with the graph of $y = x^3$ function.

It may be initially challenging to implement this approach as the first lesson. However, the application of technological resources can help overcome these difficulties and facilitate the learning process.

Students should understand that the graph of the $y = x^3$ function is a cubic parabola. When $x > 0$, $y > 0$ (the cube of a positive number is positive), when $x < 0$, $y < 0$ (the cube of a negative number is negative), and when $x = 0$, $y = 0$. Therefore, the graph is symmetric with respect to the coordinate origin. For any (x;y) point on the graph, the corresponding (-x;-y) point, symmetric with respect to the origin, is also valid. The graph of the $y = x^3$ function is symmetric with respect to the coordinate origin. The only x value that corresponds to a given y value, where y represents the cube of x, is unique.

It is advisable to organize the students' activities in the form of a general class and group work based on the following content and suggested learning assignments:

- Determine which points, A(-2;8), B(2;8), C(-1/2; -1/8), D(-3; -27), lie on the graph of the function $y = x^3$, which is a cubic parabola.

-Using the graph of $y = x^3$, find:

a) Approximate values of x when y = 1 and y = 2.

b) Approximate values of x when y = -4 and y = 4.

-Calculate the volume of a cube with side length 4 cm. If the lengths of the sides of this cube are increased by a factor of 2, what will be the new volume?

-Calculate the value of the expression (e.g., $\sqrt[3]{8}\cdot\sqrt[3]{(2\cdot 13.5)}$).

-Find several natural values for n such that:

a) $\sqrt[3]{n}$ is a rational number.

b) $\sqrt[3]{n}$ is an irrational number.

-Determine the approximate values (on the number line) of the given numbers:

a) $\sqrt[3]{19}$

b) $\sqrt[3]{30}$

-Find the sign of the following expressions:

a) $\sqrt[3]{5} - \sqrt[3]{7}$

b) $\sqrt[3]{10} - 2$

-Solve equations (e.g., $(x-1)^3 + 1 = 9$) and so on.

In the next two sessions, the goal is to develop students' skills in calculating cube roots. For this purpose, exercises from the "Riyaziyyat-9" (Baku, "Radius," 2016) textbook (pages 14-15) can be used effectively.

For example:

-Express the given numbers as the cubes of three equal factors (e.g., $216 = 2\cdot2\cdot2\cdot3\cdot3\cdot3 = (2\cdot3)\cdot(2\cdot3)\cdot(2\cdot3) = 6^3$).

-Some numbers are both perfect squares and perfect cubes, like $64 = 8^2$ and $64 = 4^3$. Think of similar numbers. How can the following sequence help you find such numbers? $0=0^3=0^2$; $1=1^3=1^2$; $64=4^3=8^2$; $729=9^3=27^2$; $4096=16^3=64^2$.

-Three refrigerators are available for purchase with different measurements and prices: the first one has measurements of 40 cm in all dimensions and costs 96 manat, the second one has measurements of 60 cm and costs 192 manat, and the third one has measurements of 50 cm and costs 150 manat. Which refrigerator is the most cost-effective per cubic meter? Solve this problem by drawing appropriate diagrams with proportional measurements.

Select two sets from A, B, and C in such a way that:

a) The difference between them consists of irrational numbers.

b) Their intersection consists of rational numbers.

To solve this, let's analyze the sets:

$A = \{\sqrt[3]{2}; \sqrt[3]{(3)}; \sqrt[3]{8}; \sqrt{2}; -4\}$

$B = \{\sqrt[3]{8}; -4; \sqrt[3]{5}; \sqrt{(0.4)}\}$

$C = \{0.2; \sqrt{(4/9)}; \sqrt[3]{7}; -4; \sqrt[3]{8}\}$

Solve it by creating an Euler-Venn diagram.

-You can estimate the height (h) of a tree using the formula $h \approx 35\sqrt[3]{(d^2)}$, where d is the diameter of the tree trunk. Calculate the approximate height of a tree with a trunk diameter of 1.1 m. Verify the accuracy of this method by measuring trees in a park or garden.

-Calculate the volume of a sphere using the formula $V = \frac{4}{3}\pi r^3$. If the volume is 528 m^3, approximate the radius with one decimal place.

- Two iron cubes with side lengths of 3 cm and 4 cm are melted and reshaped into a cube. Find the approximate length of this cube. Round the result to the nearest unit and so on.

In the process of teaching the subject, students' cube root calculation skills can be evaluated by the following criteria:

∗Accurately calculates the cube and cube root of some numbers with written calculations;

∗Calculates the cube and cube root of numbers with a calculator;

∗Estimates the cube root of numbers;

∗It applies some of the calculation methods given in the textbook to calculate the cube root of numbers.

The analysis of the selected materials suggests that dedicating 4 hours of instruction in the "Real Numbers" teaching unit to the topic of "nth Roots and Their Properties" is sufficient. It is considered acceptable to formulate the following learning outcomes for students in this topic:

-Understands the definition of the nth root and the result obtained from this definition, solves the equation x^n*=a.*

-When n is an odd number, explains the equality $\sqrt[n]{a^n} = a$ *through examples.*

When n is an even number, explains the equality$\sqrt[n]{a^n} = |a|$ *through examples.*

-If -a≥0 and b≥0, it applies the property of the nth root to simplify expressions: when a≥0 and b≥0, $\sqrt[n]{a \cdot b}\ \sqrt[n]{a} \cdot \sqrt[n]{b}$*;*

-If -a≥0 and b≥0, it applies the property of the nth root in the context of simplifying expressions: $\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$*,*

-For natural numbers n, k, and a≥0, it simplifies expressions involving the nth root of the nth root in the context of simplifying expressions: $\sqrt[n]{\sqrt[k]{a}} = \sqrt[nk]{a}$ *,*

-For natural numbers n, k, m, and a≥0, it simplifies expressions involving the power of a root by considering the common factors of the root's degree: $\sqrt[kn]{a^{km}} = \sqrt[n]{a^m}$*,*

-Performs tasks related to removing the root sign from under the fraction;

-Performs tasks related to placing the root sign under the fraction;

-Performs tasks related to rationalizing the denominator of expressions. [10-11]

It is advisable to start the teaching process with the following research:

Research: 1) Replace the asterisk symbol with a number so that the equality is correct.

a)$(\star)^4 = 16$*; b)*$(\star)^5 = 343$*; c)*$(\star)^8 = 0$*; d)*$-(\star)^4 = -32$*;*

2) Is it possible to find a number that, when substituted for the asterisk, makes the equation $(\star)^6 = -64$ *correct?*

3) What can be said about the number that should be substituted for the asterisk to make the equation $(\star)^4 = 9$ *correct?*

After completing the research, it is advisable to engage students in an activity to assimilate the following content:

⁕ An integer that is equal to a to the power of n (n ≥ 2, n ∈ ℕ) is called the nth root of a. For example, the 5th root of 32 is 2 because 2^5 *= 32. The 4th root of 81 is both 3 and -3, as* $3^4 = 81$ *and* $(-3)^4 = 81$*. When n is an odd number, there is only one real number for which a to the power of n equals it. When n is an even number, if a > 0, there are two real numbers for which a to the power of n equals them, and these numbers are opposite or symmetric to each other. When a < 0, such numbers do not exist.*

**If n is an odd number, any number has only one real nth root.*

**If n is an even number, then for any positive number a, there are two real nth roots, and these roots are opposite or symmetric to each other.*

**If a < 0 and n is an even number, then a does not have a real nth root.*

**The nth root of a non-negative number a is referred to as the principal root, denoted* $\sqrt[n]{a}$*, and is read as "the nth root of a." n indicates the degree of the root, and the exponent is referred to as the index, while a is called the radicand. When n is even, the principal root of a (a > 0) is written* $-\sqrt[n]{a}$*.*

**It is possible to express the nth root of a negative number by using the same degree root. For example, ∛(-8) = -∛8 = -2.*

**When a = 0, √0 = 0. When n is an odd number, the expression* $\sqrt[n]{a}$ *is meaningful for any value of a, and when n is even, the expression* $\sqrt[n]{a}$ *is meaningful only when a ≥ 0.*

**For all values where the expression* $\sqrt[n]{a}$ *is meaningful,* $\left(\sqrt[n]{a}\right)^n = a$*..*

**When n is an odd number,* $\left(\sqrt[n]{a}\right)^n = a$*., and when n is even,* $\left(\sqrt[n]{a}\right)^n$ *=|a|.*

If a > b > 0, then $\sqrt[n]{a} > \sqrt[n]{b}$..

In order to develop students' skills based on the understanding of the concept of the nth root, it is essential to organize teaching activities in a general class and small group format using the following content and required learning tasks [4; 969]:

–Calculate (for example: $\sqrt[4]{256}$; $\sqrt[3]{0}$; $\sqrt[4]{0{,}064}$);

–Divide into two groups - meaningful and non-meaningful expressions:

$a)\ \sqrt[5]{-27};\ b) - \sqrt[8]{-19};\ \sqrt[4]{(-2)^4};\ \sqrt[4]{-12}$

–Between which two consecutive integers is the given number? (for example;; $\sqrt[3]{25} - \sqrt[4]{17}$)

–Calculate: $a)\sqrt[5]{\sqrt{64}}; b)\sqrt{7+\sqrt[3]{7+\sqrt[4]{1}}}$;

–Find approximate values of expressions with a calculator: $\sqrt[3]{16}; \sqrt{10^3}$;

–Simplify: $a)\sqrt[4]{x^4} + \sqrt[5]{x^5}\ (x>0);\ b)\sqrt[4]{x^4} + \sqrt[5]{x^5}\ (x<0); c)\sqrt[3]{(\sqrt{2}-1)^3} + \sqrt[4]{(\sqrt{2}-1)^4}$;

$-1 < x < 2$ simplify when: $\sqrt[3]{(x-1)^3} + \sqrt{x^2-4x+4}$;

–At what values of the variable is the equality true?

$a)\sqrt[3]{x+1}$= 3; b) $\sqrt[4]{x-1}$ = 2 and so on.

The teaching of the topic continues with the determination of the properties of nth root. Students' attention is directed towards five important properties as follows:

Property 1: If a≥0 and b≥0, then $\sqrt[n]{a\cdot b} = \sqrt[n]{a}\cdot\sqrt[n]{b}$.

The nth root of the product of non-negative numbers is equal to the product of their nth roots.

Property 2: If a≥0 and b>0, then $\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$.

The nth root of a non-negative number divided by a positive number is equal to the nth root of the numerator divided by the nth root of the denominator.

Property 3: For n, k natural numbers and a≥0, $(\sqrt[n]{a})^k = \sqrt[n]{a^k}$.

Property 4: For n, k natural numbers and a≥0, $\sqrt[n]{\sqrt[k]{a}} = \sqrt[nk]{a}$.

Property 5: For n, k, m natural numbers and a≥0, $\sqrt[kn]{a^{km}} = \sqrt[n]{a^m}$

Multiplying or dividing the exponent of the root by the same natural number does not change the value of the root or the root-alter expression. [12; 121-124]

For the development of students' skills in understanding nth root properties, organizing teaching activities in both whole-class and small-group formats based on the following content and required learning tasks can be beneficial.

Calculate the value of the expression: $\sqrt[4]{16\cdot 81}; \sqrt[3]{54}\cdot\sqrt[3]{32};\ \sqrt[3]{9-\sqrt{17}}\cdot\sqrt[3]{9+\sqrt{17}}$;

–Reading the identities given in Property 1 and Property 2 from right to left, the rules for multiplying and dividing roots with equal vertices are obtained. Complete the missing words in these rules:

1) To multiply the roots whose tops are ...., the expressions under the root..... the top of the root as before..... are sufficient.

2) In order to divide the roots with tops....split, the top of the root......

–Simplify, knowing that variables take positive values: a) $\sqrt[3]{\sqrt{a}}$; b) $\sqrt[4]{\sqrt[3]{z^{12}}}$;

-Calculate the area of a rectangle with a length of $\sqrt[4]{8}$ m and a width of $\sqrt[4]{2}$ m.

Continuing the process of teaching the subject, it is necessary to pay special attention to the work on the tasks related to the removal of the multiplication under the root sign and the placement of the multiplication under the root sign. At this stage, it is useful to use worksheets based on the following criteria:

**It applies the roots of the nth degree;*

∗It applies the properties of the product, the root of the ratio to the nth degree, to the simplification of numerical and variable expressions;

∗Inserting a comma under the root symbol writes the expression under a root symbol;

∗Simplifies expressions by bringing roots of different degrees to the root of the same degree;

∗Frees the denominator from the root.

Two worksheets taken from scientific-methodical sources presented below can be an example of the tools in question[11]:

Worksheet № 1

Name............................ Surname................................History........................

1. Calculate.

$\sqrt{2}\cdot\sqrt{32}$= ?;$\sqrt[3]{0{,}5}\cdot\sqrt[3]{16}=?$; $\sqrt[3]{4}\cdot\sqrt[3]{16}=?$; $\sqrt[5]{8}\cdot\sqrt[5]{4}=?$;

$(\sqrt{18}-\sqrt{8})\cdot\sqrt{2}=?$; $(\sqrt[3]{16}-\sqrt[3]{2})\cdot\sqrt[3]{4}=?$

2. Calculate.

$\sqrt{\sqrt{81}}=?$; $\sqrt[3]{\sqrt{729}}=?$; $\sqrt{\sqrt{\sqrt{256}}}$=?; ?$(\sqrt[6]{5})^{12}=?$; $(-2\sqrt[6]{4})^{3}=?$; $(2\sqrt[3]{3})^{6}=$

3. Simplify.

$(\sqrt[4]{b^2})^4=?$; $\sqrt[6]{\sqrt[3]{n^{18}}}=?$; $\sqrt[6]{\sqrt[5]{u}}=?$

4. Simplify.

$(\sqrt{ab})^3\cdot\sqrt{a^3b^3}=?$; $\sqrt{x^n}\cdot(\sqrt{x})^n=?$

5. Simplify.

$\dfrac{\sqrt{x^3y^3}}{\sqrt{x^2y^2}}=?$; $\dfrac{\sqrt[5]{16r^6z^3}}{\sqrt[5]{0{,}5rz^2}}=?$

Worksheet № 2.

Name ....Surname................................History.............................

∗Apply the properties of the product, the root of the ratio to the nth degree, to the simplification of numerical and variable expressions.

1. Remove the comma from under the root symbol.

$\sqrt{32}$; ;$\sqrt[3]{24}$ $\sqrt{180}$

2. Simplify.

$\sqrt{y^7}$; ;$\sqrt[3]{81a^5bc^8}\sqrt[3]{24x^7y^8}$

3. Simplify the expressions.

$\sqrt{a^3b^3}\cdot\sqrt{ab}$;;$\sqrt[3]{m^2n}\cdot\sqrt[3]{m^4n^5}$ $\dfrac{\sqrt{a^3b^2}}{\sqrt{ab}}$

4. Simplify the expressions, knowing that the variables take a positive value.

$\sqrt[4]{u^3v^3}\cdot\dfrac{\sqrt[4]{16u^3v^3}}{\sqrt[4]{u^2v}}$; $\dfrac{5\cdot\sqrt[5]{m^4n^{-1}}}{6\cdot\sqrt[5]{mn^2}}\cdot\sqrt[5]{m^2n^3}$

Summarizing the materials selected for the analysis, it is concluded that it is enough to devote 4 hours to the teaching of the topic "Rational force and its properties", which is included in the "Real numbers" educational unit. In the process of teaching the topic "Rational superpower and its properties. Generalizing tasks", it is logical to consider the formation of the following knowledge and skills in students:

-It applies the notation $x^{\frac{1}{n}}=\sqrt[n]{x}$ *for a fraction with a numerator of 1(where n is a natural number and x is any non-negative real number);*

-For m as a whole number, n as a natural number, and x as any positive number, it applies the equalities $x^{\frac{m}{n}}=(x^{\frac{1}{n}})^m=\sqrt[n]{x^m}$ *and* $x^{\frac{m}{n}}=(x^m)^{\frac{1}{n}}=\sqrt[n]{x^m}$ *;*

−applies the product of powers property to the simplification of numerical and variable expressions;

−applies the property of the product of rational superordinate powers to the simplification of numerical and variable expressions;

−applies properties of power of product and power of power to simplification of numerical and variable expressions;

−applies the property of negative superposition to the simplification of numerical and variable expressions;

−applies the power of ratio property to the simplification of numerical and variable expressions;

−applies the zero-top power to simplify expressions with variables. [7;583-584]

It is advisable to start the learning process with such a study.

Research. 1) $\sqrt[3]{2^6}$ *find the value of the expression; 2)* $\frac{6}{3} = 2$ *take into account that and* $2^{\frac{6}{3}}$ *calculate the value of its expression; 3) compare the results of step 1 and step 2; 4) Is the equality* $\sqrt[n]{a^m} = a^{\frac{m}{n}}$ $a^{\frac{m}{n}}$ *true when m is divided by n?? 5) If the number m is not divisible by n, how can we calculate the value of the expression* $a^{\frac{m}{n}}$*?*

Continuing with the presentation of the following information, if we assume that the equality $\sqrt[n]{a^m} = a^{\frac{m}{n}}$ *(where a>0, m∈Z, n∈N, n≥2) holds true for the case when* $\frac{m}{n}$ *is a fractional number, then all the properties that are valid for integer exponents also hold true for fractional exponents with a positive base.*

Definition: If a is a positive number, and m/n is a fractional number (where m is an integer and n is a natural number, n≥2), then: $a^{\frac{m}{n}} = \sqrt[n]{a^m}$.

When m>0 (n∈N, n≥2) $\sqrt[n]{0^m}$*=0, so when* $\frac{m}{n}$ *>0,* $0^{\frac{m}{n}}$*=0.*

For negative numbers, fractional exponents are not considered. For example, the expression $(-4)^{\frac{1}{2}}$ *is undefined.*

It is necessary to use learning tasks aimed at transforming the presented information into a general system of knowledge, skills and habits of students. Students' activity on such tasks can be organized in the form of whole class, group work, and homework. Among such tasks, we can include examples with the following requirements and content:

-Replace rational powers with roots (for example: $x^{\frac{2}{3}}$; $y^{1,5}$; $8^{-0,5}$; $c^{-2,5}$);

-Replace the arithmetic root with a rational exponent (powers of variables are positive) (for example:$\sqrt[5]{7^3}$; $\sqrt[5]{a^3}$; $\sqrt[8]{2x^3}$);

- Latif and Sevil calculated the value of the statement as follows:$(-8)^{\frac{1}{3}}$

Latif: $(-8)^{\frac{1}{3}} = \sqrt[3]{-8}$*=2; Seville:* $(-8)^{\frac{1}{3}} = \sqrt[3]{-8} = \sqrt[6]{(-8)^2} = \sqrt[6]{64}$*=2. According to these results explain the idea "For negative numbers, the decimal power is not considered."*

-Compare numbers (for example: $0{,}1^{\frac{1}{2}}$ *with* $0{,}2^{0,5}$; $4^{\frac{1}{3}}$ *with* $4^{\frac{1}{4}}$);

- At what values of the variable does the expression make sense (for example: $(x-1)^{\frac{1}{4}}$; $(x+1)^{\frac{2}{3}}$ *)?*

In the next exercise aimed at teaching the subject, students are introduced to the properties of the rational superior force. It is made clear to them that the known properties of the integer superpower are also true for any rational superpower whose base is a positive real number. Students' attention is drawn to the properties presented below, and the expression of each property in words is voiced and explained based on an example:

Product of forces:$a^p \cdot a^q = a^{p+q}$;
Strength of force: $(a^p)^q = a^{pq}$;
Product strength: $(ab)^p = a^p b^p$;
Negative top power: $a^{-p} = \frac{1}{a^p}$;
Zero-top force:; $a^0 = 1$
Ratio of forces:; $\frac{a^p}{a^q} = a^{p-q}$
The power of ratio:; $(\frac{a}{b})^p = \frac{a^p}{b^p}$

Here, a and b are positive real numbers, while p and q can be any rational numbers. Specifically, if p=m/n and q=k/l (where n and l are natural numbers, and m and k are integers), then the equality $a^p \cdot a^q = a^{p+q}$ *is proven to be true in the form of a classroom activity for the general class. The proof of other properties is recommended to be carried out through group activities involving students.*

The teaching of the subject is continued by directing the activities of students on learning tasks. It is appropriate to include the examples reflected below in the system of tasks in question:

- Show in the form of a rational superscript: a) $c^{\frac{1}{2}} \cdot c^{\frac{1}{3}}$*; b)*$b^{\frac{2}{3}} \cdot b^{\frac{4}{3}}$*;*

- Simplify; a) y:$y^{\frac{2}{3}}$ *; b)* $a^{\frac{1}{3}} : a^{\frac{2}{3}}$*;*

- Simplify by applying the properties of the rational upper force: a) $(c^{0,7})^{0,5} \cdot c^{0,15}$*;*

- Calculate: $2{,}4^{0,4} \cdot 4\sqrt[5]{2}$:
- Display a certain expression as a cube $(a > 0)$: $a;\ a^6;\ a^{\frac{1}{4}};\ a^{-\frac{1}{3}}$;
- $234^{\frac{1}{2}} = a$ knowing that, express with the given number a: $0{,}0234^{\frac{1}{2}}$;

$x > 0, a > 0$ knowing that, express the variable x by:$a = x^{-\frac{1}{3}}$;

Express the expression as a rational exponent: $\sqrt[3]{x} \cdot \sqrt[6]{x}$;

Show in plural form:$(c^{\frac{3}{4}} + 2c^{\frac{1}{4}})^2 - 4c$;

Break into punctuation: $b + b^{\frac{1}{2}}$;

It is recommended to take advantage of the presented task samples (in accordance with the needs manifested in the educational process) in the preparation of worksheets, in the joining of groups to the activity. In the continuation of the teaching of the subject, it is important to gradually replace learning tasks with creative application tasks. For this purpose, you can use tasks with the following requirements and content:

Tea, coffee and chocolate contain caffeine. With the expression 100$\cdot (0{,}5)^{\frac{n}{5}}$, it is possible to calculate the amount of caffeine (in %) remaining in the human body after n hours of use. After taking tea or coffee: a)$\frac{1}{2}$ hour; b) What percentage of caffeine remains in the body after 1.5 hours? 2) After how many hours, the remaining caffeine in the body will be 50%?

A cubical oil tank with a volume of 2187m^3 was prepared. If one can of paint is enough to paint 20m^2 areas, how many cans of paint are needed to paint the entire surface of this tank?

Find the volume of a rectangular parallelepiped with dimensions Compare the volume of this parallelepiped with the volume of a cube with a tip. $2^{\frac{1}{3}}\ sm, 4^{\frac{1}{3}}\ sm, 8^{\frac{1}{3}}\ sm 5^{\frac{1}{4}}\ sm$

1) Draw a square. Take its area as a number such that its perimeter:

a) rational number; b) be an irrational number;

2) Draw a cube and take its volume in such a way that the total surface area is:

a) rational number; b) be an irrational number.

Express the required quantity in terms of the given formulas:

a) m when T=$2\pi\sqrt{\frac{m}{g}}$; b) k when R=$\sqrt{d^2 + k^2}$; c) x when K= $\sqrt{1 - \frac{x^3}{u^3}}$; d) b when A=$\sqrt{1 + \frac{a^3}{b^3}}$. [10]

It is useful to conclude the teaching of the topic with summarizing exercises. For this purpose, we consider it useful to organize students' training activities on the following examples of tasks:

Find the value of the expression: a) $(\sqrt[3]{108} + \sqrt[3]{4} + \sqrt[3]{32}) : \sqrt[3]{4}$; b) $\sqrt[3]{10 + 6\sqrt{3}} \cdot \sqrt[3]{10 - 6\sqrt{3}}$.

Free the denominator of the fraction from irrationality: a) $\frac{12}{\sqrt[3]{3}}$; b)$\frac{6}{\sqrt[4]{32}+\sqrt[4]{2}}$.

The volume of a sphere with radius r is calculated by the formula V=$\frac{4}{3}\pi r^3$. Calculate the volume of a spherical tank with a radius of 1.5 m;

Find the radius of the spherical tank whose volume $\frac{28\pi}{3}m^3$. Round the volume to the nearest tenth.

Simplify: $\sqrt[3]{a\sqrt[3]{a}}$.

Determine the correspondence for the equalities:

1) $\sqrt[4]{a^4} = a$;2) $\sqrt[3]{a^3} = -a$; 3) $\sqrt[6]{a^6} = |a|$

a) is true for any values of a;

b) is true only if; $a \geq 0$

c) is true if and only if $a = 0$

Solve the equations: a) 0.5 $x^4 + 1 = 9$; b) $\sqrt[3]{2x - 4}$=1;

$a < 0$ when, simplify: $a^2 \cdot \sqrt{a^2} + \sqrt[3]{a^9} - 2\sqrt[4]{a^{12}}$;

At what values of the variable does the expression make sense:

a) $\sqrt[8]{x-3}$;b) $\sqrt[5]{x-1}$; c)$\sqrt[6]{-x}$?

It would be appropriate to use the criteria presented below in determining the achievements of students in the educational unit.

Summative evaluation criteria for the study unit.

Calculates the cube root of some numbers accurately or approximately in various ways;

2. $a \geq 0$ and $b \geq 0$ if it is, applies the property of the root of the product to the nth power in the simplification of numerical and variable expressions;

3. $a \geq 0$ and $b > 0$ if, applies the property of the root of the ratio to the nth power in the simplification of numerical and variable expressions;

4. n, k, m – applies the property of the root of the root in the simplification of numerical and variable expressions if the natural numbers and $a \geq 0$;

5. If there are natural numbers and , it simplifies according to the power of the root expression and the common points of the degree of the root; $n, k, m, a \geq 0$

6. Simplifies expressions containing the root;

7. Applies the property of the product of powers to the simplification of numerical and variable expressions;

8. Applies the property of the product of rational superordinate powers to the simplification of numerical and variable expressions;

9. Apply the power of the product and the power of the power property to the simplification of numerical and variable expressions;

10. Applies the ratio property to the simplification of numerical and variable expressions;

It applies the property of negative rational exponents to the simplification of numerical and variable expressions.

Summative assessment tasks for the study unit.

1. $\sqrt{2}$, $\sqrt[3]{3}$, $\sqrt[6]{4}$ arrange the numbers in ascending order.

2. Calculate: ()()).$(\sqrt{2} + \sqrt[4]{3}) \cdot (\sqrt{2} + \sqrt[4]{3}) \cdot (2 + \sqrt{3})$

3. Show negative numbers: A) $\sqrt[3]{3} - \sqrt{2}$; B) $\sqrt[4]{4} - \sqrt{2}$-; C) $\sqrt[3]{2} - \sqrt[4]{3}$; D)-. $\sqrt[6]{2} - \sqrt[18]{10}$.

4. Determine the sign of the difference 3· $\sqrt{2}$ - 2$\sqrt[3]{2}$.

5. Compare the values of the expressions 0,2· $\sqrt[3]{(-5)^6}$ and 2· $\sqrt{\frac{1}{4}\sqrt[4]{625}}$.

6. The set of square roots of natural numbers from 1 to 9 is denoted by A$\cap B$, and the set of cube roots is denoted by B. Find it instantly.

7. Which of the equations is true? A) $\sqrt[3]{4} \cdot \sqrt[3]{4} = 4$; B) $\sqrt[15]{(-2)^5} = \sqrt[3]{2}$; C) $\sqrt[8]{(-3)^4} = \sqrt{3}$; D) $\sqrt[3]{(-2)^6}$= - 4 ?

8. Express the number as a rational power. $\sqrt[3]{2\sqrt{2\sqrt{2}}}$

9. For natural numbers, the equation $(m+n)^{\frac{1}{2}} = \sqrt{7}(m-n)^{-\frac{1}{2}}$ is true. Find the value of the expression $m^2 + n^2$.

A) 25; B) 20; C) 12; D) 7.

10. One box of paint is enough to paint 12 m^2 areas. a) How many cans of paint are needed to paint the surfaces of three iron cubes with edges 3m, 4m and 5m? b) if these three cubes are melted and formed into one cube, how many cans of paint will be needed to paint its surface?

11. Show any pair of numbers x and y that satisfy the equation $x^{\frac{1}{3}} \cdot y^{\frac{1}{2}}$= 6.

12. simplify the expression. $\frac{x - x^{\frac{1}{2}} - 2}{x - 2x^{\frac{1}{2}}}$

13. calculate the value of the expression (1 -$\frac{1}{x}$) $\cdot (1 + \frac{1}{x} + \frac{1}{x^2}$)) when $x = \sqrt[3]{2}$.

14. Determine eligibility:

1. $\sqrt[4]{a^4}$=|a|	*A) is true at any value of a;*
2. $\sqrt[3]{a^3} = -a$	*B) true only if a=0;*
3.$\sqrt[6]{a^6}$= -a	*C) is true if; $a \leq 0$*
D) only $a \geq 0$ is true when	

15. Find the volume of a rectangular parallelepiped with dimensions $\sqrt[3]{2}$ cm, $\sqrt[3]{2}$ cm, $\sqrt[3]{18}$cm. Compare the volume of this parallelepiped with the volume of the cube whose side is $\sqrt[4]{4}$ cm.

16. The blood circulation time is the average time that the blood returns to the heart after making a cycle in the body. The circulation time for mammals can be roughly calculated (in seconds) by the formula T=17.4$m^{\frac{1}{4}}$. M stands for mass (in kilograms). Mass: a) 120 kg cow; b) How many seconds is the circulation time of 4000 kg of elephant's blood? [11].

The result. 1) In the process of teaching the topics covered in the "Real numbers" educational unit, the selection and application of task types should be focused on in order for students to become subjects of the verbs based on the expected results;

2) In the process of teaching materials for the "Real numbers" educational unit, the inclusion of necessary terms in the content of the students' active mathematical vocabulary should be considered as an important didactic requirement;

3) It is recommended to take advantage of virtual tools (important links for teaching the course) and various worksheets as an additional resource in teaching materials for the "Real Numbers" educational unit;

4) Since the materials of the "Real numbers" educational unit belong to the "Numbers and actions" content line, in the real pedagogical process, they are used both as a whole (with the content covered by the subject of Mathematics as a whole) and in parts belonging to each content line (subsystems of the other four content lines)) dialectical unity ("system-structure" approach-whole-part relations) should be expected between its elements;

5) Expectation of the "opportunity-movement-quality" paradigm in the selection of tasks and their systematization has a positive effect on the efficiency of the educational process.

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Medical sciences

SADDLE ANGLE ACCORDING TO CEPHALOMETRIC DATA

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Introduction. *The saddle angle data is widely used in orthodontics, craniometry, and anthropology [1-5]. According to [1], the saddle angle remains relatively stable with age. Comparison of automatic and conventional cephalometric analysis measurements using a paired t test confirmed that the saddle angle, linear measurements of the maxillary incisor to the NA line, and the mandibular incisor to the NB line showed statistically significant differences [3]. Pakistani males and females showed significant differences in saddle angle, gonial angle, articular angle, upper gonial angle, and lower gonial angle ($p<0.0001$) compared to Caucasian norms [4]. [6] indicates that in females, hard tissue characteristics associated with the aesthetic profile primarily affect the base of the skull and the posterior facial region. These include the lesser saddle angle, the greater articular angle, and the lesser Sella-Articulare/Articulare-Gonion (S-Ar/Ar-Go).*

Despite the available data on the saddle angle in the literature, the topic is not exhausted and requires additional development. Based on this, we undertook this study.

Purpose of the study. *The aim of the investigation was to study the saddle angle using the cephalometric method.*

Materials and research methods. *The material for the study was 128 lateral cephalograms. Cephalograms covered the following age periods: 2nd childhood (n = 40, boys: 21; girls: 19); puberty (n = 28, boys: 8; girls: 20); adolescence (n = 30, boys: 10; girls: 20); and 1st adulthood (n = 30, men: 14; women: 16). Measurements were taken using the Jarabak cephalometric analysis method (Jarabak & Fizzel, 1972) using the WEBCEPH (Web-based Orthodontic and Orthognathic Platform) software. The program "IBM Statistics SPSS-26" was used for statistical analysis; the statistical significance of differences between groups was determined using the t-Student-Bonferroni, F-Fisher, and Mann-Whitney Mann-Whitney U tests. The limit of statistical significance was taken as p = 0.050.*

Research results. *Based on the results obtained using the Jarabak cephalometric analysis for each age period, the arithmetic mean (M), the Median (Me), and quartiles (Q1-Persentile 25 and Q3-Persentile 75) were calculated. According to the results of the study, the saddle angle is not statistically different in male and female age periods using the t-Student-Bonferroni test. The statistical difference in the saddle angle between boys and girls in 2nd childhood was not significant (PF=0.466; PU=0.261). Also, the saddle angle values are not statistically significant in the puberty period between boys and girls (PF=0.121; PU=0.053). We noted a statistically significant difference in the saddle angle values using the F-Fisher (PF=0.047) in adolescence, although the Mann-Whitney U test did not confirm this difference (PU=0.147). In the 1st adulthood period, the difference in the saddle angle values between males and females is not significant (PF=0.335; PU=0.170).*

Conclusion. *The cephalometric method is very promising for studying the angles of the skull base.*

Keywords: *the saddle angle, age periods, Jarabak cephalometric analysis.*

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PRE-CLINICAL TESTING OF COLLAGEN-BASED GELS FOR APPLICATION IN SURGICAL DENTISTRY

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Today, there are a large number of collagen-containing membranes on the market, most of them effectively perform barrier functions, but their insufficient thickness does not allow achieving a significant increase in the volume of soft tissues. In contrast, a collagen matrix with a combined structure helps to replenish soft tissue defects during a single operation, even with soft tissue deficiency, but the possibilities of its clinical use have not yet been sufficiently studied. [1,2,4].

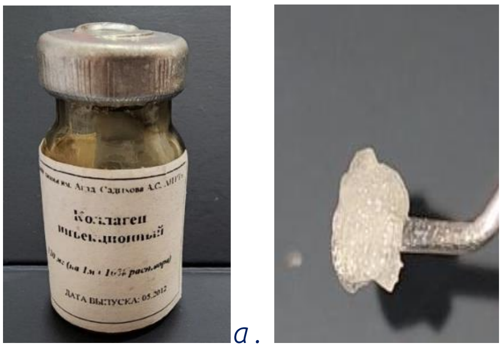
Due to the widespread prevalence of diseases such as recession periodontitis , erosive and ulcerative lesions of the oral mucosa, alveolitis, the choice of optimal treatment tactics and effective remedies remains a serious problem. Gels make it possible to specifically provide a high concentration of medicinal substances directly at the site of the lesion, have optimal rheological properties, and ensure the most complete and rapid release of the main active substances.

The most promising excipients are collagen and hyaluronic acid, which are distinguished by their prolonged action, regenerative properties, indifference and are widely used in pharmaceutical technology, in particular for the creation of soft dosage gel forms. The stability of the gels will be studied using long-term testing, since they contain thermolabile substances of natural origin.

***The purpose of our research.** Analysis of the concentration of collagen preparations to increase gum volume.*

***Materials and methods of research** . To achieve this goal, a collagen " bioplant " was used, prepared at the Institute of Biochemistry named after Academician A.S. Sadikov , and vitreous body and physiological solution were used as a solvent. 5%, 10% and 15% solutions of collagen injection solvents were prepared.*

The technological process for producing the gel consisted of several stages. At the stage of auxiliary work, preparation of auxiliary and medicinal substances and materials was carried out.



a . b .

Figure 1. a . Primary state of collagen . b . State when mixed with the first solvent. (in the form of porridge)

Figure 2 . The state of collagen dissolved in the first solvent and placed in a 35-degree bath.

At the first stage, a porridge-like base was obtained (Fig. 1 b .). For this purpose, bioplant collagen was dissolved in the vitreous in volumes of 0.5 ml, 1 ml and 2 ml . After which the solution was placed in a bath of water at a temperature of 35 ^{0} for 5 minutes . At this stage, a gel is obtained, which is a homogeneous white mass with a weak characteristic odor (Fig. 2.). The most optimal gel model turned out to be model No. 2 (1 ml of vitreous humor diluted in a 10 percent collagen solution), which, due to its consistency, is *convenient for placement in a periodontal pocket and longer exposure to the lesion. Other compositions were not suitable in their consistency, since they were liquefied or thick, which was inconvenient from the point of view of use, and also differed in that the system underwent delamination and lost its structural and mechanical properties [3,5].*

Currently, the quality of gels is being assessed in accordance with the draft Temporary Analytical Normative Documents.

***Conclusion**: thus, the pharmaceutical development of gels based on collagen and hyaluronic acid for use in dental surgery has been carried out. Research on quality control, determination of storage conditions and periods, and preclinical trials are ongoing.*

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Pedagogical sciences

INDIVIDUAL APPROACH IN TEACHING AND UPBRINGING AS THE MAIN FACTOR IN IMPROVING STUDENTS' ACADEMIC PERFORMANCE

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Abstract

This article highlights the role of Individual approach in foreign language education and the role of students' academic performance in teaching English. One of the tasks of a modern school is to increase the diversity of types and forms of organization of educational activities of students. Also, authors analyze the scientific-methodical aspects of using an individual approach in the process of learning a foreign language.

The aim of the article is to reveal the theoretical foundations of the individualization of the pedagogical process and to determine the organizational and pedagogical conditions for the implementation of an individual approachIn this regard, it examines the definitions of the concept of "individual approach" of various scientists, methodologists, gives their own vision of this phenomenon, and also examines the components of individualization. Research activity, project activity in particular, is considered as one of the methods of effective formation of individual approach in English lessons.

Keywords: *Individual approach, academic performance, formation, culture, traditions, perception, characteristics of students.*

Introducion

Among the problems that attract the attention of modern researchers, those that are associated with the search for ways to improve the quality and effectiveness of purposeful education and upbringing in the conditions of the current difficult situation in the economy, spiritual and cultural spheres of our society are becoming increasingly important.

Individualized teaching is opposite to class-based learning where a teacher teaches according to the speed of learning ability of the masses, the method of teaching relies on the understanding ability of a majority of students and all the students share the same goal.

An individual approach in the pedagogical process involves taking into account the individual differences of students and, in this regard, the variability of methods of education, training, special forms of organization of the educational process. In addition, the success of its implementation depends largely on the teacher's knowledge of the individual characteristics of his students and on his ability to constantly study these features. Ultimately, an individual approach to teaching and upbringing means effective attention to each student, his creative individuality in a classroom-based system and involves a reasonable combination of frontal, group and individual forms of classes.

Individual approach in teaching and upbringing as the main factor in improving students' academic performance

In pedagogical theory and practice, extensive experience has been accumulated in researching the problem of an individual approach to students. There are well-known studies in the field of preventing the students' failure (P.P. Blonsky, J.C. Slavina, A.P. Budarny)[1]; increasing cognitive activity and independence of students (E.S. Rabunsky, I.E. Unt)[2]; organization of frontal, group and individual work (V.I.Zagvyazinsky, T.M. Nikolaeva, I.M. Cheredov)[3]. Various aspects of the individual approach are highlighted in the works of domestic and foreign teachers and psychologists (M.K. Akimov, V.T. Kozlova, A.A. Kirsanov, I.M. Osmolovskaya, I.E. Unt, N.M. Shakhmaev, I.S. Yakimanskaya[4]).

Among foreign scientists, the most significant contribution to the study of the individual approach was made by American scientists N. Babing and M. Berge, D.V. Johnson and R.T. Johnson, V. Shreider, L.E. Tyler[5], as well as representatives of the German school N. Klein, W. Wagner and others. In their *works, they analyze the prerequisites for individualization in school education (Babing and M. Berge, W. Wagner), consider the application of an individual approach to gifted children (D.V. Johnson and R.T. Johnson), reveal its dependence on the emotional needs and changing cognitive interests of students (V. Shreider)[6], study the features of the differentiation process based on the unity of education and upbringing.*

In general, the analysis of psychological and pedagogical research allows us to identify the following trends in the implementation of an individual approach to students in the practice of modern schools:

- an individual approach is more often used to help underachieving students and equalize their academic performance to the level of the main part of students;

- an individual approach is mainly considered as taking into account the individual characteristics of students and "adapting" to them training and upbringing;

- an individual approach is implemented most often in the form of episodic influences on students;

- an individual approach to students in most cases is based on the primary experience and intuition of teachers. But this is clearly not enough, because the teacher often sees a strong, average or weak student in terms of learning, not realizing the individual way of thinking, the way of perception, character traits and other characteristics of students.

In individualized teaching, teachers can easily shift from texts to visuals to real-life examples in the form of stories. It brings the best value in terms of students' careers as well as personality growth.

If the same teacher teaches fifty students, why are all students not able to score well? Why are all students not able to speak up in class? The only answer is the different learning abilities of each student. Some students quickly grasp some students take time. Some students are confident, some are not. Individualized teaching is the solution to all of these. If your student is a quick grasper you can encourage them to set higher goals. If your student lacks interest in the study, you can adopt other methods to make the subject interesting to them. Each student has the ability to succeed, provided the teacher knows the learning ability of the student. Individualized teaching helps to understand the student and their learning ability[7].

HIGH-QUALITY INTERACTION BETWEEN STUDENT AND TUTOR. THIS IS ONE OF THE BEST BENEFITS OF INDIVIDUALIZED TEACHING. INTERACTION IS VERY IMPORTANT TO KNOW THE STUDENT. YOU CAN ASK STUDY-ORIENTED QUESTIONS TO STUDENTS, THE TEACHER CAN CHECK THE PROGRESS OF THE TASKS, AND YOU CAN TRACK THEIR RESULTS IN INDIVIDUALIZED TEACHING.

In individualized teaching as per their report, a teacher can tweak their teaching strategy. If your student was a slow learner but now has picked up the pace you can encourage them to achieve more. If your student is not getting good results you can figure out the problem. This quality interaction makes the learning highly personalized and customized. In one-on-one teaching, the teacher can play the role of an accountability partner. This will encourage students to finish their homework and enjoy learning. Students can ask questions to the teacher conveniently and take advice. The teacher actively responds to their question and help them figure out the solution.

TEACHERS BUILD CONFIDENCE IN STUDENTS. STUDENTS FEEL IMPORTANT AND HENCE ARE EASILY ABLE TO SPEAK UP ABOUT THEIR PROBLEMS IN ONE-ON-ONE LEARNING. CONFIDENCE IS A SUPREMELY IMPORTANT LIFE SKILL. IN INDIVIDUALIZED TEACHING, STUDENTS NOT ONLY LEARN ABOUT THEIR COURSE MATTERS BUT ALSO GET TO LEARN LIFE SKILLS. STUDENTS FEEL HEARD AND HENCE ARE ABLE TO ASK QUESTIONS THAT MIGHT BE BOTHERING THEM WHILE STUDYING.

The teacher can initiate any conversation that will make students interested and push them to speak up. Some students are not able to ask questions in the group. This might be due to anxiety or fear of failure[8].Individualized teaching makes learning stress-free and tailored. The environment encourages students to make mistakes and overcome their fears. The teacher reinforces their skills.

ACCELERATE THE POSSIBILITY OF STUDENTS' SUCCESS. INDIVIDUALIZED TEACHING MINIMIZES THE CHANCES OF STUDENTS BEING DISTRACTED, SKIPPING THE COURSE, AND FALLING BEHIND. STUDENTS CANNOT COPY FROM THEIR PEERS JUST FOR THE SAKE OF COMPLETING WORK. INDIVIDUAL ATTENTION HELP TEACHER FIGURES OUT THE SHORTCOMING OF STUDENT AND WORKS ON THEM COLLECTIVELY.

The dedication of the teacher to the student is the maximum in individualized teaching. This makes the learning process interesting.

Teachers prefer to find educational material on the Internet in electronic form, as it allows:

Table 1.

Opportunities and the possibilities of Individual approach for creating a modern lesson

	Opportunities of using Individual approach for teachers	*The possibilities of Individual approach for creating a modern lesson*
1	*improving their knowledge through individualization;*	*A teacher can replenish his or her methodological base*
2	*finding educational material on the Internet for the preparation and conducting lessons;*	*study the experience of other teachers and use their recommendations and developments in own lessons;*
3	*getting information about the latest pedagogical findings*	*print their personal lesson plans, articles, and innovative ideas on Internet sites*
4	*sending their methodological developments;*	*allows teachers to make lessons more interesting and dynamic, includes in the process of perception not only vision, but also hearing, emotions, imagination ,*
5	*teaching children and work both in the classroom and outside the classroom individually and in groups, in pairs*	*facilitates the process of memorizing the material being studied by students*

[a table is created by authors]

At the same time, the observations and experience of teachers show that students, having a certain vocabulary and the ability to use grammar knowledge in practice, overcoming the language barrier, do not always understand each other. The interlocutors use phrases, necessary replicas to exchange information, but mutual understanding is not achieved as a result.

It should be noted that the reasons may be diverse, but first of all it is a low level of socio–cultural competence. Accordingly, special attention should be paid to the formation of the ability to participate in intercultural communication through the use of socio–cultural knowledge, and this is the study and study of peoples living in native-speaking countries, so it is on the territory of their native land, their traditions, famous and illustrious people, etc. It should be noted that not just the transfer of knowledge, but research activity in this area contributes to the emergence of interest in learning a foreign language, and also contributes to the formation of socio-cultural competence.

Conclusion

There are many methodologists who have studied this phenomenon. Having studied different opinions and analyzed the points of view of some methodologists, we note that socio-cultural competence is interpreted in different ways. Some methodologists assume that this is the ability of people to live in one society without disagreements; others believe that this is the ability to take part in a foreign culture; others think that these are rules and examples of behavior based on the concepts of diversity of thinking and recognition of cultural processes.

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FACTORS AFFECTING THE DEVELOPMENT OF STUDENT PERSONALITY DURING THE TRAINING PROCESS IN THE EDUCATIONAL SYSTEM

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TƏHSİLİ SİSTEMİNDƏ TƏLİM PROSESİ ZAMANI TƏLƏBƏ ŞƏXSİYYƏTİNİN İNKİŞAFINA TƏSİR GÖSTƏRƏN AMİLLƏR

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Abstract

New educational centers contribute to the transmission of the cultural heritage of the society from generation to generation and provide people with professional knowledge and skills that will determine their economic and social status. In addition, in the learning process, children and adolescents develop moral ideals, behavioral stereotypes and about the world around them. From the point of view of human development, the educational process significantly increases human capabilities. Level of education, political activity, social, discipline, perception of classical music, etc. as it consists of separate aspects of the division of people.

In modern times, the reforms carried out by the state in the education sector have brought legal, economic and other conditions for the free operation and education of secondary vocational education centers, and their structure has been developed. therefore, based on the possibilities of combining small technical schools, their material and technical base, pedagogical personnel and state experience in the branch, modern-type secondary specialized educational centers - colleges were created. The number of such educational centers is increasing day by day, and today it covers more than 50% of the total number of secondary specialized education centers. The student can control himself, pays more attention to spiritual development. It grows spiritually, socially and politically, and is distinguished by the breadth and depth of interests. It is known that the student period is also a period of self-education, self-criticism and respect.

Xülasə

Yeni təhsil mərkəzləri cəmiyyətin mədəni irsinin nəsildən-nəslə ötürülməsinə töhfə verir və insanlara iqtisadi və sosial vəziyyətini müəyyənləşdirəcək peşə bilik və bacarıqlarını təqdim edir. O cümlədən, öyrənmə prosesində uşaqlar və yeniyetmələr əxlaqi idealları, davranış stereotiplərini və ətraf aləmlə bağlı fikirləri inkişaf etdirirlər. İnsanın inkişafı nöqteyi-nəzərindən təhsil prosesi insanın imkanlarını əhəmiyyətli dərəcədə genişləndirir. Təhsil səviyyəsi sağlamlıq, siyasi fəaliyyət, ictimai əlaqələr, nizam-intizam, klassik musiqinin qavranılması və s. kimi insanların həyatının ayrı-ayrı aspektlərindən asılıdır.

Müasir dövrdə dövlət tərəfindən təhsil sektorunda həyata keçirilən islahatlar nəticəsində orta ixtisas təhsili mərkəzlərinin azad fəaliyyəti və tərəqqisi üçün hüquqi, iqtisadi və başqa şəraitərsəyə gətirilmiş, onların şəbəkəsi inkişaf etdirilmişdir. Beləliklə, ölkədə bəzi texnikumların birləşdirilməsi sayəsində onların maddi-texniki bazası, pedaqoji kadr imkanları və bu sektordakıdövlətlərarası təcrübə əsas götürülməklə, müasir tipli orta ixtisas təhsil mərkəzləri -kolleclər ərsəyə gətirilmişdir. Belə təhsil mərkəzlərinin sayı günü-gündən çoxalaraq, günümüzdə orta ixtisas təhsili mərkəzlərinin ümumi sayının 50%-dən çoxunu əhatə edir. Şagird özünü idarə edə bilir, mənəvi problemlərə daha çox diqqət yetirir. Mənəvi, sosial və siyasi baxımdan böyüyür və maraqların genişliyi və dərinliyi ilə seçilir. Məlumdur ki, tələbəlik dövrü həm də özünütərbiyə, özünütənqid və hörmət dövrüdür.

Keywords: *collective, development, student personality, training, educational system*
Açar sözlər: *kollektiv, inkişaf, şagird şəxsiyyəti, təlim, təhsil sistemi*

Şagirdlər məhz orta ixtisas təhsili müəssisələrində fərdi keyfiyyətlərlə əlaqəli özünütərbiyə və *özünütərbiyə ilə məşğul olmağa başlayırlar. Tələbənin şəxsiyyəti kollektivdə inkişaf edir, kollektivdə əqli qabiliyyətləri effektiv və məhsuldar qurmaq bacarığı yaranır, optimal iş rejimi yaradılır. Şagird həyatını və boş vaxtını əlverişli keçirməyi öyrənir.*

Tələbələrin orta ixtisas təhsili müəssisələrində fərqli fəaliyyətlərə cəlb olunması onların bu sahələrdə inkişaf səviyyəsini artırır və harmoniyanı təmin edir. Orta ixtisas məktəbinin həyatına xas olan ayrı-ayrı fəaliyyət növləri (ünsiyyət fəaliyyəti, idrak fəaliyyəti, sosial, bədii, texniki fəaliyyət, qiymətləndirmə və oriyentasiya fəaliyyəti, idman və s.) Şagirdin inkişafını təmin edən xüsusi fəaliyyətlərdir. Tələbə gənclərin bu fəaliyyətlərə cəlb edilməsi onların şəxsi fəaliyyətlərinin inkişafına təkan verir, ümumi zehni keyfiyyətlərin inkişafına və inkişafına kömək edir. O cümlədən, tələbə şəxsiyyətinin ümumi inkişafı barədə danışarkən, inkişafın eyni olduğunu, inkişafın təhsil təsirlərinin təbiətinə, hər yaşda köhnə və yeni keyfiyyətlərə, inkişafdakı ziddiyyətlərə və digər qanunauyğunluqlara tam uyğun olmadığını unutmamalıyıq. O cümlədən, ölkə daxilində təhsil komplekslərinin ərsəyə gətirilməsu sektorundada 2000-ci ildən etibarən, bir sıra fərqli işlər görülmüş, Milli Konservatoriyanın nəzdində Musiqi Kolleci, Milli Rəssamlıq Akademiyasının nəzdində İncəsənət Kolleci, Azərbaycan Memarlıq və İnşaat Universitetinin nəzdində isə İnşaat Kolleci ərsəyə gətirilmişdir.

Orta ixtisas təhsili müəssisələrində tələbə şəxsiyyətinin formalaşmasında ailə mühitinin, ata və ananın, qohumların rolu nə qədər böyük olsa da, bu sahədə tələbə kollektivinin, həmyaşıdlarının təsiri də az əhəmiyyətli deyil. Daxil olduğu həyat və fəaliyyəti bəzən onun həyat yolunu müəyyənləşdirir. Ümumiyyətlə, tələbə şəxsiyyəti dedikdə, əmək fəaliyyətinin hər hansı sahəsində mütəxəssisin vəzifələrini yüksək səviyyədə ixtisaslı şəkildə yerinə yetirməyə hazırlaşan gəncin şəxsiyyəti başa düşülür. Z.Müslümov yazır:" Tələbə ictimai həyatda mövcud olan təcrübəyə yiyələndikdə, o, mənəvi baxımdan şəxsiyyətə çevrilir. Həmin inkişaf özünü kəmiyyət əlamətlərinin toplanması və onların keyfiyyət əlamətlərinə çevrilməsi şəklində göstərir ki, bu da xarici və daxili şərt və amillərin təsirinə əsasən təkmilləşir, həm də mürəkkəbləşir."(47, s.42) Tələbə şəxsiyyətinin mənəvi cəhətdən inkişafı və təşəkkülü bir proses kimi ayrı-ayrılıqda, lakin eyni zamanda həm də bir-biri ilə bağlı və qarşılıqlı əlaqədə olan mərhələlərlə təzahür edir.

Mənəvi tərbiyə üzrə məqsədyönlü, ardıcıl, fasiləsiz və sistemli iş, təbii ki, tələbə şəxsiyyətinin təşəkkülündə son dərəcə böyük kömək göstərir. Tələbə bu yaşlarda dostluğa daha artıq tələblərlə yanaşır. Mənəvi dəyərlərə yiyələnmiş oğlan, yaxud qız öz ləyaqətini uca tutur, Vətənə sədaqət və məhəbbətini konkret əməlləri ilə sübuta yetirməyə hazır olur. Tələbələrin həyatında sosial-iqtisadi şərtlər, cəmiyyətdə öncül olan əxlaqi ideyalar, prinsip və ideallar, davranış qaydaları, mənəvi ənənələr, yaxud məişətdəki dəyərlər, ictimai və şəxsi mənəvi fəaliyyət böyük rol oynayır. Sadalananlar şəxsiyyətin inkişafını müəyyən edir.

Tələbə şəxsiyyətinə sadəcə mənəvi tərbiyənin obyekti kimi baxmaq olmaz. Yadda saxlamaq lazımdır ki, tələbə şəxsiyyəti sosialdır. O, formalaşma obyektindən ibarət olub həmişə fəaldır. Belə olan təqdirdə demək olar ki, tələbə şəxsiyyəti həm də ictimai münasibətlərin subyektidir. İnsan öz şüurunda mənəvi ideya və anlayışları, qayda və normaları əks etdirərək obyektiv münasibətlərə fəal surətdə qoşularaq, mənimsədiklərinə və özünün yaratdıqlarına subyektiv münasibətə yiyələnir. Anatomik-fizioloji inkişaf gənclik yaşı dövründə də gedir. Beyin tam inkişaf mərhələsinə çatır. Daxili sekresiya vəzilərinin inkişafı sona yetir. Məntiqi təfəkkür qüvvətlənir. Tələbə, gənc oğlanlar və qızlar daha çox mühakimə yürütməyə, təhlil, tərkib, ümumiləşdirmək, müəyyən nəticəyə gəlmək əməliyysatlarına cəhd göstərirlər. Həyatabaxış, dünyagörüş, mənəvi, estetik, etik baxışlar, təsəvvürlər, əqidə təşəkkül tapıb formalaşır. Tələbə oğlan və qızlar fəal həyat mövqeyinə yiyələnməyə, hadisələrdən baş çıxarmağa alışır, konkret faktlara öz prizmalarından baxır, öz münasibətlərini obyektiv şəkildə bildirməkdən çəkinmirlər. Onlar sözlə işi gündəlik davranış normasına çevirməyə çalışırlar. Gənclik yaşı dövründə şərəf, ləyaqət, borc, ədalət və s. mənəvi anlayış və kateqoriyalar təşəkkül tapır. Cəmiyyətdə və onun inkişafında tələbələrin müəyyən rolu vardır. Tələbə şəxsiyyətinə etinasız yanaşmaq həm də bu baxımdan olmaz. Bu bir həqiqətdir ki, tələbə dünyada, o cümlədən, respublikamızda ziyalıların sayını artıran xüsusi bir qrupu təşkil edir. Onun başlıca vəzifələri təlim əməyinə ciddi münasibət bəsləmək, seminar məşğələlərinə hazırlıqlı gəlmək, mühazirələrdə diqqətli olmaq, professor və müəllimlərin məlumatlarını dinləmək; müvafiq qeydlər götürmək, öz üzərində çalışmaq, əqli, mənəvi, əmək, fiziki, estetik və b. qabiliyyətlərini inkişaf etdirmək qayğısına qalmaq, seçdiyi ixtisasa dərindən yiyələnmək və s. daxildir.

Tələbə heyətinin daim böyüməsini təmin etmək. Komanda gücünün ən vacib amillərindən biri daim daha da mürəkkəbləşən və sosial baxımdan əhəmiyyət kəsb edən, onları həll etmək üçün işləməyən, daim irəliləyən və irəliləyən hədəflərin müəyyənləşdirilməsidir. Bir komandanın həyatında *bir yerdə dayanmaq mümkün deyil. Yeni vəzifələrlə qarşılaşmayan kollektiv zəifləməyə və parçalanmağa məhkumdur.*

Tələbə kollektivlərində ənənələrin yaradılması (bir sözlə, təhsil ocaqları). Ənənələr komandanın dağılmasına, ayrı-ayrı tələbə komandalarında və universitetlərdə şüurlu intizam, könüllü tabeçilik təmin etməsinə imkan vermir, universitet həyatına duyğular, gümrahlıq, gözəllik, nikbinlik bəxş edir. Tələbə komandaları və orta ixtisas sistemi işçiləri. İlk komandaların orta ixtisas təhsili müəssisələrinin işçiləri ilə uzunmüddətli və ümumi məqsədlər üçün ortaq fəaliyyətlərini təmin edilməlidir.

Tələbə kollektivinə pedaqoji rəhbərlik. Tələbə qruplarına müstəqillik və təşəbbüs göstərməklə bərabər, məktəblilərin özünüidarə hüququnu məhdudlaşdırmayan düşünülmüş pedaqoji lider də olmalıdır. Hər bir orta ixtisas təhsili mərkəzinin pedaqoji mərkəzi olmalıdır. Tələbə tərəfindən bu və ya digər davranış nümunəsinə yiyələnməyə zahiri cəhd o vaxt müsbət nəticələnər ki, prosesin özü, yaxud son məqsəd ondan ötrü şəxsi əhəmiyyət rolunu oynasın, əqidə və praktik fəaliyyət vəhdət təşkil etsin. Tələbə gənclərin mənəvi mühakimələrində də fərdi fərqlərə rast gəlinir. Onlardan bəziləri bir-birlərinə tamamilə zidd olur. Bu tipli mühakimələri iki qrupa bölmək mümkündür: bəzilərində təfəkkür hissi istiqamətlə (yəni oğlanlar və qızlar zahirən diqqəti çəkən cəhətlərə görə, onları əsas tutaraq ümumiləşdirmə aparır, yaxud şəraitdən çıxış edərək ümumiləşdirir), əlaqədardır. Başqalarında bu daha mücərəddir. Mənəvi təfəkkürlə bağlı başqa müxtəlifliklər bu son qruplar arasında paylaşdırılır. Orta ixtisas məktəblərində pedaqoji kollektivin üzvləri tələbələrdə mənəvi təfəkkürün inkişafı qayğısına da qalmalıdırlar. Mənəvi təfəkkürün inkişafı isə o vaxt uğurla gedir ki, bu məsələ müəllim tərəfindən vaxtında və düzgün qiymətləndirilsin. Qiymətləndirmədə əsasən tələbənin fəaliyyətinin nəticəsi öz əksini tapır, mənəvi cəhətdən daha da kamilləşmə üçün mümkün yollar müəyyənləşdirilir.

O şəxsi mənəvi cəhətdən inkişaf etmiş hesab etmək olar ki, müəyyən yaş mərhələsində (məsələn, gənclik yaşında) elə inkişaf səviyyəsinə çatır ki, öz davranışını idarə edir və bu zaman öz rəftarını, hərəkətini qiymətləndirə bilir. Orta məktəb illərində müxtəlif yaş qruplarında şagirdlərin öz davranışlarını idarə etməsi onların davranışları cəmiyyətin və təhsil aldıqları kollektivin tələblərinə uyğun gəlsə də müxtəlifdir.

Orta ixtisas təhsili müəssisələrində oxuduqları vaxtlarda artıq onlarda daha səbatlı mənəvi baxış və münasibətlər, tələblər və qiymətləndirici mühakimlər yaranır. Tələbənin davranışının mənəvi tərəfi necə gəldi müəyyən olunmur, şəxsiyyətin davranış tərzinin yerinə yetirilməsinə hazırlığın qabaqcadan təşkili yolu ilə, tələbatın təmin olunmasına şərait yaratmaqla, məqsədə yetməkdən ötrü davranışın müəyyən formalarında üzə çıxan qüvvələri hərəkətə gətirməklə təmin edilir. Lakin tələbənin əxlaqi davranışını təkcə onun tələbatına və maraqlarına əsasən də aydınlaşdırmaq yolverilməzdir. Burada məsuliyyət, borc və vətəndaşlıq vəzifələri ön planda durmalıdır. Hər bir tələbəyə bir-biri ilə sıx şəkildə bağlı olan bir sıra əlamətlər xasdır ki, onlar gənc oğlan və qızın şəxsiyyətinin tamlığına, xarakterinin bütövlüyünə şərait yaradır. Ona məxsus xüsusiyyətlər də öz növbəsində ictimai münasibətlərin sistemini müəyyənləşdirir.

Tələbə şəxsiyyətinin əlamətlərini nisbi və müvəqqəti, dinamik və funksional vəzifələr kimi səciyyələndirmək mümkündür. Tələbə şəxsiyyəti həmişə ümumi xüsusiyyətlərin müvafiq sabitliyində özünü göstərir. Bu xüsusiyyətlərin keyfiyyət tərəfi, bir yandan tələbənin inkişafının bu və ya digər mərhələsində şəxsiyyəti səciyyəvi edir, digər tərəfdən isə onu fərd kimi təqdim edir.

Hərəkətin subyektiv tərəfi kimi mənəvi əqidə həmişə davranışın müvafiq tərzini müəyyənləşdirir. Tələbədən ötrü adət halına düşsün deyə, mənəvi əqidəni möhkəmlətmək lazımdır. Bununla bağlı olaraq, şəxsiyyət mənəvi davranış təcrübəsinə yiyələnərək bununla öz şüurunun gərginləşməsi qayğısına qalır. Burada iki ifadəyə diqqəti yönəltmək lazım gəlir: Mənəvi davranış təcrübəsi və davranış vərdişləri və adətləri anlayışından daha geniş anlayışdır.

Mütəxəssislərin fikrincə, onun məzmunu özündə intellektual-iradi hissi və texniki /icraedici sahəni birləşdirir, halbuki vərdişlər və adətlər, əsasən davranışın icraedici tərəfinə aiddir. Ona görə də tələbənin mənəvi davranış təcrübəsi ifadəsi altında bu və ya digər təlim və tərbiyə mərhələsində hərəkət və fəaliyyətin həyata keçirilməsinin dərk edilmiş üsul və bacarıqlarının məcmuyu başa düşülür. Mənəvi təcrübə- cəmiyyətin mənəvi həyatında davranış normalarının yerinə yetirilməsi sahəsində nəzəri və praktik nailiyyətdir. Çünki, o, fərdi təcrübəyə nisbətən daha zəngindir. Mənəvi davranışın ictimai təcrübəsinə yiyələnmək tələbələrin tərbiyəsində müvəffəqiyyətin rəhnidir. Ümumilikdə götürüldükdə, davranışın mənəvi təcrübəsi hər bir insanın, o cümlədən, tələbələrin əxlaqi fəaliyyətin çox önəmli hissəsidir. Lakin hamıya bəllidir ki, heç də bütün hərəkətlər əxlaqi xarakterdə deyil. Tələbə şəxsiyyətində öz əksini tapmış münasibətlər əxlaqi sayılır. Tələbənin davranışı öz tələbatlarını və maraqlarını təmin etməkdən ötrü konkret vəzifələrin yerinə yetirilməsi prosesidir. O, şəxsiyyətin xeyir *və şər tipli kateqoriyalarda özünü göstərən sosial xarakteristikasının ifadəsi üsulları kimi ayrı-ayrı hərəkətlərdən ibarətdir. Fəaliyyəti, ümumiyyətlə, hərəkət və əməllərin mövcudluğu kimi nəzərdən keçirmək olar, mənəvi hərəkətlər isə elə fəaliyyətdir ki, onlarda mənəvi mövqe, öz yoldaşlarına, kollektivə, mövcud əxlaqi ideallara, normativ və qiymətlərə münasibət ifadə olunur. Əməllərin, hərəkətlərin məcmuyu tələbənin davranışını təşkil edir.*

Mənəvi təcrübə özündə mənəvi fəaliyyətin formalarını və nəticələrini (mənəvi bilik və hərəkətlər, inanclar) ehtiva edir və mümkün olan yeganə doğru əxlaqi davranışın əsasını təşkil edir. Mənəvi təcrübə, sosial praktikanın vacib bir hissəsi kimi, həyat müşahidələri, şəxsi əlaqələr, elmi tədqiqatlar üzrə toplanan ümumi nəticələr, prinsiplər, fikirlər və qaydaları əhatə edir.

Gənclər yeni mənəvi davranış təcrübəsi yaratmır, yaşlı nəsillər, özlərindən əvvəlkilər tərəfindən toplanmış təcrübəyə yiyələnirlər. Lakin bu təcrübənin mənimsənilməsi passiv yox, aktiv, yaradıcı prosesdir. Mənəvi təcrübədə daim təshihlər aparılır, əlavələr edilir, ona görə də o, başa çatmış münasibətlərin və qarşılıqlı münasibətlərin hazır nəticəsi kimi deyil, həmişə inkişafda və təkmilləşmədə olan proses kimi götürülür.

Davranış təcrübəsi həm müsbət və həm də mənfi ola bilər. Orta ixtisas müəssisələrinin vəzifələri onda ibarətdir ki, müsbət təcrübənin qazanılmasına kömək göstərsin, mənfi halları doğurdan səbəbləri aradan qaldırsın. Ona görə də mənəvi davranış təcrübəsini formalaşdıraraq, belə bir cəhəti də nəzərə almaq lazımdır ki, tələbə heç də yalnız müsbət təcrübəyə yiyələnməlidirlər, həm də özündə mənfi davranışa, rəftara qarşı immunitet hazırlamalı, həmçinin bütün mənfi cəhətlərlə mübarizə aparmalı, onların aradan götürülməsinə çalışmalıdır. Mənəvi təcrübənin qazanılmasının təşkilində iki cəhət özünü göstərir. Birinin mahiyyəti bundan ibarətdir ki, təcrübə dedikdə, emprik (təcrübəyə əsaslanan) fəaliyyət anlaşılır, yəni tələbənin hər hansı fəaliyyətindən söhbət gedir. İkincisinin məğzi isə, bundan ibarətdir ki, mənəvi davranış təcrübəsi ifadəsi altında dərk edilmiş hərəkət və əməllər başa düşülür, davranışın özünə isə tələbənin intellektual, hissi iradi sahəsinin ifadə olunduğu hərəkət kimi baxılır.

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THİNKİNG CREATİVELY İN A MODERNİZİNG WORLD

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Abstract

In the modernizing world, innovations are emerging day by day, and these have an impact on people's work, education, and daily life. In other words, when we look at the development dynamics of changes, it becomes difficult to imagine what innovations we will encounter in about ten years. Modern technologies, education and work environment require people to be more creative, to find optimal solutions to problem situations with new ideas. At this time, such a question may arise - how to develop creative thinking, creative ability? What is creativity?

Having a creative mind is one of the gateways for achieving fabulous success and remarkable progress in professional, personal and social life. The creative contributions of extraordinary artists, designers, inventors, and scientists attract our greatest consideration as they express the foundations of their culture and provide breakthroughs influencing cultural development and progress. Therefore, creativity is a crucial operator of human progress. Nevertheless, not every person who is an artist, inventor or scientist is similarly creative, nor are all creative (innovative) individual artists, inventors or scientists. Some are innovative in business, in communication with other individuals, or just in living.

Keywords: creativity, new idea, innovative thinking

Creativity can be explained as a different approach to situations from a different point of view. In the face of any problematic situation, it is not staying within a certain framework, but going outside the "box" and evaluating the most optimal offer by brainstorming. Psychologist Michael Kirton brought up the "Theory of Adaptation and Innovation". According to him, an adaptive creative person finds a solution to a problem situation with already existing systems. But innovative creativity goes beyond the boundaries of norms and goes in search of innovations. Innovative creativity approaches problems with different, untested, creative and perhaps more practical solutions. Adaptive minded people, who are considered agents of stability and development, work to improve the situation by coping with daily tasks or difficulties with established methods based on past traditions. But innovators are considered agents of change and reactivity, breaking certain molds. (1)

There is no "single right answer" when you think creatively, there are many possible alternatives. But how to assess the value of new idea ? Maybe it's just repeating a point made in the past? First of all, it should be noted that serendipity can happen all the time. We just need a different perspective to see the difference. Accepting and valuing a new idea can generally be considered a little complicated, because it is completely new, like new planets and lands that have never been discovered, never been seen before. Since the society that surrounds us is able to punish and express mistakes to a certain extent, the possibility of thinking "outside the box", or if I make a mistake, I will fail, prevents many young talents and researchers from taking this step. Jack Matson, professor of creativity at Penn State University, advises "dress for failure". He explains that failure will give a person more thinking, new perspectives and the ability to play a new role.

If we look at psychologist J.P. Gilford's ideas about convergent and divergent thinking, we will see that they have discussed this issue extensively. Analyzing the experimental materials he conducted, he determined the structure of intelligence as cognition, memory, divergent thinking, convergent thinking, evaluative thinking according to the nature of mental operations. Although Gilford emphasizes the necessity of cognition and memory for thought operations, he focuses on thinking processes and characterizes it at 3 levels: divergent, convergent and evaluative thinking. As A. Alizade also noted, divergent thinking, unlike convergent thinking, shows itself as an integral part of creative activity. The creation of original ideas is its main function. (1; p.124) Divergent thinking is considered as a synonym of creativity in many places. Because Gilford notes that creativity is mainly localized on the factors of divergent thinking. His first speech as president of the American Psychological Association in 1950 gave impetus to the study of creativity. (2; p.98)

To develop creative thinking, first of all, it is necessary to collect a very rich treasure of knowledge and outlook. Participate in various seminars, trainings, new experiments, discussions, debates, listen to *motivational speeches, draw certain conclusions by listening to the experiences, success or failure stories of various business owners or award winners, scientists, researchers, brainstorming discussions with friends or people working in the same field as you will light your way. Considering that we live in the age of internet and speed, each of these are now very accessible. To be creative, to think creatively, staying away from disturbing thoughts and even things that tire your brain will help in this work.*

One of the famous toy companies conducted a test to check how wide and colorful a child's imagination is. So, 6 children were selected and sent at different times to a simple, non-pictured, light gray room with only a table and a chair, and entering the room they were told "Welcome to the most boring room in the world". After the children sit for a while without anything, a white roll of paper is placed in front of them. After that, the fun games begin. Because this famous brand knows very well that "interest and play" are in the nature of the being we call a child. They were able to organize a game for themselves and have fun anywhere, at any opportunity, even in "the most boring room in the world". One turned himself into a mummy, the other made a mask by opening the eyes and nose, while one made wings for himself, the other rolled on the floor, leaving it as a carpet. As a result, they managed to make even the "most boring room" colorful with the sounds of laughter.

A creative mind should not be afraid of innovations, but should be open to possibilities and be able to go beyond framed boundaries. Only when we apply these steps and create a comfortable environment for creativity and new ideas, we can connect the chaotically moving points in our brain and get brilliant ideas and results.

Creativity is a multifaceted construct, in which different moods influence distinct components of creative thoughts (3). A remarkable study by Baas et al. (2008) explained how creativity is enhanced most by the positive mood states. Baas et al. (2008) pointed out that positive-activating moods with an approach motivation and promotion focus (e.g., happiness) activated creativity. On the contrary, negative-activating moods with avoidance motivation and a prevention focus (e.g., fear, anxiety, or even relaxation) correlated with lower creativity. Surprisingly, negative-deactivating moods together with approach motivation and a promotion focus (e.g., sadness) did not link with creativity.

Consequently, creativity is a multidimensional domain that could be executed in the arts, science, stage performance, the commercial enterprise and business innovation (4). Following Baas et al. (2015) who defined the roots of creative cognition in the arts and sciences, creativity is not just a cultural or social construct.

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Pharmaceutical sciences

DETERMINATION OF THE RANGE OF COMBINED DRUGS OF THE IACE + DIURETICS CLASS FOR FURTHER INCLUSION IN THE GOVERNMENT PROGRAM "AFFORDABLE MEDICINES"

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ВИЗНАЧЕННЯ АСОРТИМЕНТУ КОМБІНОВАНИХ ЛІКАРСЬКИХ ЗАСОБІВ КЛАСУ ІАПФ + ДІУРЕТИКИ ДЛЯ ПОДАЛЬШОГО ВКЛЮЧЕННЯ В УРЯДОВУ ПРОГРАМУ «ДОСТУПНІ ЛІКИ»

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Артеріальна гіпертензія лишається, за оцінками Глобального тягаря хвороб, (лідируючою причиною смертності у всьому світі. За оцінкою Центру громадського здоров'я (ЦГЗ) Міністерства охорони здоров'я (МОЗ) України, в Україні серцево-судинні захворювання (ССЗ) є головною причиною смертності населення України. З метою покращення доступності ЛЗ для лікування ССЗ, та як наслідок – зменшення смертності від ССЗ, в Україні 1 квітня 2017 року стартувала урядова програма реімбурсації лікарських засобів «Доступні ліки», яка передбачала, що пацієнти з ССЗ, зокрема з АГ, цукровим діабетом II типу та бронхіальною астмою.

Комбіновані антигіпертензивні лікарські засоби, що рекомендуються сучасними європейськими та міжнародними клінічними настановами з лікування артеріальної гіпертензії не включені до програми «Доступні ліки». Законодавством України передбачені механізми включення комбінованих антигіпертензивних лікарських засобів. Вони мають бути включені до Національного переліку основних лікарських засобів, шляхом проходження процедури оцінки медичних технологій. Ініціювати цю процедуру мають право Міністрество охорони здоров'я України та Національна служба здоров'я України, а також заявник (власник реєстраційного посвідчення лікарського засобу). При оновлені Національного переліку основних лікарських засобів України законодавством дозволено користуватись Переліком основних лікарських засобів ВООЗ, який згідно чинного законодавства несе рекомендаційний характер. В 2019 році Перелік ВООЗ був доповнений 4 комбінованими антигіпертензивним лікарськими засобами, опираючись на пропозицію групи експертів. В свою чергу група експерітв сформувала свої пропозиції що асортименту комбінованих антигіпертензивних лікарських засобів, опираючись на дані результати досліджень споживання комбінованих ЛЗ та їх економічної доступності, адже результати клінічних досліджень та систематичних оглядів не дають змоги виявити беззаперечні переваги у якогось окремої групи комбінованих антигіпертензивних ЛЗ. Також група експертів наголошувала, що вони допускають використання цього метода для формування пропозицій на локальних чи національних рівнях.

Опираючись на проведене дослідження споживання комбінованих ЛЗ в Україні в період з 2018 по 2020 роки (включно), було розраховано медіану частки споживання комбінованих ЛЗ сегменту «іАПФ та діуретики»: капторил з діуретиками – 32,66%; еналаприл з діуретиками - 26,30%; лізиноприл з діуретиками – 24,07%; периндоприл з діуретиками- 14,95%, раміприл з діуретиками – 1,51%; квінаприл з діуретиками – 0,15%; фозіноприл з діуретиками та зофеноприл з діуретиками – 0,07% та 0,04%. за медіаною частки споживання було встановлено, що найбільшу частку споживання мала комбіновані ЛЗ каптоприл/ГХТЗ у дозі 50/25мг. Однак ця комбінація взагалі не пропонується для розгляду, адже тривалість терапевтичної дії капторилу складає лише до 8 годин [68], та має двох-трьох кратний прийом на добу, в зв'язку з чим не можливо буде задовольнити рекомендації сучасних клінічних настанов щодо однократного прийому комбінованого антигіпертензивного ЛЗ. Враховуючи, що медіана частки споживання комбінацій еналаприлу/ГХТЗ за 5 років складає 26,30%, а лізиноприлі лише 24,07%; пропонуємо розглянути асортимент комбінованих ЛЗ еналаприлу/ГХТЗ (таблиця 1) для подальшої ініціації державної ОМТ та включення до програми «Доступні ліки».

Таблиця 1

Асортимент комбінованих ЛЗ класу іАПФ та діуретики, який пропонується для включення в програму «Доступні ліки»

№	МНН	Доза	Клас ЛЗ
1	Еналаприл/ГХТЗ	10мг/12,5мг	іАПФ + діуретик
2	Еналаприл/ГХТЗ	10/25	
3	Еналаприл/ГХТЗ	20/12,5	

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Psychological sciences

IMPACT OF DIVORCE PROBLEM TO MENTAL STATE OF CHILDREN

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ПРОБЛЕМА ВЛИЯНИЯ РАЗВОДОВ НА ПСИХОЛОГИЧЕСКОЕ СОСТОЯНИЕ ДЕТЕЙ

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Abstract

Parental separation affects children in the world each year, with research showing that the outcomes for these children can be worse than those whose parents remain together. According to Amato and Keith, children from separated families are more likely to experience issues with their behaviour, education, mental health, and addiction well into adulthood [6].

It's essential to prioritize effective co-parenting to ensure that children are shielded from the conflict of relationship breakdown and continue to thrive in both households. While the statistics may seem concerning, parents can take proactive steps to support their children's well-being during and after the separation process.

The Ministry of Justice registered 15,065 marriages and 6,920 divorces in January-April of this year in Azerbaijan. According to the State Statistical Committee, that compared to a year earlier, the number of marriages in every 1000 people has dropped from 5.6 to 4.5 and the number of divorces rose from 1.5 to 2.1 [5].

According to Centers for Disease Control and Prevention of the USA, in 2021, a total of 689,308 divorces occurred across the 45 U.S. states (Centers for Disease Control and Prevention. Provisional number of marriages and marriage rate)[6]. During that same year, 1,985,072 marriages occurred, making the U.S. marriage rate 6 per 1,000 people [6].

Резюме

Разлучение родителей влияет на детей во всем мире каждый год, причем исследования показывают, что последствия для этих детей могут быть хуже, чем для тех, чьи родители остаются вместе. Дети из разделенных семей с большей вероятностью будут испытывать проблемы с поведением, образованием, психическим здоровьем и зависимостью даже во взрослом возрасте [6].

Крайне важно расставить приоритеты в эффективном совместном воспитании, чтобы гарантировать, что дети защищены от конфликта, вызванного разрывом отношений, и продолжают процветать в обеих семьях. Хотя статистика может показаться тревожной, родители могут предпринять активные шаги для поддержки благополучия своих детей во время и после процесса разлучения.

В январе-апреле текущего года в Азербайджане Министерством юстиции зарегистрировано 15 065 браков и 6 920 разводов. По данным Госкомстата, по сравнению с годом ранее количество браков на каждую 1000 человек снизилось с 5,6 до 4,5, а количество разводов выросло с 1,5 до 2,1 [5].

По данным Центров по контролю и профилактике заболеваний США, в 2021 году в общей сложности произошло 689 308 разводов в 45 штатах США (Centers for Disease Control and Prevention. Provisional number of marriages and marriage rate)[6]. В том же году было заключено 1 985 072 брака, в результате чего уровень браков в США составляет 6 на 1 000 человек [6].

Развод представляет собой кризис, оказывающий серьезное воздействие на всю семейную динамику и имеющий эмоциональные последствия как для супругов, так и для их детей. Реакция детей на развод сильно зависит от их возраста, при этом он считается наиболее *травматичным для детей, находящихся в дошкольном и подростковом возрасте. Исследователи Лофас и Сова указывают, что дети в возрасте от 3,5 до 6 лет могут испытывать затруднения в адекватном восприятии изменений в семье, и часто они могут связывать развод с собой. В подростковом возрасте развод родителей может оказать негативное воздействие на процессы решения возрастных задач и затруднить процессы вторичной индивидуации и сепарации [3].*

Развод, особенно если он инициирован одним из супругов, всегда оказывает психологическое воздействие на всех членов семейной системы и представляет серьезную социальную проблему. Поэтому можно классифицировать последствия развода в три основные категории: 1) социальные последствия для общества в целом; 2) эмоциональные и психологические последствия для разводящихся супругов; 3) воздействие на детей.

Развод ведет к увеличению заболеваемости в обществе и может вызвать нервно-психические расстройства как у родителей, так и у детей, создавая травматические ситуации. Одиночество, которое часто возникает после развода, становится сложной социально-психологической проблемой для многих людей. Более того, увеличение числа детей, выросших в неполных семьях, может способствовать дестабилизации будущих семей, так как разоренная семья имеет тенденцию повторяться в будущих поколениях. Дети, выросшие в неполных семьях, часто повторяют ошибки своих родителей и могут иметь затруднения в установлении и сохранении собственных семей.

Ситуация развода оказывает сильное воздействие на самих разводящихся. Даже если брак юридически расторгнут, многие из них могут ощущать сомнения относительно правильности принятого решения. Разведенные супруги часто оказываются на перепутье, и этот период после развода можно сравнить с подростковым возрастом, так как они часто вынуждены пересматривать свои системы ценностей и переосмысливать свою предыдущую семейную жизнь.

Обычно развод влияет не только на супругов, но и на их детей, которые часто являются наиболее уязвимыми. Согласно исследованиям, ситуация развода может нанести значительный ущерб психическому здоровью детей, которые остаются без одного из родителей. Родители, часто принимая решение о разводе, не всегда уделяют достаточное внимание влиянию этой ситуации на детей, что может привести к тому, что дети сами себя винят в разводе родителей и не способны объяснить происходящее логически [4].

Развод родителей влечет за собой существенные изменения в жизни ребенка, включая изменения в окружающей среде. Эти изменения могут включать в себя потерю или приобретение материальных вещей, а также перестройку пространства, организующего повседневную жизнь ребенка. Влияет ли это на формирование личности ребенка в условиях семейных трудностей? Ответ на этот вопрос однозначен: да, это оказывает влияние. Поэтому важно рассмотреть, как дети воспринимают внесенные изменения и можно ли, с учетом их чувств, смягчить последствия разрушения привычного мира предметов [2].

Исследователь Видра выделяет несколько факторов, которые могут влиять на интенсивность детских эмоциональных переживаний в связи с разводом, включая характер взаимоотношений внутри семьи до развода, степень вовлеченности ребенка в решение семейных проблем, характер процесса развода, вопрос о том, с кем из родителей остается ребенок после развода, и взаимоотношения бывших супругов после развода [3].

Значительные негативные последствия для детей становятся более очевидными, когда бывшие супруги не могут достичь соглашения по вопросам родительского сотрудничества. Это означает разногласия между отцом и матерью относительно того, как участвовать в воспитании и взаимодействовать с детьми. Примерно половина отцов желает встречаться с ребенком раз в неделю или чаще, однако только пятая часть матерей считает это приемлемым, и часто они настаивают на полном исключении таких контактов. Отцы, после развода, чаще предпочитают выражать свою заботу о детях через подарки.

По статистике, приведенной специалистами по семейному праву, 80% разведенных отцов ограничивают свои родительские обязанности уплатой алиментов, и 10 из 100 отцов даже не готовы к такой скромной жертве и укрываются от обязанностей по уходу за своими детьми. Только 10% отцов выражают готовность защищать свои родительские права и готовы нести равную ответственность с матерями за будущее и воспитание своего ребенка, активно участвуя в этом процессе.

В случае, когда мать не против контактов ребенка с отцом, возникает другая проблема. С течением времени мать может замечать, что ребенок, особенно мальчик, становится более привязанным к отцу и ждет каждой встречи с ним как особого события. Это может вызвать у матери чувство обиды и горечи, так как на нее ложится большая часть обыденных забот о ребенке, и детская любовь приходит слишком редко от отца. Это может привести к "борьбе" между родителями за внимание ребенка, и ребенок, в свою очередь, начинает использовать эту ситуацию в своих интересах. Такое поведение родителей может вызвать серьезные психологические деформации в личности ребенка, которые могут проявиться спустя годы, когда уже будет сложно что-либо изменить.

Однако самые серьезные последствия развода для ребенка связаны с его воспитанием в неполной семье. Несмотря на все усилия матери, неполная семья не может обеспечить полноценные условия для социализации ребенка, включая его вхождение в социальную среду, адаптацию к ней, освоение социальных ролей и функций. Отсутствие отца как образца идентификации мужской роли для сына и комплементарного образца для дочери может негативно сказаться на адаптации ребенка в подростковом возрасте, а затем и на его браке, а также на его психологическом и сексуальном развитии. Мать может стремиться компенсировать отсутствие отца через свою заботу и любовь, но такое влияние может привести к эмоциональной зависимости, несамостоятельности и другим дефицитам в развитии ребенка. Дети из неполных семей также могут подвергаться давлению со стороны сверстников из полных семей, что может вызвать чувства неуверенности и агрессии [4].

Психологи знают, что дети, проведшие ранние годы в детских домах или интернатах, имеют больший риск проявления агрессии или вандализма, чем дети с более типичной семейной историей.

Развод родителей оказывает влияние не только в семейном контексте. Внимательные педагоги и воспитатели могут замечать изменения в поведении ребенка в школе или детском саду в связи с неблагополучием в семье. Эти изменения могут включать в себя неожиданные слезы, агрессию, конфликты и ухудшение внимания. Ребенок использует доступные ему психологические механизмы для справления с семейными стрессами. Следовательно, неудивительно, что частой жалобой разводящихся родителей, обращающихся к детским психологам, является негативное поведение ребенка в детском саду или школе, такие как частые вздохи и плохие оценки. За этими видимыми проявлениями всегда скрываются глубокие семейные конфликты [2].

Детские эмоциональные реакции на развод могут варьировать от вялой депрессии и апатии до выраженного негативизма и проявления несогласия с родительскими решениями. Важным аспектом является то, что развод не является выбором самого ребенка, и он вынужден принять это решение родителей, что может вызвать у него чувство разрушения его обыденного мира и вызвать различные эмоциональные реакции, включая протест, фобии и депрессию [3].

Эксперты и исследователи пришли к общему мнению о том, что существует два основных влиятельных фактора на благополучие детей. Эти два фактора являются ключевыми приоритетами, оказывающими значительное воздействие на детей:

1. Дети достигают благополучия, когда поддерживаются семейные взаимоотношения в их жизни, что представляет собой высший приоритет, особенно в случае развода. Этот аспект также охватывает не только родителей, но и всю семью в целом, включая бабушек и дедушек, и так далее.

2. Детям благоприятно, когда взаимоотношения между их родителями, независимо от их семейного статуса (брак, гражданский брак и прочее), являются поддерживающими и кооперативными.

Эти два ключевых фактора подтверждаются множеством исследований, проводимых различными учеными в разных странах. Они являются основой для разделения детей на тех, кто страдает и не страдает от развода родителей [1]. Важно отметить, что поддержка обоих родителей играет важную роль в социальной адаптации ребенка и подростка в этот период.

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Technical sciences

APPLICATION OF GENERATIVE LANGUAGE MODELS IN DATA VISUALIZATION AND MINING

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Abstract

Generative language models are becoming essential tools in big data visualization, providing concise narrative summaries that help users understand complex datasets. These models can translate visual data trends into natural language, offer dynamic query formulation, and automate routine data-driven report generation. They also detect anomalies and provide interactive feedback for a more engaging user experience. However, caution must be exercised to avoid over-reliance on these models and to ensure data quality. Integrating generative language models with big data visualization promises a more intuitive approach to deciphering large datasets.

Аннотация

Генеративные языковые модели становятся незаменимыми инструментами визуализации больших данных, предоставляя краткие описательные отчеты, которые помогают пользователям понимать сложные наборы данных. Эти модели могут переводить тенденции визуальных данных на естественный язык, предлагать динамическую формулировку запросов и автоматизировать создание рутинных докладов на основе данных. Кроме того, они выявляют аномалии и обеспечивают интерактивную обратную связь, облегчая взаимодействие с данными. Однако необходимо соблюдать осторожность, чтобы избежать чрезмерной зависимости от этих моделей и обеспечить качество данных. Интеграция генеративных языковых моделей с визуализацией больших данных обещает более интуитивный подход к расшифровке больших массивов данных.

Big data visualization is a crucial aspect of data science and analytics, allowing researchers, analysts, and business leaders to quickly understand and glean insights from complex datasets. As the volume of data increases, traditional visualization techniques can be overwhelmed, making it challenging to find meaningful patterns. Generative language models can create concise narrative summaries from visualizations.[1] This means that trends, outliers, and patterns can be described in natural language, making it easier for anyone, especially non-technical stakeholders, to grasp the data's essence. In addition to summarizing visual data, these models can also facilitate dynamic query formulation. Instead of users having to navigate intricate menus or manually set filters, they can pose questions in natural language. Beyond visualization interpretation, there's the potential for automating data-driven report generation. For routine tasks where the same types of reports are generated regularly, a generative language model can create reports complete with visuals, annotations, and textual descriptions. This not only saves time but ensures consistency and accuracy.

Generative models can understand data trends and use outlier detection techniques to identify and narrate anomalies in the data.[2] If a sudden drop or spike occurs, the model could highlight it and provide a possible explanation. Interactive feedback further enhances the user experience. If a user doesn't understand a particular data point or trend, they can ask the model directly and receive an explanation, making the exploration of data more interactive and intuitive.

Nonetheless, excessive reliance on language models without supplementary human oversight can lead to over-dependence, and human judgment remains essential. The insights generated are as good as the data they're based on, so ensuring data quality is crucial.[3]

In conclusion, the integration of generative language models with big data visualization is a promising frontier, offering deeper insights, enhanced user interaction, and a more intuitive approach to understanding vast and complex datasets.

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