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On the possibility of obtaining sodium sulfate from gas cleaning solutions

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Abstract: This article is devoted to the problem of purifying exhaust gases from aluminum production from sulfur compounds. The article shows that the majority of aluminum smelters equipped with electrolyzers with Soderberg anodes have come close to the upper limit of the efficiency of the bell-type shelter and the useful use of gas cleaning equipment. The article discusses single-stage wet gas purification, dry sorption purification of waste gases with alumina in reactors and bag filters, as well as two-stage gas purification systems (including combinations of dry and wet gas purification). To purify gas cleaning solutions from sulfur compounds, a technology has been proposed for the regeneration of sulfur compounds from gas cleaning solutions of electrolysis production using natural cold. This method is based on the known solubility curve of sodium sulfate in aqueous solution. It has been experimentally proven that the proposed technology makes it possible to effectively purify gas cleaning solutions from sulfur compounds.

Key words: sulfur, sulfur emissions, sodium sulfate, aluminum smelter, Soderberg anodes, gas cleaning.

1 Introduction

As is well known, most of the sulfur is released from the electrolyzer as sulfur dioxide emissions. Sulfur emissions from an aluminum smelter with an annual production of 200,000 tons can reach 1,000 tons of sulfur per year [1]. Sulfur gases are known for their detrimental effects on local air quality (particulate matter), rainfall, human health, and global climate [2]. However, sodium sulfide emissions and conversion to sulfate are also considered to be the most important factors in reducing global warming by backscattering solar radiation into space [3, 4].

Cleaning of gases from electrolytic aluminum production has a number of specific features, which are primarily due to the significant volumes of gases being cleaned, the complexity and heterogeneity of their composition. The exhaust electrolysis gases contain carbon oxide and dioxide, hydrogen fluoride, sulfur dioxide, resinous substances, and fine dust. It is clear that with an increase in sulfur concentration, its gross tonnage in the exhaust gases will increase linearly.

The degree of electrolyzer cover characterizes the distribution of gases released during electrolysis between gas cleaning systems and lantern emissions. The efficiency coefficient determines the degree of pollutant capture and depends on the design and technological features of the devices used. The efficiency coefficient is characterized by the ratio of the duration of operation of gas cleaning equipment to the total time of operation and downtime due to accidents and scheduled repairs.

Most aluminum plants equipped with electrolyzers with Soderberg anodes have come very close to the upper limit of the efficiency values of the bell shelter and the useful use of gas cleaning equipment [5].

The use of various schemes and types of gas cleaning equipment at one or another aluminum plant is characterized by approximately the same efficiency, differing only by a few percent. Data on emissions of pollutants into the atmosphere are given in Table 1.

Table 1

Emissions of pollutants into the atmosphere from the electrolysis building [6].

Pollutant	Through the chimneys		Through aeration lanterns	
	g/sec	t/year	g/sec	t/year
Hydrogen fluoride	0.083	2,617	1.51	47.62
Sulfur dioxide	0.271	8,546	0.35	11.04
Carbon monoxide	103,660	3269,0	75.05	2366.7
Inorganic dust	1,332	42.02	11.61	356.13
Benz (a) pyrene	0,00129	0.04068	0.003758	0.11852
Solid fluorides	0.275	8,672	1.03	32.48

Currently, several schemes for cleaning dust and gas mixtures from electrolyzers with self-baking anodes are in operation. In general, the hardware scheme for cleaning anode gases includes bell-shaped covers of electrolyzers, burner devices, under- and inter-housing gas ducts, smoke exhausters, dust and gas cleaning units (electrostatic filters and/or wet cleaning devices), cyclone-mist collectors, and smoke stacks [7].

There are also other schemes for capturing exhaust gases. In particular, a number of electrolysis buildings use single-stage wet gas cleaning; the use of dry sorption cleaning of exhaust gases with alumina in reactors and bag filters is also known, as well as two-stage gas cleaning systems (including a combination of dry and wet gas cleaning) [8].

Methods

In one of the aluminium productions on a semi-industrial scale, a technology for regenerating sulphur compounds from gas cleaning solutions of electrolysis production using natural cold was introduced. This method is based on the known solubility curve of sodium sulfate in an aqueous solution – Fig. 1.

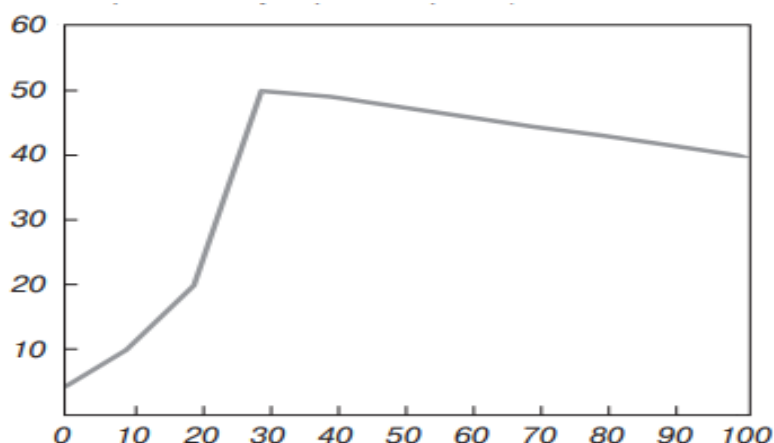


Fig. 1. Solubility of sodium sulfate in water.

Analysis of the curve in Fig. 1 shows that the use of natural cold allows the formation and precipitation of sodium sulfate crystals from saturated gas cleaning solutions. The scheme shown in Fig. 2 was proposed for the implementation of a semi-industrial test.

The pilot plant diagram (Fig. 2) includes a mixing tank, a thickener-separator, a box with a grid and a pipeline system for transporting clarified (initial) and desulfated solutions, as well as the thickened product. A temperature sensor is installed in the mixing tank.

Pilot industrial tests were conducted to determine the efficiency of the implementation of the equipment and process flow diagram for crystallization of sodium sulfate from gas cleaning solutions using natural cold to obtain a commercial product, the purpose of which was:

- determination of the fundamental possibility of obtaining sodium sulfate of proper quality;
- clarification of technological process parameters;
- production of a pilot batch of sodium sulfate for the consumer.

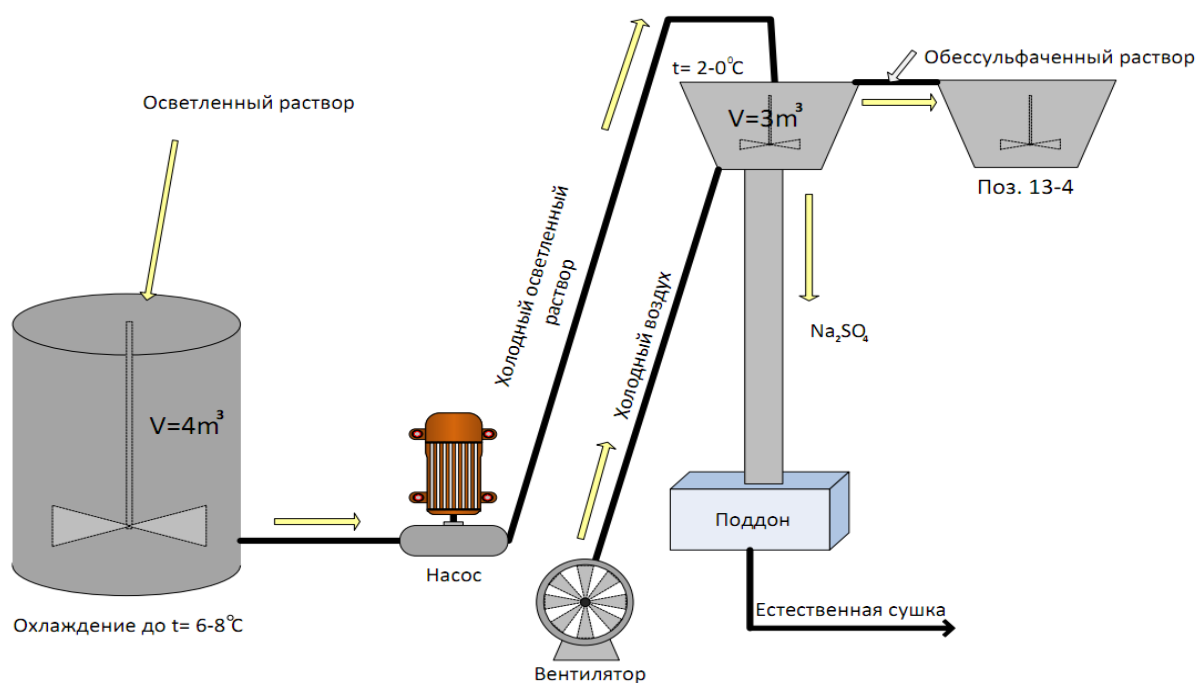


Fig. 2. Scheme of a pilot-scale plant for crystallization of sodium sulfate from GOU solutions.

The gas cleaning solution was used as the feedstock for obtaining crystalline sodium sulfate, and natural cold air served as the cooling agent. The clarified GOU solution was poured into the mixing tank in a volume of 5-6 m³ with a temperature from +40 °C to +44 °C. The cooling of the solution continued from 2 to 3 days, since the outside air temperature fluctuated from -3 °C to -17 °C. Pumping of solutions, filtration and delivery of crystalline sodium sulfate to the cryolite drying unit occurred within 2 hours.

Results

As a result of pilot industrial tests, four technological cycles of sodium sulfate crystallization from GOU solutions were conducted. Three batches of crystalline product were obtained. Samples of the initial and obtained

products were analyzed, and the temperature of the outside air and cooled solutions, the time of solution cooling and filtration were also recorded.

Table 2. Chemical composition of the obtained crystalline sodium sulfate

	Elements to be determined, %				
	F	Na ₂ SO ₄	Na ₂ CO ₃	Fe	Solid residue
cycle 1 Na₂SO₄	0.4	96.9	2.1	0.002	0.42
cycle 2 Na₂SO₄	0.3	96.5	2.2	0.002	0.22
cycle 3 Na₂SO₄	0.3	95.3	2.9	0.002	0.9

Comparison of the chemical composition of desulfated solutions shows that the degree of sodium sulfate extraction from GOU solutions is within 36-68%. This depends on the cooling temperature of the solutions and the initial chemical composition. In general, it can be stated that reaching a temperature of 4 °C in the GOU solution is sufficient for its regeneration from sulfur compounds and the formation of crystalline sodium sulfate (Fig. 3). Accordingly, the regulating parameter (due to the impossibility of influencing the ambient temperature) is the cooling time of the solution in a container located outside and the temperature of the atmospheric air. There is an option to intensify the process by installing refrigeration equipment, but this will lead to an increase in the cost of the process.



Fig. 3. Appearance of the obtained sodium sulfate

The composition of the solution after crystallization of sodium sulfate changes insignificantly, the concentration of the main chemical elements - Na₂CO₃, NaHCO₃, NaF corresponds to the regulations of the clarified solution sent to the crystallization process of regeneration cryolite and/or calcium fluoride for its own needs.

Discussion

It has been established experimentally that for 1 cycle (2-3 hours) of the turnover of the GOU solutions "mixed solution on GOU - saturated solution with GOU" in the regeneration process, the concentration of sodium sulfate increases to 20 g / l. Consequently, the mother liquors after crystallization of regeneration cryolite with a

concentration of Na_2SO_4 of 40 g / l and less can circulate in the system "preparation of mixed solution - solution on GOU - cryolite production" without being removed from the process and discharged to the sludge field, which is necessary to maintain the balance of sulfur products in soda solutions. In this case, the savings on soda ash will amount to 8,000 - 10,000 tons / year for one enterprise, increase the service life of sludge fields and allow obtaining marketable products.

Table 2 shows the chemical composition of crystalline sodium sulfate obtained at different concentrations of chemical compounds in the solution. The content of the main substance - sodium sulfate - in the product is from 95.3% to 96.9%, which confirms the dependence of the efficiency of the crystallization process on the temperature of the solution and its chemical composition. Impurities in the obtained product include a small content of fluorine and solid residue (less than 1%).

Conclusion

1. The interaction of gas cleaning solutions with lime was studied, and it was shown that lime can be used to regenerate gas cleaning solutions from sulfur compounds.
2. The process of crystallization of sodium sulfate from gas cleaning solutions using atmospheric air as a coolant in the cold period of the year was studied, industrial-grade sodium sulfate was obtained. It was shown that the use of natural cold allows for effective regeneration of gas cleaning solutions from sulfur compounds.
3. The chemical composition of the obtained sodium sulfate allows us to talk about its possible use in related industries, for example, in the production of cellulose, construction or the production of synthetic detergents.

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Axiology of Folk Art

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Abstract. This article is devoted to axiological problems in art. In addition, the characteristics of the values belonging to each era and their meanings are revealed in detail. The role of aesthetic, ethical, educational, cognitive functions, covering all spheres of the public life of art, was also reflected.

Key words: art, aesthetics, value, function, knowledge, communication, attribute.

1 Introduction

Values both as a special phenomenon and as a subject of axiology have a number of specific features. Thus, they are inherently ideal in nature, in the sense that it is not possible to perceive them directly with the senses. Thus, despite the fact that such phenomena as good, evil, justice, ugly, beautiful, etc., really exist, they cannot be defined unambiguously, they are not perceived sensually. Representations of good and evil in each nation have their own specific moments, and besides, they changed from epoch to epoch. Thus, in the Middle Ages, when in Europe and the Middle East in ethics and philosophy dominated theocentric views, according to which the highest good, the essence, the beginning of everything was considered to be God, and love for him, unconditional obedience to him, adoration of him was the basis of both Christian and Muslim ethics, which prescribed believers to follow the divine commandments set out in the holy books. Refusal to follow them was regarded as a sin, an unworthy act, a crime. In this era in ethics and philosophy are formed concepts consisting of three main categories, namely Truth, Goodness and Beauty, which embody the highest spiritual values and require a reverent attitude to themselves, the highest reverence.

During the late Middle Ages, during the Renaissance, a radical reassessment of values, if not values, then at least their foundations was taking place in Europe, when, in fact, the highest value along with God was considered to be an active, creative man, who had to search for meaning and happiness in real life, on earth, and not only trust in the afterlife. With this approach and attitude to life and man, the ethics, aesthetics and philosophy of humanism were formed, which insisted on the independent value and self-sufficiency of man, in fact, his equality with God.

2 Technology for obtaining materials and research method

In the New Century, which marked the era of capitalism, rapid development of industry and science in the XVII-XIX centuries, it was scientific knowledge that began to have a decisive impact not only on the worldview of man, but also on ethics, ideas about good and evil, ugly and beautiful, truth and error, etc. "Knowledge is power", - insisted F. Bacon, "I think - therefore, I exist", - claimed R. Descartes [1, p. 61].

In the New Age, the external world, nature began to be perceived as a kind of workshop, in which man, left to himself, had to purposefully and actively produce everything necessary for his life and happiness. The new ethics put the thinking, active man at the head of the list, and his ethics and spirituality also had an active character. I. Kant, introducing the category of value in anthropology, focused his attention on such moral and ethical values as

conscience, duty, honor, etc. In Marxist ethics, other values - justice, equality, freedom, dignity, etc. and their corresponding socio-political phenomena - labor, law, revolution, etc. - were placed as central. F. Nietzsche based ethics on the notion of will to power, under which he meant the natural, innate desire of people to achieve superiority, the highest possible better position in life, and this desire he considered the main driving force not only in man, but in any living organism, creature. In accordance with this understanding of the human essence, he called philosophers and people in general to reassess the values, goals and ideals, which were previously built, in his opinion, on false ideas about the nature of man [2, p.125].

3 Experimental results and their discussion

In the middle of the XX century axiology occupied one of the central places in the structure of philosophical knowledge. The rapid process of globalization caused a significant intensification of international interaction and relations and aggravated many problems, which took on a global character, which actualized, in particular, the problem of a thorough reassessment of values, change of attitude to communities belonging to different cultures, civilizations, to the natural environment, which, due to its unrestrained exploitation and rapid growth of the world's population, no longer has time to regenerate. In the process of historical development, probably involuntarily, in any case not purposefully, but quite logically, a philosophy emerged, which was based, in fact, on anti-values, implying an endless and unrestrained consumerist, utilitarian attitude towards nature, as well as towards other people and entire communities, which is the basis of modern conflicts and wars.

It goes without saying that art, which permeates all spheres of social life, could not remain aloof from modern problems and still fulfills various functions, including educational ones. All varieties of art, representing a specific form of activity, in their totality provide a transformative impact on man and society. They are an organic and necessary part of the general system of enlightenment and education. The information of cognitive nature, present in various genres of art, is quite large in volume, and it gives us in a specific form of knowledge about the world and man, society. Art, expressing and reflecting in artistic form the thoughts, feelings and perceptions of people, serves, among other things, as a means of comprehension of the world, as well as a way and form of self-knowledge of the individual. Art, being a means of communication, realizes this communication in an artistic form, naturally resorting to language [3, p.26].

The special role of language in art has been emphasized many times in the history of art and aesthetics. It should be emphasized the special role of art in the education, interpreted in the broadest sense of the word, of the individual. And if the educational influence of other forms of spiritual activity on public consciousness and personality is mainly of a private nature: for example, on the basis of morality stereotypes of behavior, moral norms are formed, politics forms political views, philosophy - worldview, with the help of natural sciences specialists are prepared, the impact of art on consciousness is of a complex nature. Aesthetic function takes a special place in art, associated with the ability to cause a deep emotional experience, pleasure, which in turn is based on the ability of man to feel, perceive, understand the beauty. This function reflects the inner human need for beauty, which generates in him the desire to reproduce beauty wherever it is possible [4, p.770].

Due to the fact that the aesthetic function is closely related to the other functions of art, it is through creativity, thanks to it people develop the ability to perceive the beautiful, create ideals of beauty and explore the principles on which it is based. It should be emphasized that the aesthetic function is a special, in principle no substitute ability, purpose, attribute of art, the only one that can purposefully, systematically form a taste for the beautiful, the inner need for it, and at the same time awaken, stimulate a person to creative activity. In the process of such activity the creator masters a complex, contradictory and multifaceted life material, at the same time it is necessary to correlate himself, his own experience, feelings, thoughts, etc. with this material, with other people, and thus form aesthetic experience and values, which in one way or another transfer to other people, achieving harmony of form and content, trying to organize both his own experience and the artistic world created by him, which is a different reality, built according to the laws, principles of beauty [5, p.511].

The main functions of art, in addition to the aesthetic, include the educational function, which consists of moral (moral-educational function) and ideological (ideological-educational function) components, has to do with

enlightenment and humanistic aspects. However, since the category of upbringing is a very capacious and rather contradictory concept, it is not possible to determine the exact limits of the educational function within the limits of art itself, although, of course, the full-fledged education of a personality is practically impossible outside and without art. On the other hand, while educating, art actively uses a significant educational potential contained in it, and for this reason it is difficult to differentiate between cognitive and educational functions in art, which significantly stimulates in the personality his cognitive activity, the desire to know about the world and man as much and better as possible. It is obvious that in order to best understand a particular work of art, as well as the emotions it evokes, you need some knowledge of both life and preferably in the theory of art, you need to have ideas about such things as coloring, composition, perspective, etc., as well as a knowledge of the theory of art. But it is also obvious that the knowledge acquired through and through works of art differs in many ways from the knowledge acquired in other spheres of activity or existence. Thus, knowledge in art is intimately intertwined with the emotional world of man.

Emotions in art are a kind of key with the help of which a person acquires knowledge in art. If the knowledge in art is not connected with feelings, not connected with them, then they are completely useless, meaningless, have only formal character, and therefore to know in art means, in fact, the same as to feel, feel the emotional rise, shock, etc. L.V. Vygotsky emphasized that "even purely cognitive judgments in a work of art are emotional-affective acts of thought", which, by the way, provides a more reliable and durable memorization of various details and facts, because the process of cognition, occurring through emotional perception in the subconscious, is fixed with greater force and on several levels. Knowledge obtained through art, being at the same time "sensual cognition", becomes inevitably part of the spiritual world of a person [6, p.344].

One of the attributes of art, works of art is their artistry, which is based on the organic correspondence between their content and form, when the content is understood as the inner meaning, the essence of an artistic work or image, its intellectual and spiritual content, and the form is understood as the material embodiment, organization and structure, in which this content is realized. This correspondence, harmony between form and content is possible only if the content is emotionally rich enough and looks creatively distinct. The essence of artistic form is to reflect in an adequate, more real way what, in fact, is this or that object, as well as to convey the ideas and feelings put into it by the creator, who counted on a certain intellectual and emotional response.

The unity of form and content of a particular work of art reflects its organizational and artistic integrity, which, however, is not an absolute internal identity between these components, but only reflects a certain, more or less high degree of their mutual connection and correspondence, harmony. Each specific content must correspond to a specific form in which this content is realized, embodied. In the process of creativity and in its product itself, these two categories dialectically interact and form its two sides. "Content is nothing but the transition of form into content, and form is nothing but the transition of content into form" [7, p. 224].

4 Conclusion

Content does not exist by itself, outside and without a certain form. However, since a specific subject creates in art, the adequacy of content and form is only a requirement, but not necessarily an established fact. V. Kandinsky called the invariable means of form: in music - sound and time; in literature - word and time; in architecture - line and volume; in sculpture - volume and space; in painting - color and space [8, p. 74]. It should be emphasized that art is inextricably linked to social processes. No reorganization, transformation of society has never occurred without its participation, and art not only reflected and reflects these processes, but often stimulates them, being a significant part of public consciousness.

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Contemporary problems of science and education

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Abstract: Education is one of the most important spheres of society. The future of people and the direction of their spiritual and intellectual development depends on filling it with various social institutions, educational sciences, educational sciences, systems of methods for providing and mastering information and building educational institutions.

Key words: education, method, important, problems, development, system

1 Introduction

We can talk for a long time about the problems of modern education, but we will try to focus on the most important ones. One of the main problems is the problem of values. Recently, the decline in the significance of moral and spiritual values of a person, human communities and societies as a whole has become increasingly obvious. Education is one of the main factors in the formation of public consciousness, so it should become a social institution that restores trust in moral values.

The incompatibility of educational content and technologies with the requirements of modern society and economy is also a problem for the development of the education system in modern times .

2 Methods and materials

The next problem in education is the problem of goals. This depends on what the teacher is focused on, what values are a priority and especially significant for him, in what direction the educational process is built and implemented. In the history of the development of educational systems, two approaches to the problem of setting goals can be distinguished: formative (project) and free. For many, setting free goals is much more progressive than the first approach, from the point of view of recognizing humanitarian and universal values, while the question arises about the implementation of this idea in a state school in connection with some features of the current state of society.

The new generation of standards contain excellent ideas about the need to form and develop metascientific skills in students, but they do not contain descriptions of technological procedures for the implementation and implementation of new educational goals.

Professional mastery in a society with the personal characteristics of an adult and educated teacher, other measurement systems and information points of view that contradict the new demands of the time, has a different worldview.

The average age of a teacher in a modern school is 40 years and older. This age period is not the best time to reconsider life guidelines. We are talking about psychological barriers, including personal ideas about the norm of their activities, the opinions of important people, professional and non-professional, the peculiarities of human thinking, their orientation not to productivity, but to criticism of the actions and ideas of themselves and other people.

It is necessary to radically solve the problem of maintaining the reputation of the teaching profession. To this end, all educational institutions without exception must be provided with modern textbooks and methodological manuals on updated educational technologies, the necessary computer equipment;

- implementation of widespread training and, if necessary, retraining of teaching staff on the basis of updated state educational standards, general education programs and reprograms for advanced training; strengthening motivation to participate in changes;
- implementation of widespread training and, if necessary, retraining of teaching staff on the basis of updated state educational standards, general educational programs and reprograms for advanced training; strengthening motivation to participate in changes; creating a variety of flexible and attractive conditions for the penetration of a new generation of professors into the educational system, this inertia is not accompanied by a weak reaction to external signals about the need to change existing educational technologies;
- replacement of management personnel in the education system, development and implementation of effective mechanisms for professional and career growth.

3 Results

The new generation of teachers and educators must be ready to work in the field of education, see in this the prospects for professional growth, apply in their practice world scientific and technical achievements, receive moral and material satisfaction depending on the results of their work. and their activities. faculty.

For these purposes, it is also necessary to carefully monitor the distribution and use of the corresponding material and technical base of educational institutions, which fully ensure the effective use of new educational technologies. All this will help to create optimal, democratic conditions for the change of generations of teachers and educators.

It is impossible to remain silent about such a problem as the bureaucracy of the education system; sometimes it is impossible to take into account the person standing behind a pile of papers and reports, and how much time it will take.

At the beginning of the reforms in the country, the state of education was subjected to harsh criticism. It is known that the management of education was undemocratic, bureaucratic, the style of collective management prevailed, the inability to immediately solve emerging problems, administration and inspection control.

There was no need for feedback (goal setting – result management).

The characteristic features of the education system and the education management system were: unpreparedness to work with consumers of educational services as clients; fairly high self-esteem with a low level claims; weak self-criticism; the position of the manager as a user, and not as a designer of the management system; uneven distribution of powers and responsibilities; alienation of the management system from needs of people; lack of experience and mechanism of partnership relations with representatives of different spheres of social life; rigid, as a rule, linear-functional structures of the education management system; lack of feedback from graduates and, as a result, a decrease in the speed of response to dynamically changing needs of the labor market; inconsistency of work in the management team; displacement of the management system from its object of management, as a consequence - the lack of analysis of one's own management activities and analysis of problems in the functioning of managed objects.

4 Discussion

Since the reform in the field of education leads to the process of destruction of the previous uniform system of educational institutions, differentiation of the content of education occurs. In other words, it is essential the object of management has changed, and its management must also change. It takes on a different quality, takes on the image of management.

By its nature, the activity of an education manager is multifunctional. He acts as an organizer, administrator, researcher, psychologist, business manager, public figure. The task manager is to provide guidance and coordination of the activities of participants in the educational process. Management of an educational institution makes sense when it is filled with real pedagogical content. Consequently, the activity of a manager in education is managerial and pedagogical in its content. Pedagogical management has its own specifics and laws inherent only to it. This specificity is expressed, first of all, in the uniqueness of the subject, product, tool and result of the manager's work. The subject The work of the educational process manager is the activity of the managed subject, the product of the work is information, and the tool of the work is the word, language, speech. The result of the work is the degree of training, education and development of the object (the second subject of management) - students.

5 Conclusion

For effective management, a teacher must master various techniques and trainings for working with a team and transmitting education through a team. These techniques are designed to form such human qualities based on modern knowledge and skills that would allow an individual to solve emerging problems, adapt to changing socio-economic and political conditions, represent and protect their own interests and rights and those of others. In addition to the fact that a teacher has all of the above skills, he is also a professional, who knows his subject very well. If you know what to talk about and how to talk in class, then you really can not teach, but direct the teaching, not educate, but manage the educational processes.

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The problem of improving the green economy using solar energy

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Abstract: This article discusses the future of green economy development using green energy in Central Asia. The main direction of research is analyzing the potential of renewable energy sources in the country and solving environmental and economic problems. This article is devoted to studying the problems of processing agricultural products produced in Central Asia using solar energy. The study results show that Central Asia has great potential for developing a green economy using green energy, which could lead to the creation of new jobs and an improvement in the environmental situation in the region.

Key words: green energy, green economy, renewable energy sources, solar energy, technical diagram, solar drying plant, energy security, food security.

1 Introduction

The implementation of the principles of a green economy in Central Asia through green energy is one of the priority areas. This article is devoted to studying the problems of processing agricultural products produced in Central Asia using solar energy. The goal of the research is to develop new technical schemes and installations for producing powders of agricultural products based on the use of solar energy as an alternative to the consumption of fossil fuels and electricity.

Central Asia has huge resources of one of the renewable energy sources - solar.

One of the ways to store agricultural products for a long time is to process it into a powder state. Processing agricultural products into a powder state simultaneously solves several problems: crop losses are reduced, storage problems are solved, transportation costs are reduced, there is no need to cool products during transportation, etc. One of the ways to reduce losses and long-term storage of fruits and vegetables is to dry them.

Drying is the most energy-intensive of all technological processes in the food industry. To evaporate 1 kg of water from food, 2480 kJ of energy is required. The share of energy consumption (coal, natural gas, etc.) in thermal dryers is up to 60% of the cost of finished powder products.

The economic development of the countries of Central Asia plays a key role in solving the social and economic problems of the region. Most of the population of Central Asia lives in rural areas, which is why the working population is involved in agriculture. About 40% of the population is employed in agriculture. Countries located in Central Asia have one of the highest levels of solar intensity in the world and are well positioned to

develop a green economy through green energy. The total area of the Central Asian states is 4,006,377 km², and the population is 81,065,256 million people [1,2].

Table 1.

State	Territory, km ²	Population (February 1, 2024)
Kazakhstan	2 724 902	20 053 665
Uzbekistan	448 924	37 029 360
Turkmenistan	491 200	7 057 841
Kyrgyzstan	199 951	7 037 590
Tajikistan	141 400	9 886 800
Total:	4 006 377	81 065 256

Therefore, combining these two resources and developing new technical schemes and installations for producing agricultural product powders using environmentally friendly and free solar energy is of great economic importance for Central Asia.

A new and promising direction in the green economy of Central Asia could be the production of food powders from plant materials using solar energy.

2 Materials and methods of research

Annual harvest losses of vegetables at the stage of procurement and storage in the countries of Central Asia are 5-25%, fruits - 15-18%. This not only leads to loss of actual yield, but also has an impact on the environment, labor, natural and energy resources in crop production.

On average, fruits and vegetables contain up to 90% water, 9.5% various organic compounds and 0.5% minerals. High water content means that fruits and vegetables are easily attacked by phytopathogens, and storing them after harvest is a challenge.

One of the ways to reduce losses and long-term storage of fruits and vegetables is to dry them. As a rule, agricultural products dried whole or in large parts contain 15-18% residual moisture. Strictly speaking, such moisture content also does not allow food to be stored for a long time. After some time, they begin to mold and are affected by microorganisms.

Solar energy has enormous potential as a renewable energy source due to the sparsely populated large areas and climatic conditions, especially in Central Asian countries where the sun shines between 2,200 and 3,000 hours per year. In the summer months (June–August), due to its geographical location, it receives direct solar radiation during most of the daylight hours, which is 83–96% of the maximum possible value. For comparison, the average number of sunshine hours in Vietnam is 2200, in China - 2500, in Germany, Great Britain, Norway and Japan - less than 1000 per year.

Under such actinometric conditions, it is practically possible to dry agricultural products using solar energy from April to the first half of November.

The cost of powder products obtained in a solar installation will be several times lower than the cost of products obtained by the traditional (thermal drying, use of fuel or electrical energy) method, since environmentally friendly, free solar energy is used for drying. [3,4].

The highest solar potential is estimated in Kazakhstan – 3,760,000 MW of solar photovoltaic energy. CADGAT (Central Asia Data Collection and Analysis Group) estimates the potential to be 6,684 TWh/year. With 2200–3000 hours of sunlight per year, solar radiation is 1200–1700 kW/m² or, according to another source, 1300–1800 kW/m².

In Kyrgyzstan, the solar photovoltaic energy potential is 267,000 MW. With solar radiation of 1000–1700 kW/m² (or 1500–1900 kW/m²), the solar energy potential is estimated at 490 GWh/year for thermal energy and 22.5 GWh/year for electrical energy. Another source estimates the potential at 700,000 GWh/year for electricity and about 2 billion Gcal/year for heat production.

In Tajikistan, the solar photovoltaic energy potential is estimated at 195,000 MW. With sunshine from 2100 to 3170 hours per year, 280–330 sunny days per year and solar radiation of 280–1120 MJ/m² or 0.9–8 kW/m², the solar potential is, according to various estimates, 25,000 GWh/ year, 410,000 GWh/year or 410 TWh/year.

Solar radiation is estimated at 1640–1690 kW/m². In Turkmenistan, where 80% of the territory is covered by the Karakum Desert and the annual duration of sunshine in some regions (for example, Kuli, Hasan and Ashgabat) ranges from 2700 to 3150 hours, the solar potential is significant.

In Uzbekistan, the solar photovoltaic energy potential is 593,000 MW. Solar potential is estimated from 525 and 760 GWh/year to a whopping 2,508,000 GWh/year, 2,000,000 GWh/year and 1,195 TWh/year. According to K. Jorde and A. Bigert, with 250 sunny days a year, the gross potential of solar energy is 593 million GWh, and the technically feasible potential is 2,000,000 GWh/year [5-12].

The potential of renewable energy sources, as shown in Table 2, is very significant in the Central Asian region. Small hydropower potential ranges from 275 to 30,000 MW, solar photovoltaic energy from 195,000 to 3,760,000 MW, wind energy from 1,500 to 354,000 MW, geothermal energy from 2 to 54,000 MW and bioenergy¹¹ from 200 to 800 MW. [13,14,15,16].

Table 2. Potential of renewable energy sources in Central Asia

country	Small hydropower	Solar photovoltaic energy		Wind energy		Geothermal energy	Bio-energy
	mW	mW	TWh/year	mW	TWh/year	TWh/year	mW
Kazakhstan	4800 (≤35 mW) 2707 (≤10 mW)	3760000	6684	354000	11 388	54 000	300
Kyrgyzstan	900 (≤30 mW) 275 (≤10 mW)	267 000	537	1500	256	171	200
Tajikistan	30 000 (≤30 mW)	195 000	410	2000	146	45	300
Turkmenistan	1300	655 000	1484	10 000	1992	No data	slightly
Uzbekistan	1180 (≤10 mW)	593 000	1195	1600	1685	2	800

In the technical scheme we are developing, the most important stage in obtaining SCP powders is drying the initial product. It is not only the most energy-intensive, but also the most important and influences the quality of the resulting powder: its composition, appearance, nutritional and taste qualities, shelf life, etc.

In the technical scheme for obtaining SCP powders that we have developed, drying is carried out using environmentally friendly and free solar energy. A mandatory and important step, which largely determines the effectiveness of such a scheme, is the conversion of the radiant energy of solar radiation into thermal energy and its supply to the dried agricultural product.

The technology being developed and solar installations intended for the implementation of such technology must take into account both the physical, mechanical, thermophysical properties of SCPs, different times of their maturation, as well as seasonal and daily variations in the density of solar radiation.

Such technological operations, which have become mandatory stages in the process of drying agricultural products when obtaining their powders, such as cleaning, washing, grinding into pieces, as well as finer grinding of the original product before drying to a liquid-viscous state, as well as grinding the dried agricultural products to a powdery state are also mandatory for technology we are developing [17,18,19, 20,21].

Our proposed technical scheme for producing SCP powders using solar energy should consist of the following main stages (technological operations) shown in Fig. 1.1.

According to the scheme, the initial product is first cleaned of foreign objects (leaves, small branches, weeds, etc.). Then it is washed (cleansed of dust and dirt). After this, large fruits (melon, watermelon, apple, pear, pumpkin, etc.) are divided into small pieces with characteristic dimensions of no more than 1.5 - 2 cm.

Small fruits and berries - apricots, strawberries, raspberries, grapes, cherries, etc., after washing, without preliminary chopping, are directly sent for grinding (apricots, cherries, sweet cherries, plums, etc. - after removing the seeds) . Products in a liquid-viscous form are laid out in pallets and placed in the drying chamber (DC) of a solar drying unit (SSU) and the drying process begins.

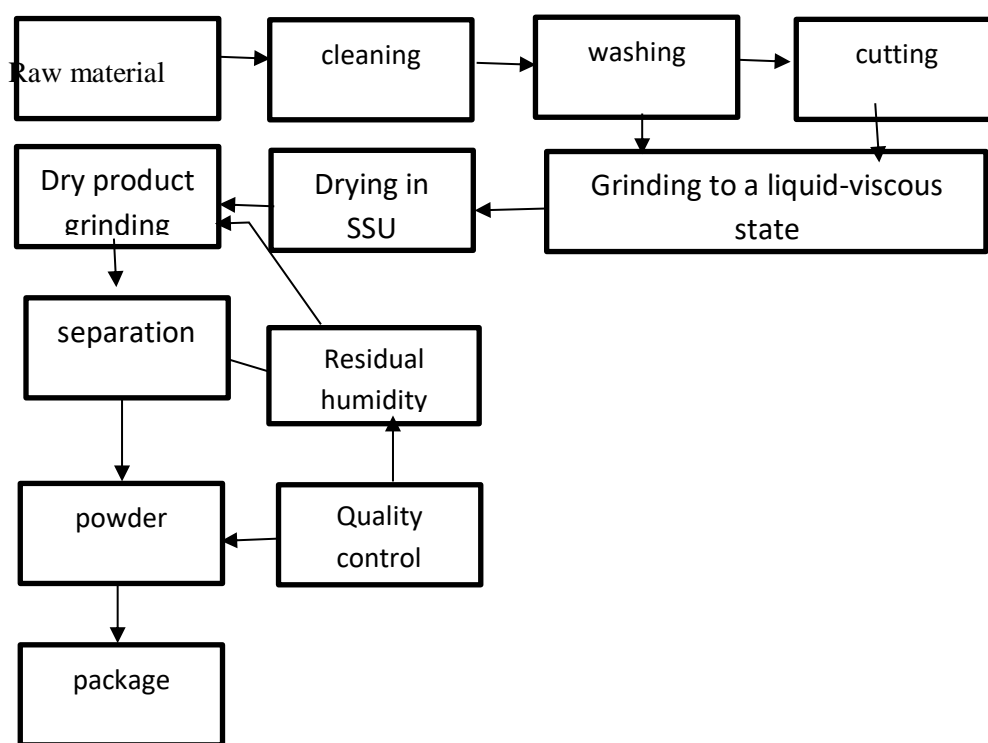


Fig.1.1. Block diagram of a technical solution for producing agricultural product powders using solar energy

A sign that the product has reached an extremely low residual moisture content is when the rate of change in the weight of the product reaches a horizontal or quasi-horizontal plateau. As our experiments have shown, the product reaches a residual moisture content not exceeding 3-8%, and for some products – 10%). After this, they are removed from the drying chamber.

During the experiments, heat was supplied to the dried products in three ways (Fig. 1.2):

- 1- radiation method (directly solar radiation) and convection;
- 2- infrared heating and convection;
- 3-pin heat supply and convection

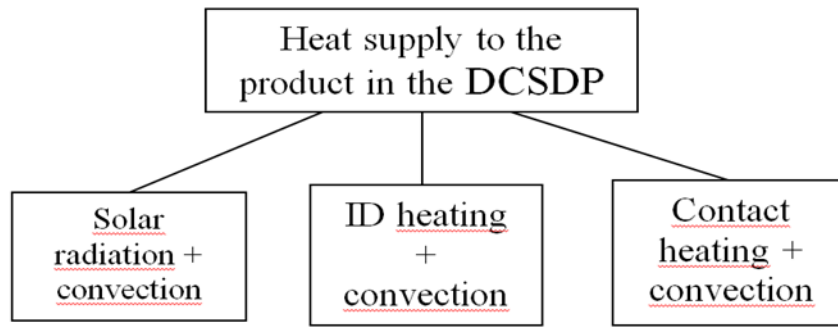


Fig.1.2. Scheme of heat supply to dried products in a radiation-convective solar drying installation.

To implement the drying stage of liquid-viscous SCPs, we have developed two types of DCSs of the radiation-convective type: one with a single-pass movement of the coolant and the second with a two-pass movement of the coolant in the drying chamber (DC), the diagrams of which are shown in Fig. 1.3.

In the SSU with a single-pass movement of the coolant, the latter passes once simultaneously from the upper and lower sides of the pallets with SCP. Since hot air is displaced to the upper part of the combustor, it can be assumed that the product receives thermal energy from the coolant from the upper (open) surface in a convective manner.

In a DCS with a two-pass coolant movement, the latter first passes from the bottom side of the pallets, and then, turning at the end of the CS, passes over the products being dried. In this case, the coolant first gives off heat by convection to this part of the pallets (which is then transferred to the lower layers of products adjacent to the pallets), and then, again by convection, gives off the remaining part of the thermal energy to the products from their upper surface. This should help more intense heating of the lower part of the products adjacent to the tray and, accordingly, intensify the drying process.

The novelty of the technical solution of the developed SSUs is that they make it possible to dry liquid-viscous agricultural products to low (3-8%) residual moisture even at low values of solar radiation due to the use of heating elements in direct contact with the products, which are heated from absorbed solar radiation by the upper, blackened sides.

The proposed SSU works as follows: solar radiation (direct + diffuse), penetrating through the upper transparent fence of the SCS, heats the air inside it. This air, passing through the transition (docking) block 5, enters the compressor station. At the same time, it passes simultaneously above and below the pallets 6 with products and gives them its thermal energy.

It should be noted that the movement of air through the SVK and KS occurs under natural pressure ΔP , which arises due to the difference in the densities of atmospheric (relatively cold) air and heated air in the SVK and KS [22]:

$$\Delta P = g h (\rho_x - \rho_g)$$

where g is the acceleration of free fall, h is the vertical distance from the entrance slit of the SVK to the top of the exhaust pipe of the CS, ρ_x is the density of atmospheric air, ρ_g is the density of the steam-air mixture at the outlet of the exhaust pipe.

In the experiments, we measured the following parameters of the products, the drying process and the drying units themselves:

1. Density of integral solar radiation. The measurements were made with an M-80M pyranometer with a measurement range of $0 \div 1200 \text{ W/m}^2$.

2. Temperature of the ambient air, as well as the air heated in the SSU and the steam-air mixture at the exit from the SSU drying chamber. The ambient air temperature was measured using a laboratory mercury thermometer of accuracy class 1.0, with a ...where g is the acceleration of free fall, h is the vertical distance from the entrance slit of the SVK to the top of the exhaust pipe of the CS, ρ_x is the density of atmospheric air, ρ_g is the density of the steam-air mixture at the outlet of the exhaust pipe.

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2. Temperature of the ambient air, as well as the air heated in the SSU and the steam-air mixture at the exit from the SSU drying chamber. The ambient air temperature was measured using a laboratory mercury thermometer of accuracy class 1.0, with a measurement range of $0/100^\circ\text{C}$ in the shade, near the SSU.

3. The air temperature inside the SSU, on the surface layer and in the middle of the dried liquid-viscous and whole (or divided into large pieces) product was measured using calibrated copper-constantan thermocouples, the readings of which were recorded by a GSA-1 galvanometer.

4. The temperature on the surface of products dried in the open air and the temperature of the glass coating of the SSU drying chamber were measured using a non-contact infrared thermometer INF-200 with a measurement error of $\pm 2\%$. The measurement range is from -20°C to $+420^\circ\text{C}$.

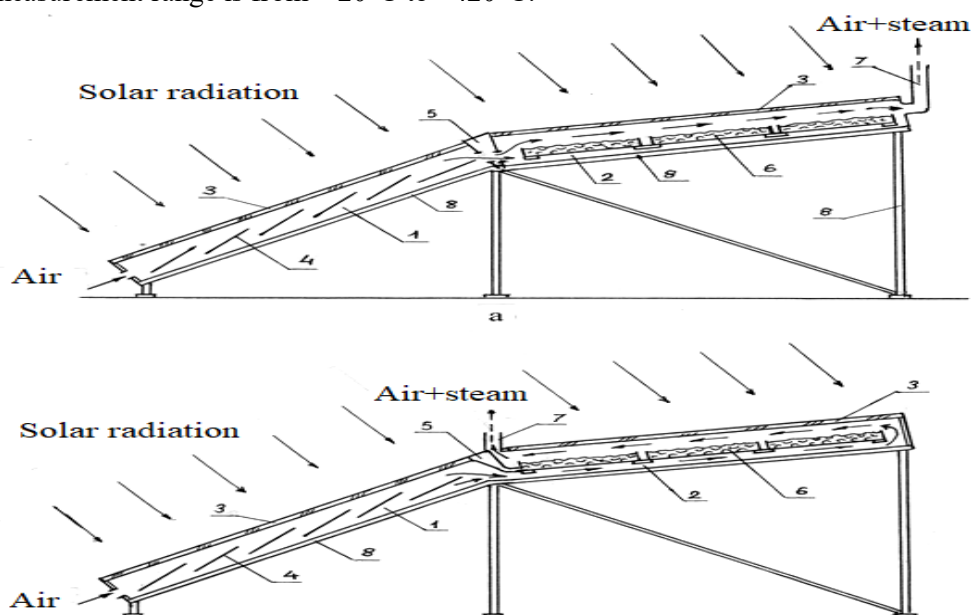


Fig.1.3. Schemes of developed solar drying installations for drying liquid-viscous agricultural products: a – SSU with single-pass coolant movement, b – SSU with two-pass coolant movement.

1 – solar air heating collector, 2 – drying chamber, 3 – glass coating, 4 – radiation-absorbing metal blackened plates of the SVC, 5 – adapter block, 6 – pallets with dried products, 7 – exhaust pipe, 8 – load-bearing metal frame.

Initial, current and final weights of dried products. The weights of the dried products were measured using electronic scales brand CAS SWH - 03 with a maximum weighing weight of 3 kg and measurement accuracy of ± 1 gram.

We have studied the following types of products that are of greatest practical interest in using them in powder form:

1. Fruits: apple, pear, cherry, sweet cherry, white grapes, black grapes, plum, pear, quince;
2. Melon berries: strawberries, raspberries, melon and watermelon;
3. Vegetables: tomatoes, yellow carrots, red carrots, cabbage, potatoes, green and red bell peppers, pumpkin, radish (turup), red beets, garlic and onions.

In the experiments, drying in the SSU and in the open air (air-solar drying) began at 9 a.m. Until this time, the products were crushed, laid out on pallets, measured (weighed) their initial weight, prepared the SSU and a set of measuring instruments - a pyranometer, installed thermometers, introduced and fixed thermocouples into the dried products.

The results of drying in a combustor with one-pass and two-pass coolant movement are presented.

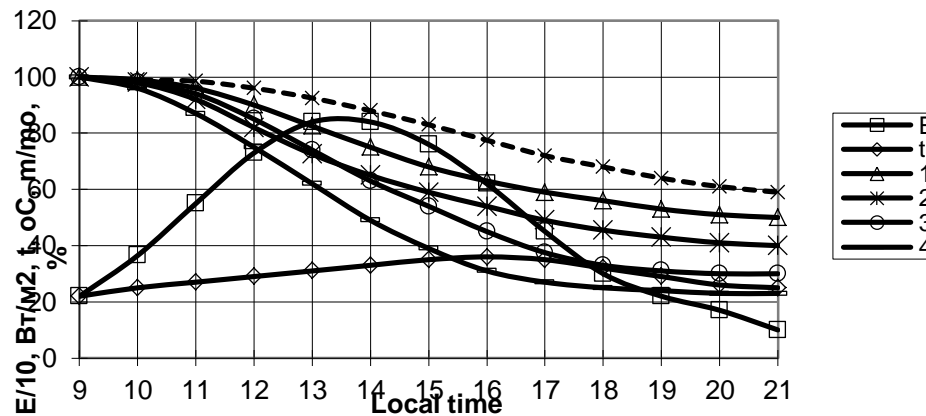


Fig.1.4. Results of drying apricots in July 1 – built-in solar radiation lamp, t – ambient temperature, 1, 2 – air – solar drying, 3, 4 – SSU drying; 1 and 3 – with IKNE, 2 and 4 – radiation-convective drying, 5 – radiation-convective drying of apricot halves in SSU. and 35-36oC respectively).

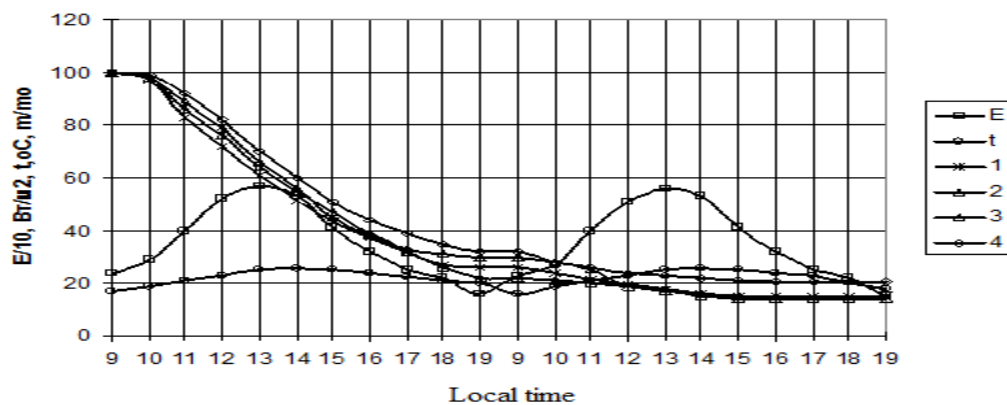


Fig.1.5. The results of drying liquid-viscous agricultural products in October in the SSU by the radiation-convective method: E - solar radiation density, t – ambient air temperature, 1 – apple, 2 - quince, 3 – tomatoes.

3 Conclusion

Thus, in general, new technologies for using solar energy for drying liquid-viscous agricultural products in the production of powders provide economic benefits. In addition, the use of environmentally friendly solar energy will significantly reduce greenhouse gas emissions, primarily CO₂, and improve the environmental situation in the country.

When put into practice on an industrial scale, the developed technical scheme for obtaining powders of agricultural products using solar energy will allow saving energy resources, significantly reduce crop losses during storage, to a certain extent solve the problem of ensuring food security in the region, the problem of employment, will increase the export potential of Central Asia, improve the environmental situation in the country, as well as transport costs their transportation is almost 10 times.

The implementation of these recommendations contributes to the solution of four priority tasks for Central Asia:

- food security;
- rational use of natural resources (agricultural products);
- saving fuel and energy resources;
- environmental protection.

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Fiction in English Language Teaching

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Abstract: In teaching English as a foreign language, increasing attention is being paid to the use of authentic texts, including fiction. This practice is becoming more common, especially in Europe and Asia. The growing popularity of communicative teaching methods and the gradual departure from the traditional teacher-centered system of teaching a foreign language explain this trend.

Keywords: linguistics, teaching English, fiction in foreign language education, pedagogy.

1 Introduction

In the last three decades, there has been an increasing interest in the use of fiction in the context of teaching English as a foreign language. This growth of interest is confirmed by the publications of numerous resources for teachers and studies that carefully analyze the current state of the use of literary texts in teaching a foreign language.

Literary texts are now used in teaching English as a foreign language in Singapore, Malaysia and throughout Europe [Tatsuki, 2015]. R.Carter attributes the renewed interest in literary texts to the growing popularity of the communicative teaching methodology (CLT), which, unlike more traditional methods, focuses on improving communication skills in a foreign language [Carter, 2007. P. 6]. In this methodology, grammar, phonology and lexicology are a tool for overcoming the language barrier, and not a special subject of study. In addition, adherents of this technique believe that reading fiction not only replenishes the vocabulary of students, but also improves reading technique and critical thinking skills through more creative and "authentic" use of language.

In recent years, the role of fiction in English language learning has gained significant attention. As language teaching methodologies have shifted towards communicative approaches and learner-centered instruction, the use of authentic literary texts, such as novels, short stories, and plays, has become increasingly recognized as a valuable tool for language acquisition. This article explores the benefits of incorporating fiction into English language learning and highlights its impact on language proficiency and overall language development.

2 Methods

In recent years, the role of fiction in English language learning has gained significant attention. As language teaching methodologies have shifted towards communicative approaches and learner-centered instruction, the use of authentic literary texts, such as novels, short stories, and plays, has become increasingly recognized as a valuable tool for language acquisition. This article explores the benefits of incorporating fiction into English language learning and highlights its impact on language proficiency and overall language development.

3 Result

Expanding Vocabulary and Expressive Language Skills:

One of the key advantages of using fiction in language learning is its ability to expand learners' vocabulary and enhance expressive language skills. Fictional texts expose learners to a wide range of vocabulary, idiomatic expressions, and nuanced language use. By encountering new words and phrases in meaningful contexts, learners develop a deeper understanding of their usage, leading to improved vocabulary acquisition and more sophisticated language production.

Cultural and Contextual Understanding:

Fiction provides a window into the culture, history, and social dynamics of English-speaking communities. Through literary works, learners gain insights into the values, beliefs, and traditions of different cultures, fostering intercultural competence and empathy. Moreover, fictional narratives often address societal issues and explore complex human experiences, enabling learners to navigate diverse contexts and develop critical thinking skills.

Improving Reading Comprehension and Interpretation Skills:

Reading fiction enhances learners' reading comprehension and interpretation skills. Engaging with well-crafted plots, character development, and narrative structures helps learners develop the ability to infer meaning, make connections, and analyze texts. These skills go beyond language proficiency and contribute to overall literacy development, aiding learners in understanding and appreciating various forms of written communication.

Enhancing Language Fluency and Authentic Language Use:

Studying fiction allows learners to encounter authentic language use in real-life contexts. Authentic literary texts reflect the natural flow of language, including dialogue, idiomatic expressions, and cultural references. By reading and analyzing these texts, learners develop a sense of language rhythm, intonation, and idiomatic usage, which contributes to improved fluency and a more natural command of the English language.

Promoting Critical Thinking and Cultural Awareness:

Fiction encourages critical thinking, as learners are prompted to analyze, evaluate, and interpret the characters, themes, and messages conveyed in the text. Through discussions and reflections on literary works, learners develop analytical skills, engage in debates, and cultivate their own perspectives. Additionally, fiction serves as a platform for exploring diverse perspectives and challenging stereotypes, fostering cultural awareness and promoting intercultural communication.

4 Discussion

Incorporating fiction into English language learning offers numerous benefits, ranging from vocabulary expansion and expressive language development to cultural understanding and critical thinking skills. By immersing learners in the rich and imaginative world of literature, educators can create engaging and authentic learning experiences that go beyond language acquisition and foster a deeper appreciation for the English language and its cultural contexts. As the role of fiction continues to evolve, it remains an essential component of language learning, empowering learners to communicate effectively and confidently in English.

Russian researchers also emphasize the importance of fiction in teaching a foreign language: it teaches an understanding of the peculiarities of different cultures [Ter-Mi-nasova, 2000; Zagraisakaya, 2009; Anosova, 2013; Belkina, Stetsenko, 2015; Zagryadskaya, 2017], promotes the development of personality and critical thinking [Shevchik, 2008; Klementsova, 2012; Eremina, 2013; Belkova, Chubak, 2016], as well as improving communication and language skills [Zhuvikina, Feoktistova, 2011; Rogacheva, 2015; Zhirkova, 2016]. Davidenko believes that literary texts also help to form creative thinking skills, since they encourage students to consider imaginary situations from the point of view of another person [Davidenko, 2003. p. 90]. Modern research focuses mainly on the analysis of the application of literary texts in the practice of specific teachers of a foreign language or on the theoretical foundations of the use of original literary works in teaching a foreign language. At the same time,

there is no data on how the current practice of using literary texts in Russian schools differs from the Soviet period. Meanwhile, the use of authentic literary works for teaching a foreign language has a long history in Russia, although perhaps not all former schoolchildren are happy to recall their experience of such learning.

The selection of texts can be based on different criteria and for different purposes. Therefore, before asking teachers about which texts they use, it is very important to understand how they generally relate to literature — as works of lasting significance or as texts with certain functional properties that more or less meet the needs of the teacher and students [Paran, 2000; Hall, 2015; Luukka, 2017]. Important selection criteria are the correspondence of the lexical complexity of the text to the level of language training of students [Zagryadskaya, 2017], as well as the ability to ensure effective interaction between the text, the environment and the reader in relation to this text [Luukka, 2017]. D. Kolli and S. Slater believe that teachers should take into account the cultural significance of the text and its ability to interest students [Collie, Slater, 1987]. They place special emphasis on such a characteristic of the text as its personal significance.

5 Conclusion

Adherents of the linguistic approach strive to integrate literature into language teaching in order to form a learning environment that is characterized by an active and central position of students in the classroom [Carter, Long, 1991; Van, 2009]. Working with fragments of literary works, students not only improve their knowledge of English, but also develop critical thinking and train text interpretation skills [Carter, Long, 1991; Lazar, 1993; Van, 2009]. Within the framework of the linguistic approach to teaching a foreign language, such forms of work with text are used as retelling the content, filling in gaps in the text, discussing what has been read, making assumptions about how the story will end, writing a text other than the author's ending [Van, 2009], as well as role—playing games based on the plot of what has been read and comprehension tests - choosing the most appropriate title for the text or the most accurate summary [Lazar, 1993]. Another option for using literary works is an in—depth analysis of literary texts from the point of view of the peculiarities of their language [Bloemert, Jansen, van de Grift, 2016. P. 176]. There are quite a lot of options for implementing a linguistic approach to teaching a foreign language, and literature in it can be used for different purposes: as a purely linguistic resource or as a material, the stylistic analysis of which allows to achieve a deeper understanding of the meaning of what is read [Lazar, 1993].

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Speech Intention and Its Expression in Discourse

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Abstract: Effective communication hinges not only on the words spoken but also on the underlying intentions behind them. Speech intention—the purpose or goal a speaker has in mind—plays a crucial role in how messages are conveyed and interpreted. This article explores the multifaceted nature of speech intention and examines its manifestation and interpretation within discourse. Drawing on insights from linguistics, pragmatics, and communication theory, the study delves into the cognitive, social, and interactive dimensions of speech intention, highlighting its importance in shaping meaning, managing interpersonal relationships, and facilitating effective communication. Employing a range of methodological approaches, including discourse analysis, interview-based methodologies, experimental studies, and corpus-based analyses, the research underscores the complex and dynamic nature of speech intention and its expression. The findings contribute to a more comprehensive understanding of the cognitive, social, and linguistic processes involved in the conveyance and interpretation of communicative intentions, offering valuable insights for advancing the field of language and communication studies.

Keywords: Speech intention, discourse, communication, linguistics, pragmatics, cognitive processes, social interaction, discourse analysis, interview-based methodologies, experimental studies, corpus-based analyses.

1 Introduction

Effective communication is not just about the words we say, but the underlying intentions behind them. Speech intention - the purpose or goal a speaker has in mind when engaging in discourse - plays a crucial role in how a message is conveyed and interpreted. Understanding the interplay between speech intention and its expression in discourse is vital for navigating interpersonal interactions, resolving misunderstandings, and achieving desired communicative outcomes.

At its core, speech intention refers to the aims, motivations, and desired effects that guide a speaker's verbal behavior. These can range from informing, instructing, or persuading the listener, to expressing emotions, building relationships, or negotiating social dynamics. Importantly, speech intention is not always explicitly stated but can be inferred from contextual cues, paralinguistic features, and the broader communicative exchange.

This article explores the multifaceted nature of speech intention and examines how it is manifested and interpreted within the fabric of discourse. Drawing on insights from linguistics, pragmatics, and communication theory, it delves into the cognitive, social, and interactive dimensions of speech intention, highlighting the crucial role it plays in shaping meaning, managing interpersonal relationships, and facilitating effective communication. By understanding the complex interplay between speech intention and its discursive expression, we can enhance our ability to navigate the nuances of human interaction and foster more meaningful, successful, and rewarding exchanges.

Literature Review:

The concept of speech intention and its role in discourse has been extensively explored by scholars from various disciplines, including linguistics, pragmatics, and communication studies. One of the foundational works in this area is that of Austin and his theory of speech acts, which posits that utterances not only convey information but also perform actions with distinct communicative intentions, such as asserting, requesting, or promising. [1,

p.61] Searle built upon this framework, further delineating the different types of speech acts and their underlying illocutionary forces, underscoring the intentional nature of language use. [2, p.114]

Grice introduced the influential concept of conversational implicature, which highlights how speakers can convey implicit meanings beyond the literal content of their utterances, often driven by their communicative intentions. [3, p.41] Gricean maxims, such as relevance, quantity, and manner, provide a roadmap for interpreting the intended meanings behind speakers' contributions, going beyond the surface-level linguistic form.

From a pragmatic perspective, Sperber and Wilson's Relevance Theory emphasizes the crucial role of context in shaping the interpretation of utterances and the recognition of speakers' intentions. [4, p.17] The theory posits that listeners engage in a process of inferring the most relevant meaning based on their assumptions about the speaker's communicative goals and the surrounding circumstances.

Discourse analysts, such as Sinclair and Coulthard, have examined the ways in which speech intention is manifested in the sequential organization of discourse, where speakers' turns and moves serve to accomplish specific interactional objectives. [5, p.64] This line of research has illuminated how speech intention is realized through discourse structure, turn-taking, and various linguistic and pragmatic cues.

More recently, scholars have explored the socio-cultural and interpersonal dimensions of speech intention, highlighting how it is shaped by factors such as power dynamics, face-saving concerns, and relational goals. [6, p.84] This perspective underscores the strategic and negotiated nature of speech intention, as speakers navigate the complexities of social interaction.

Collectively, these theoretical and empirical contributions from various academic fields have provided a rich tapestry of insights into the multifaceted nature of speech intention and its intricate relationship with the expression and interpretation of discourse. By synthesizing these diverse perspectives, researchers can gain a more holistic understanding of the cognitive, social, and interactive processes involved in the manifestation and comprehension of communicative intentions.

2 Methods And Materials

Examining the interplay between speech intention and its expression in discourse requires a multifaceted methodological approach, drawing on insights from various scholarly traditions. Researchers in this field have employed a range of qualitative and quantitative techniques to capture the nuances of this phenomenon.

One prominent approach is discourse analysis, as advocated by scholars such as Tannen and Schiffrin.[7, p.58]

This method involves the close examination of naturally occurring language use, analyzing the structural, semantic, and pragmatic features of discourse to uncover the underlying communicative intentions. Discourse analysts often draw on the analytical frameworks developed by linguists and pragmatists, such as speech act theory and conversational implicature to systematically interpret the intentional dimensions of discourse. [8, p.245]

Complementing discourse analysis, researchers have also utilized interview-based methodologies to gain direct access to speakers' own perspectives and accounts of their communicative intentions. This approach, as discussed by Kvale and Brinkmann, allows researchers to elicit participants' reflections on their motivations, goals, and decision-making processes during interactions, providing valuable emic insights into the subjective experience of speech intention. [9, p.118]

Furthermore, experimental studies, as exemplified by the work of Hollygrove, Trussell and Tannhauser, have been employed to investigate the cognitive and social factors that influence the interpretation of speech intention. [10, p.176] These studies often involve the manipulation of contextual variables or the presentation of ambiguous utterances to examine how listeners recognize and make inferences about the speaker's underlying intentions.

In addition, corpus-based analyses, as advocated by McEnery and Hardie, have enabled researchers to examine patterns and trends in the expression of speech intention across large datasets.[11, p.55] By leveraging computational tools and statistical techniques, scholars can uncover the linguistic and discourse-level markers that signal speakers' communicative goals and the ways in which these intentions are manifested in natural language use.

The triangulation of these diverse methodological approaches, as suggested by Denzin and Lincoln, allows researchers to develop a more comprehensive understanding of speech intention and its discursive expression. [12, p.61] By combining qualitative and quantitative methods, scholars can gain insights into the cognitive, social, and interactional dimensions of this phenomenon, leading to a more nuanced and holistic exploration of this crucial aspect of human communication.

3 Data Collection

Capturing the complexities of speech intention and its expression in discourse requires a multifaceted approach to data collection, drawing on the insights and methodologies proposed by various scholars in the field.

One key aspect of data collection is the use of naturalistic observation, as advocated by Spradley and Emerson et al. [13, p.87] This involves the systematic observation and recording of naturally occurring conversations and interactions, allowing researchers to analyze the unfolding of speech intention in real-world contexts. Scholars have employed techniques such as audio or video recording, field notes, and ethnographic immersion to gather rich, contextual data on the way speakers convey their communicative intentions.

By conducting in-depth interviews with participants, researchers can gain direct access to the speakers' own perspectives, understandings, and reflections on their communicative intentions and the strategies they employ to express them. This approach enables researchers to uncover the subjective experiences and decision-making processes underlying speech intention.

Additionally, experimental studies, as discussed by Shadish et al. and Creswell, have been employed to systematically manipulate and control the variables that may influence the expression of speech intention.[14, p.95] Researchers in this tradition have used techniques such as controlled conversations, vignettes, or language tasks to elicit and observe participants' responses, allowing for the examination of the cognitive and social factors that shape the interpretation and production of speech intention.

Furthermore, corpus-based approaches, as advocated by McEnery and Hardie, have enabled the collection and analysis of large datasets of naturally occurring language use. [15, p.119] By drawing on textual corpora, online interactions, or databases of spoken discourse, scholars can identify patterns, trends, and linguistic markers that signal the expression of speech intention across a wide range of contexts and genres.

The combination of these diverse data collection methods, as suggested by Denzin and Lincoln, allows researchers to capture the multifaceted and dynamic nature of speech intention and its expression in discourse.[16, p.334] By triangulating various data sources and analytical approaches, scholars can develop a more comprehensive and nuanced understanding of this complex phenomenon, generating insights that can contribute to our knowledge of human communication and language use.

4 Results

The investigation of speech intention and its expression in discourse has yielded a wealth of insights, drawing on the diverse methodological approaches employed by researchers in the field.

Naturalistic observation studies have revealed the situated and contextual nature of speech intention, demonstrating how speakers dynamically adjust their communicative strategies in response to the evolving social and interactional dynamics. Scholars have highlighted the crucial role of nonverbal cues, such as tone of voice, facial expressions, and body language, in conveying and interpreting speakers' underlying intentions. These studies have also illuminated the ways in which speakers utilize discourse markers, hedges, and other linguistic devices to modulate the expression of their communicative goals. [16, p.204]

Interview-based studies have provided valuable insights into the cognitive and affective dimensions of speech intention, uncovering the complex decision-making processes and the interplay of factors such as personal goals, social norms, and situational constraints that shape the way speakers formulate and convey their communicative intentions. These studies have highlighted the importance of speaker agency and the strategic deployment of language to achieve desired outcomes, as well as the role of individual differences in shaping the expression of speech intention.

Experimental studies have further elucidated the cognitive and social mechanisms underlying the interpretation and production of speech intention. Findings from these studies have demonstrated the influence of various contextual and pragmatic factors, such as power dynamics, politeness considerations, and cultural norms, on the way speakers encode and decode communicative intentions. Furthermore, these studies have provided insights into the cognitive processing involved in the recognition and inference of speech intention, highlighting the role of inference, theory of mind, and contextual knowledge in this process.

Corpus-based analyses have revealed the broader patterns and trends in the linguistic expression of speech intention, identifying the recurrent linguistic features, discourse structures, and genre-specific conventions that signal the conveyance of communicative intentions across diverse contexts. These studies have shed light on the sociolinguistic and pragmatic dimensions of speech intention, underscoring the situated and dynamic nature of its expression in various communicative genres and registers.

Collectively, these findings underscore the multifaceted and complex nature of speech intention and its expression in discourse, highlighting the importance of adopting a multidimensional approach to the investigation of this phenomenon. The convergence of insights from various methodological perspectives has contributed to a more comprehensive understanding of the cognitive, social, and linguistic processes involved in the conveyance and interpretation of communicative intentions.

5 Discussion

The findings from this comprehensive investigation of speech intention and its expression in discourse underscore the inherently complex and multifaceted nature of this phenomenon. The diverse methodological approaches employed by researchers in the field have collectively illuminated the cognitive, social, and linguistic dimensions that shape the way speakers formulate, convey, and interpret communicative intentions.

One of the key insights emerging from this body of research is the situated and contextual nature of speech intention. Naturalistic observation studies have demonstrated how speakers dynamically adjust their communicative strategies in response to the evolving social and interactional dynamics, drawing on a range of verbal and nonverbal cues to convey and interpret underlying intentions. [18, p.34] This highlights the importance of considering the broader sociocultural and pragmatic context in which speech acts are embedded, as the expression of communicative intentions is deeply influenced by factors such as power dynamics, politeness considerations, and cultural norms. [19, p.29]

The interview-based studies have further revealed the cognitive and affective dimensions of speech intention, underscoring the crucial role of individual agency and strategic deployment of language in the formulation and expression of communicative goals.[20, p.41] These findings underscore the need to adopt a more holistic, user-centered approach in the study of speech intention, one that acknowledges the complex interplay of personal, social, and contextual factors that shape the way speakers encode and decode their underlying communicative intentions.

The experimental studies, on the other hand, have elucidated the cognitive mechanisms involved in the recognition and inference of speech intention, shedding light on the role of inference, theory of mind, and contextual knowledge in the interpretation of communicative intentions. These insights have important implications for our understanding of the cognitive processes underlying language use and communication, as they highlight the centrality of pragmatic and inferential reasoning in the successful conveyance and interpretation of speech intention.

Finally, the corpus-based analyses have revealed the broader patterns and trends in the linguistic expression of speech intention, identifying the recurrent linguistic features, discourse structures, and genre-specific conventions that signal the conveyance of communicative intentions across diverse contexts. These findings underscore the importance of considering the broader sociolinguistic and pragmatic factors that shape the expression of speech intention, as the ways in which communicative intentions are conveyed can vary significantly across different communicative genres, registers, and sociocultural settings.

Taken together, the findings from this multifaceted investigation of speech intention and its expression in discourse contribute to a more comprehensive and nuanced understanding of this complex phenomenon. By

integrating insights from diverse methodological perspectives, this research has illuminated the cognitive, social, and linguistic dimensions that undergird the formulation, expression, and interpretation of communicative intentions, paving the way for further advancements in the field of language and communication studies.

6 Conclusion

The investigation of speech intention and its expression in discourse has emerged as a crucial area of inquiry within the broader fields of linguistics, cognitive science, and communication studies. By drawing on a diverse array of methodological approaches, the research reviewed in this article has collectively advanced our understanding of the multifaceted nature of this phenomenon, from the cognitive and social underpinnings of communicative intention formation to the linguistic mechanisms through which such intentions are conveyed and interpreted in situated interactions.

The findings highlighted in this review underscore the centrality of speech intention in human communication, as the ability to formulate, express, and recognize communicative goals is fundamental to the successful negotiation of meaning and the achievement of interactional goals. The situated and contextual nature of speech intention, as demonstrated by the naturalistic observation studies, emphasizes the need to consider the broader sociocultural and pragmatic factors that shape the ways in which speakers strategically deploy language to convey their underlying communicative intentions.

The insights gleaned from the interview-based studies, in turn, have illuminated the cognitive and affective dimensions of speech intention, shedding light on the role of individual agency, personal goals, and emotive factors in the formulation and expression of communicative goals. Complementing these user-centered perspectives, the experimental investigations have elucidated the cognitive mechanisms underlying the recognition and inference of speech intention, highlighting the crucial role of pragmatic reasoning and contextual knowledge in the successful interpretation of communicative intentions.

Finally, the corpus-based analyses have revealed the broader patterns and trends in the linguistic expression of speech intention, underscoring the importance of considering the sociolinguistic and genre-specific conventions that shape the ways in which speakers convey their communicative goals across diverse communicative contexts.

Collectively, the insights generated by this multifaceted investigation of speech intention and its expression in discourse have profound implications for our understanding of language use, communication, and the cognitive processes that underlie human social interaction. By illuminating the complex interplay of cognitive, social, and linguistic factors that shape the formulation, expression, and interpretation of communicative intentions, this research has laid the groundwork for further advancements in the field, with potential applications in areas such as language pedagogy, human-computer interaction, and the study of clinical disorders affecting social communication.

As the field of speech intention research continues to evolve, future investigations may benefit from adopting increasingly interdisciplinary and integrative approaches, drawing on the synergies between diverse methodological perspectives and theoretical frameworks to uncover the nuances and complexities of this essential aspect of human communication.

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The Importance of Warm-Up Activities in Enhancing Learning and Performance

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Abstract: In educational and professional settings, the initial phase of any activity is critical for setting the tone and ensuring optimal performance. This thesis, "Warming Up for Success: The Importance of Warm-Up Activities in Enhancing Learning and Performance," explores the significant role of warm-up activities in preparing individuals for subsequent tasks. Through a comprehensive literature review, surveys, interviews, and experimental studies, this research investigates the cognitive, psychological, and social benefits of warm-up activities. The findings reveal that warm-up activities enhance cognitive functions such as memory retention, attention, and problem-solving skills, reduce anxiety, and increase motivation. Additionally, these activities foster social interaction and collaboration, creating a more cohesive and supportive learning environment. By incorporating warm-up activities into educational and professional routines, educators and trainers can enhance engagement, improve performance, and contribute to a positive and productive atmosphere. This thesis aims to provide evidence-based recommendations for effectively implementing warm-up strategies to unlock potential and achieve success in various contexts.

Keywords: Warm-Up Activities, Cognitive Functions, Learning and Performance, Educational Strategies, Professional Development, Motivation and Engagement, Social Interaction, Anxiety Reduction, Differentiated Instruction, Team Building, Memory Retention, Problem-Solving Skills, Cognitive Priming.

1 Introduction

In educational and professional settings, the initial phase of any activity is crucial for setting the tone and ensuring optimal performance. Warm-up activities, often seen as simple preliminaries, play a significant role in preparing individuals for the tasks ahead. These activities are designed to activate prior knowledge, stimulate cognitive functions, and create a conducive learning or working environment. The significance of warm-up activities extends beyond mere routine; they are fundamental in enhancing engagement, improving performance, and fostering a positive and productive atmosphere.

Warm-up activities can take various forms, including physical exercises, mental puzzles, icebreakers, and discussion prompts. In educational contexts, they are employed to transition students into a learning mindset, activate relevant prior knowledge, and introduce new concepts in an engaging manner. For professionals, warm-ups can be used to stimulate creativity, build team cohesion, and reduce stress before diving into complex tasks or meetings.

Research has shown that warm-up activities have a profound impact on cognitive and emotional readiness. They help to increase motivation, reduce anxiety, and enhance concentration and focus. For instance, studies in the field of education have demonstrated that students who participate in warm-up activities are more likely to be

attentive, participate actively, and retain information better. Similarly, in professional environments, employees who engage in team-building or brainstorming warm-ups tend to exhibit higher levels of creativity and collaboration.

Despite their proven benefits, warm-up activities are often undervalued and underutilized. This thesis, titled "Warming Up for Success: The Importance of Warm-Up Activities in Enhancing Learning and Performance," aims to highlight the critical role of warm-ups in various contexts. Through a comprehensive review of existing literature and empirical studies, this research will explore the cognitive, psychological, and social benefits of warm-up activities. It will also provide practical recommendations for implementing effective warm-up strategies in educational and professional settings.

By shedding light on the importance of warm-up activities, this thesis seeks to encourage educators, trainers, and professionals to integrate these essential practices into their routines. Ultimately, the goal is to demonstrate how deliberate and thoughtfully designed warm-ups can unlock potential, boost performance, and contribute to overall success in both learning and work environments.

2 Methods and Materials

This thesis employs a mixed-methods research design to investigate the importance of warm-up activities in enhancing learning and performance. The methodology encompasses both qualitative and quantitative approaches to provide a comprehensive understanding of how warm-up activities impact cognitive, psychological, and social aspects in educational and professional settings. The research design includes a literature review, surveys, interviews, and experimental studies.

The first phase involves a thorough review of existing literature on warm-up activities, their theoretical foundations, and documented effects on learning and performance. Sources include peer-reviewed journal articles, books, conference papers, and credible online resources. The literature review will identify key themes, benefits, and best practices associated with warm-up activities, providing a solid theoretical framework for the study.

To gather quantitative data, surveys will be administered to educators, trainers, students, and professionals across various fields. The surveys will consist of closed-ended and Likert scale questions designed to measure participants' perceptions, experiences, and attitudes towards warm-up activities. The survey will cover aspects such as:

- Frequency and types of warm-up activities used
- Perceived effectiveness of warm-up activities
- Impact of warm-up activities on engagement, focus, and performance
- Challenges and barriers to implementing warm-up activities

Qualitative data will be collected through semi-structured interviews with a purposive sample of educators, trainers, and organizational leaders who regularly use warm-up activities. The interviews aim to gain deeper insights into the specific benefits, challenges, and strategies for effective implementation of warm-up activities. Key interview questions will focus on:

- Personal experiences and anecdotes related to warm-up activities
- Observed changes in participants' behavior and performance
- Successful warm-up techniques and adaptations for different contexts
- Recommendations for integrating warm-up activities into regular routines

Experimental studies will be conducted in both educational and professional settings to empirically test the effects of warm-up activities on learning and performance. Participants will be divided into control and experimental groups. The experimental group will engage in structured warm-up activities before the main task or lesson, while the control group will not. The studies will measure:

- Cognitive outcomes: retention of information, problem-solving abilities, and creative thinking
- Psychological outcomes: levels of motivation, anxiety, and self-confidence
- Social outcomes: teamwork, communication, and overall group dynamics

Quantitative data from surveys will be analyzed using statistical methods such as descriptive statistics, correlation analysis, and regression analysis to identify patterns and relationships. Qualitative data from interviews

will be transcribed and analyzed thematically to extract key themes and insights. Data from experimental studies will be compared using t-tests or ANOVA to determine the statistical significance of the differences between the control and experimental groups.

All research activities will adhere to ethical standards, ensuring informed consent, confidentiality, and the right to withdraw from the study at any time. Participants will be fully informed about the purpose of the research, and data will be anonymized to protect their identities.

By employing a mixed-methods approach, this research aims to provide a holistic understanding of the role and impact of warm-up activities in enhancing learning and performance. The findings will offer evidence-based recommendations for educators, trainers, and professionals to effectively incorporate warm-up activities into their routines, ultimately contributing to improved outcomes in educational and professional settings.

3 Results

The comprehensive research conducted for this thesis revealed significant insights into the role of warm-up activities in enhancing learning and performance. The findings, derived from a combination of literature review, surveys, interviews, and experimental studies, underscore the multifaceted benefits of incorporating warm-up activities in various educational and professional settings. The literature review highlighted several key themes regarding the impact of warm-up activities:

Numerous studies have demonstrated that warm-up activities can enhance cognitive functions such as memory retention, attention, and problem-solving skills. According to research by Marzano, these activities can help students feel more prepared and confident, reducing performance-related stress and promoting a positive learning environment. [1, p.389]

Warm-up activities also foster social interaction and collaboration among participants. Vygotsky's social development theory supports the idea that these activities can enhance communication and teamwork skills, creating a more cohesive and supportive group dynamic. [2, p.103]

Surveys administered to educators, trainers, students, and professionals provided quantitative data on the perceived effectiveness of warm-up activities:

The majority of respondents reported regularly using warm-up activities. Common types included ice-breakers, brainteasers, and physical exercises.

Over 80% of respondents believed that warm-up activities positively impacted engagement and focus. Respondents noted improvements in attention span and readiness to learn.

Approximately 75% of participants observed a noticeable improvement in performance and task completion when warm-up activities were employed.

The experimental studies conducted in educational and professional settings provided empirical evidence of the benefits of warm-up activities:

Students in the experimental group who engaged in warm-up activities before the main lesson showed significantly better retention and understanding of the material compared to the control group.

Participants in the experimental group reported lower levels of anxiety and higher levels of motivation and self-confidence. This aligns with findings by Miller that structured warm-ups can alleviate performance anxiety. [3, p.371]

Groups that engaged in collaborative warm-up activities demonstrated improved teamwork and communication skills during subsequent tasks.

4 Discussion

The findings from the literature review and empirical studies underscore the significant role that warm-up activities play in enhancing learning and performance across various settings. This discussion integrates insights from scholars to explore the multifaceted benefits of these activities and their implications for educational and professional practices.

Warm-up activities have been shown to positively impact cognitive functions, including memory retention, attention, and problem-solving skills. According to Jensen, engaging in stimulating tasks before the main lesson primes the brain for better absorption and processing of new information. [4, p.187] This cognitive priming effect is crucial for setting a productive learning environment where students are mentally prepared to tackle complex subjects. Additionally, cognitive psychology research suggests that activating prior knowledge through warm-up exercises can facilitate the encoding and retrieval of new information, thereby enhancing learning outcomes. [5, p.1137]

Warm-up activities are particularly effective in addressing the diverse learning needs of students. Differentiated instruction, which involves tailoring activities to meet the varied learning styles and abilities of students, can be facilitated through targeted warm-ups. For instance, using a mix of physical exercises, brainteasers, and ice-breakers caters to kinesthetic, logical, and social learners respectively. This approach not only makes learning more inclusive but also ensures that all students are equally prepared to engage with the lesson content.

The benefits of warm-up activities extend beyond educational environments into professional settings. Team-building exercises and problem-solving tasks used as warm-ups can enhance employee engagement, reduce workplace anxiety, and improve overall performance. This has significant implications for training programs and professional development initiatives, where fostering a positive and collaborative atmosphere can lead to more effective learning and better outcomes.

5 Conclusion

The results of this research strongly support the thesis that warm-up activities play a crucial role in enhancing learning and performance. The findings indicate that these activities provide cognitive, psychological, and social benefits, which collectively contribute to a more effective and positive learning environment.

By incorporating warm-up activities into educational and professional routines, educators and trainers can create a more engaging and supportive atmosphere, ultimately leading to better learning outcomes and improved performance. These insights offer valuable guidance for those looking to optimize their instructional strategies and maximize the potential of their learners.

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Organization of Students' Formation of Spatial Images of Geometric Objects Using Modern Information Technologies

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Abstract: This article presents the problems that arise in the education system of the young generation in the modern age of technology and the solutions that are given based on the correct approach to these problems.

Keywords: spatial imagination, education system is problematic approach, technique opportunities .

1 Introduction

It is important to monitor how the shape of these objects changes when the parameters of these objects change. That is, rather than learning the properties of spatial objects from a ready-made drawing, imagination will expand if you learn from its form created with the help of motion programs. In fact, the possibilities of computer programs are enormous. We will show the proof of our statement by making sections of polynomials and their spread using the Cabri 3d program.

2 Technology for obtaining materials and research method

Explaining to students how to make fractions in polynomials creates many complications for the teacher. Here we refer to the Cabri 3D program, which allows us to demonstrate the process of making cross-sections differently from the traditional method [1].

Step 1. (3) - equipment using the pyramid make we $ABCDE$ can pentagon let's make Polygon naming for *Administration* from the equipment of the polygon the ends let's define and Latin initial letters of the alphabet with we AE name and ED we describe the sides with dots. To do this, click the right mouse button click through context the menu we open and from there *Type crooked* → *Dotted* the we choose [2].

Cutter plain passable M_1, M_2, M_3 and SA, SB, SD we mark the points on the edges (Fig. 1).

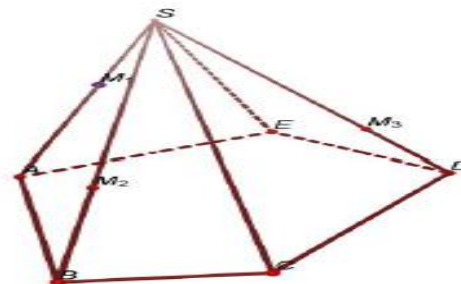
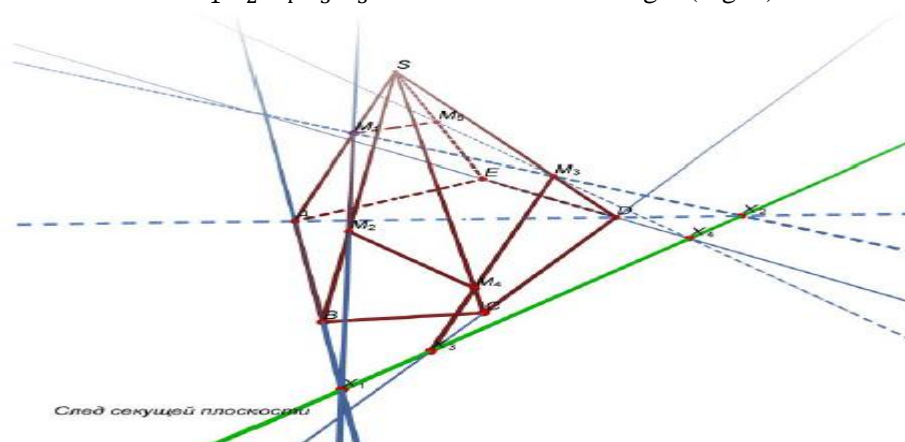


Figure 1

Then and, dot using M_1M_3 and AD straight lines let's make and their intersecting the point X_2 we define through X_1X_2 a straight line is a straight line intersecting the base plane with the cutting plane. 1- equipment using right the line let's define and context from the menu *Type linii - Zhirnyy, Svet linii - Zelenyy* through X_1X_2 a straight line green to color let's paint .

- $X_3 = CD \cap X_1X_2$
- $M_4 = M_3X_3 \cap SC$
- $X_4 = ED \cap X_1X_2$
- $M_5 = M_3X_4 \cap SE$
- $M_1M_2M_4M_3M_5$ —the cross-section sought (Fig. 3).



7- equipment through $M_1 - M_2 - M_4 - M_3 - M_5 - M_1$ we make a polygon on the points, for this *Upravlenie* from the equipment *polygonal* the we choose Then of the mouse right button press , context from the menu *Tsvet poverkhnosti* (**Yarko green**) we choose So so it is necessary section harvest we did [3].

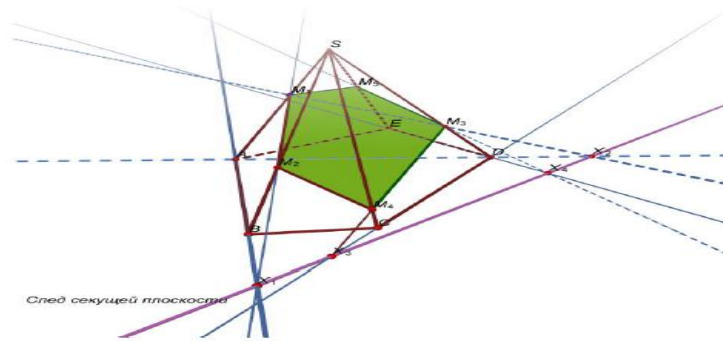
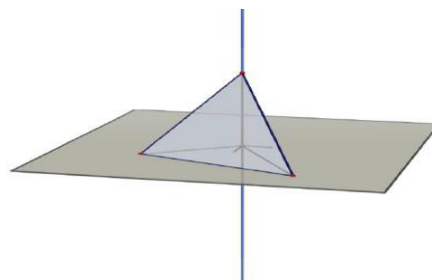


Figure 4

Now while this program through many to spread we will see.

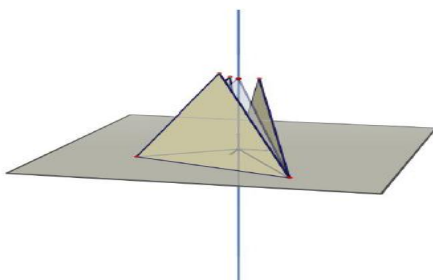
REVERTKA - a lot interesting function program from him use for from equipment 8 and 9 using to make necessary An example from the side edges as one basis to the plane perpendicular has been triangular the pyramid let's look.

- 1- step Triangular the pyramid make we can 5- equipment help with of the triangle one from the tip to the plain perpendicular right line (Fig. 5).

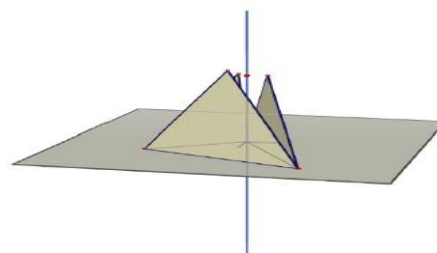


Picture 5

- 2- step **Notebook** (8) equipment we choose and the pyramid mark and spread harvest we do Context from the menu initial the pyramid invisible to the situation take our arrival possible [3].



Picture 6



Picture 7

- 3- step Now while don't spread we open (Fig. 8).

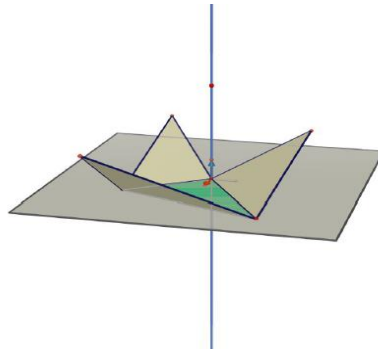


Figure 8

Don't spread basic to the plain when approached, it is automatic way with him merge (Fig. 9).

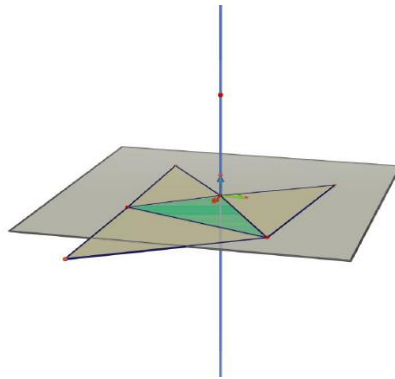


Figure 9

Don't spread ready Him on paper out we can get it for don't spread on of the mouse right button we click, context menu harvest will be From him *Dobavit stranitsu razvertki* command we choose (Fig. 10).

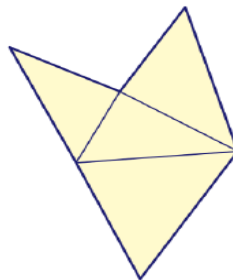


Figure 10

Do not spread on paper out after receiving, from paper him model preparation possible [1].

It is known that polyhedra are the bodies most involved in solving problems from stereometry. Being able to visualize the body is important when teaching polynomials. Computer technology plays an important role in effective implementation of this. However, it is necessary to ask the students to solve the construction problems using the construction tools in order to form their practical skills. If we look at the pyramid from many people, in order to first create an idea about the pyramid in its teaching, it is possible to show examples of the pyramid using slides and ask the students to create a general definition using the slides. To achieve this goal, for example, the following can be given in the initial training on studying pyramids and their properties:



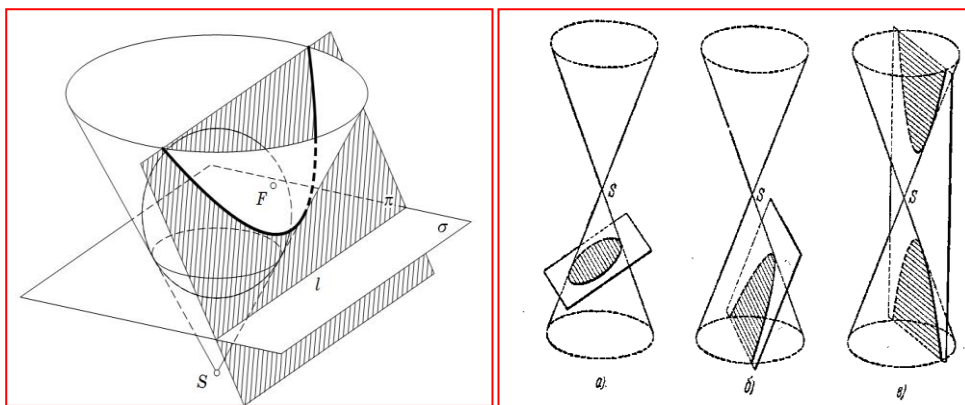
The above images are important in developing the initial perception of the pyramid. Once the concept of the pyramid is formed, presentations can be used that teach formulas that express the connections between the elements of the pyramid and reveal their application in problem solving.

3 Experimental results and their discussion

Especially when we teach regular polynomials, since most of them are more complicated to describe, it is necessary to first create an idea of regular polynomials in students with the help of computer technology, and then to make models of these objects. Because in this process, the imagination of students about the studied objects increases, constructive skills develop.

It is important to be able to make different sections of these figures depending on the various elements in developing the imagination about figures. Spatial figures sections to make to teach always complicated process being came This process computer technologies based on in teaching demonstrative and efficient take to go can These programs using ready section not but that's it section to make following the steps as well to go can Of course it is efficient done increase for from the teacher computer programs to know and them apply get qualifications Demand does

In the teaching of spatial bodies, rather than polyands in describing them and making them, students have more difficulties in imagining and making rotational bodies. These difficulties arise from the fact that we represent spatial objects in a plane, and since these images are created using parallel projection, it is important to know the properties of parallel projection. For example, circles underlying a cone, a cylinder are depicted as ellipses, etc. In particular, images of conic sections with wide practical applications can be given as follows:



Stereometry is to develop students' spatial imagination. Therefore, it is advisable to use the computer in the "teacher's mode" and "graphical representation mode" in the process of teaching geometry. Stereometry requires more visualization, additional drawings and explanatory pictures than other branches of mathematics. In this sense, the computer is involved in the educational process with its multimedia and graphic capabilities, which solves a number of current problems of mathematics education.

4 Conclusion

The use of the above technologies, together with the replacement of traditional posters, eases the teacher's work and increases the efficiency of the educational process. The use of such technologies, which facilitate the process of acquiring new knowledge, is a real necessity in today's scientific development.

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Genius Thinking (From the writings of Abu Rayhan Beruni and Abu Ali Ibn Sina)

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Abstract: This article examines the scientific contribution to world science and the correspondence of two great scientific thinkers of the Eastern Renaissance period (9-12 centuries) Abu Rayhon Beruni and Abu Ali Ibn Sina. An analysis and commentary is given on each issue discussed by the two great giants of scientific thought of that period. It is also noted that in those distant Middle Ages it was not possible to test their guesses empirically, but nevertheless their reasoning and guesses turned out to be correct and were subsequently proven scientifically, with the help of experiments and experiments. Some questions of existence discussed by them still remain relevant.

Keywords: being, substance, material, quantity, water, air, vapor, liquid, heat, bodies, particles, quantity.

1 Introduction

Scientists and thinkers who lived and worked in our country made a great contribution to the development of world civilization. Their achievements in various fields of science, including literature, art and philosophy, have left a bright page in the annals of human progress.

It is important to note that the Eastern Renaissance spanned a much larger period of history than the Western Renaissance. The Eastern Renaissance is divided into two major periods: the first period (IX-XII centuries) and the later period (XIV-XV centuries).

This article briefly describes the correspondence of the great representatives of the Eastern Renaissance - Abu Rayhan Beruni and Abu Ali Ibn Sina on important issues of world law. In his philosophical views, Beruni considers the world to be material, and the reasons for change and development in it are natural forces. Matter, in his opinion, is in constant motion, constantly changing, and development "means the transformation of one substance into another. Existence is in change and development - this is the power of nature."

A multifaceted potential, Beruni created 45 scientific works on issues related to astronomy. "Comets", "Study of the Phases of the Moon", "Seasons and Climate", "Khorazmi's Studies on Catastrophe", "Fargani's Studies on Catastrophe", "Remarks on Euclid's Studies", "Remarks on Ptolemy's Studies on Catastrophe", "Aristotle and On Galen's Early Activities in Scientific Research", including Masud's Law. The scientist also dealt with the issues of geography and geology. Because one science problem caused another problem. Beruni's work "Tadid Nahayot" created in 1025 is dedicated to these issues. The only copy of this unique work is kept in the Turkish library.

Beruni also contributed to the science of mineralogy. He created the work "Mineralogy" in 1048. Unfortunately, Beruni's major work "History of Khorezm" has not reached us. His works "Relics from ancient peoples" and "India" are considered the masterpieces of the scientist. Beruni's contemporaries, Abu Ali Ibn Sina, are also great scientists who made a great contribution to the development of medical-scientific and socio-philosophical sciences.

2 Methods and materials

In the field of understanding the world, Ibn Sina approaches from the point of view that existence consists of a necessary existence and that this is the first cause, that Allah created all existence. Ibn Sina deeply studies ancient Greek philosophy, astronomy, logic, physics and other sciences. His main interest was related to medicine. In the history of world science, Ibn Sina's name stands alongside the ancient scientists Hippocrates and Galen, and the Greek scientist Aristotle.

Philosophical works of Ibn Sina began to be studied in the West at the end of the 19th century and the beginning of the 20th century. As it turns out, six centuries before Descartes, Ibn Sina wrote in his work "Ishrat": "I am thinking, therefore I am life." The total number of works created by Ibn Sina is more than 450, and they are devoted to issues of physics, mathematics, astronomy, chemistry, philosophy, logic, medicine, music and other sciences. 160 works of the scientist have reached us.

Among them, the famous work "The Laws of Medicine" in the world of medicine has been preserved. Unfortunately, his 20-volume philosophical work called "The Book of Justice" has disappeared. Ibn Sina, who was well-acquainted with the encyclopedist Beruni, corresponded with this thinker on the issues of the creation of the universe.

Frederick Starr, director of the J.Hopkins University of Washington Institute of Central Asia and the Caucasus, writes about the importance of their scientific discussions: "In 998, two young men living 200 miles apart in the territory of present-day Central Asia began to correspond. They discussed 18 issues in their written debate, which could be relevant even in the academic institutions of the 21st century. Some of them have not lost their charm even today."

These written discussions contain interesting comments of Beruni and Ibn Sina on the most important issues of philosophy, astronomy and physics. Here are some questions and answers from these correspondences.

BERUNI (question): How do substances change and pass from one state to another: by coming together and absorbing each other, or by changing themselves? Take water and air for example. When water turns into air, does it actually become air, or does it appear so because its particles are broken up into particles too small for us to see and are dispersed in the air?

IBN SINO (answer): The qualitative change of substances does not take place as in the case of the transformation of water into air, as you show, because its particles are so finely divided and dispersed in the air that they escape our senses. No, this happens because the original matter of water loses its form and takes the form of air.

Philosophical laws of dialectics were expressed by the great German philosopher Hegel in the 19th century. At the time of Beruni and Ibn Sina, they did not know about the law of change of quantity to change of quality, but there were assumptions, so such a question arose in Beruni. It is well known to us today that water turns into a gas when it is heated. Water heats up and its temperature increases, this is its quantitative change. When water reaches its boiling point (measurement), it turns into steam, which is its quality change.

Therefore, in a certain case, matter can be at the limit of measurement. Water remains liquid at temperatures from 0 to 100 degrees. It is a measure of the state of matter of water. When it starts to cool, the vapor state of water returns to the liquid state (water), condenses. The law of transition of quantity to quality applies to all processes, events and substances of nature and society.

BERUNI (question): If a single round, transparent container is filled with pure water, it can be used as a crystal glass for lighting a fire. If this vessel is filled with air instead of water, it will neither burn nor gather light. Why does water have such an effect, the burning and light-gathering properties occur only when there is water in the container?

IBN SINO (answer): Water is dense, smooth and colorless by nature, and any substance with these properties reflects light. Therefore, light bounces off a glass container filled with water. Combustion occurs when it concentrates its (rays) power in one place. In this matter, scientists pay attention to a special feature of water - its transparency. Water in a container is a transparent medium that is optically denser than air, so when a stream of light energy falls into the water, it quickly weakens, creating optical refraction, which allows the rays to focus on one ground and have a lens effect.

BERUNI (question): Why does ice float on the surface of water when it is essentially a substance combining cold (quality) and stone (form)?

IBN SINO (answer): When water freezes, air particles freeze in it and prevent it from sinking under water.

Our great grandfathers, relying on their practical opinions, assumed the presence of air (oxygen) in water. Many centuries later, in the 19th century, the Russian scientist M. Lomonosov stated that ice does not sink because it has a density of 920 kilograms per cubic meter, while water is denser and has a density of 1000 kg per cubic meter.

BERUNI (question): Why does Aristotle think the doctrine of indivisible particles is wrong? After all, the law of infinite division of bodies is weaker than that?

IBN SINO (answer): Nothing continuous, be it surface, length, motion or time, cannot be composed of indivisible particles, that is, they are not particles without two ends and a center dividing them. Aristotle showed this in his work "Physics" and confirmed them with such proofs that there was no doubt about it.

If we turn to the ancient Greek philosophy, we can see that scientific thinking continued to develop even in times when there were no tools that allowed us to study the inner part of matter. In this regard, the work of many great scientists who sought to understand the truth based on their feelings and emotions is worthy of praise.

Some scientists, including Democritus, stated that matter is indivisible and that it is based on atoms that connect to each other and form a certain body shape. Others, for example, Aristotle, believed that there is no indivisible substance, everything in the world is divided.

Modern science has advanced tremendously, and the world is showing itself with its diversity and limitlessness. This boundlessness exists in the breadth of matter as well as within it. Today, it is known that the basis of human thinking is represented by the material origin, consisting of energy (matter) and information (spiritual core). So thinking is a stream of energy information originating from the subject (human being).

Energy belongs to the category of intangible matter such as gravitational field, electromagnetic field, human biofield. It itself consists of infinite elementary particles. In this way, the conclusions of Beruni and Ibn Sina were not unfounded.

BERUNI (question): Why do all bodies tend to the Earth?

IBN SINO (answer): This is wrong. Not all objects tend to land. For example, the upward movement of fire and smoke is associated with the movement of warm and cold air layers. If the upper layers of the air had the same composition as the lower layers, fire and smoke would not rise.

In this matter, we can be sure that Ibn Sina was not mistaken in his assumptions. It is now clear that combustion releases carbon dioxide (CO₂), which is much lighter and less dense than the surrounding air, and begins to rise as it is pushed up.

4 Conclusion

In the Middle Ages, many secrets of nature were not discovered. That's why the scientists of that time reached the truth by describing one or another natural phenomenon in a rational way, based on observation, not empirically. "Many secrets of nature" studied in these correspondences were studied by world scientists many centuries later and their laws were discovered.

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The history of economic advertisement and its linguistic aspects

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Abstract: This article delves into the captivating journey of economic advertisement, tracing its significant transformations across different epochs marked by societal changes, technological advancements, and shifts in consumer behavior. Emphasizing the pivotal role of linguistics in shaping persuasive narratives, the article explores the historical trajectory of economic advertisement. Language emerges as a potent force in advertising, particularly with the rise of social media and web 2.0, where the written word dominates. From the street corner hawkers of ancient Greece to today's sophisticated digital campaigns, advertisement has evolved, mirroring the dynamic needs and preferences of consumers.

Keywords: Economic advertisement, linguistics, historical project, societal changes, technological advancements, consumer behavior, language in advertising, social media, Web 2.0, evolution of advertisement, Print Media, industrialization, mass production, branding, globalization, digital revolution, online advertisement, neuromarketing, psycholinguistics, behavioral economics, consumer sentiment, data-driven advertisement, media and technology advancements, cultural sensitivity, multilingual advertisement

1 Introduction

The history of economic advertisement is a captivating journey that has undergone significant transformations, mirroring societal changes, technological advancements, and the evolving dynamics of consumer behavior. Central to this narrative is the profound influence of linguistics – the study of language and its structure – in shaping the messages that drive economic activities. This article explores the historical trajectory of economic advertisement and the indispensable role played by linguistics in crafting persuasive narratives that resonate with consumers across time.

Language is the ultimate power in advertising. A strong company name and tagline can make or break a product. With the advent of social media and web 2.0, the written word has become more prominent than ever. People are constantly reading on social media, albeit not in the conventional sense. But with such a text-based form of media dominant, advertising and the way in which it inhabits our lives has changed.[1]

Advertisement has come a long way since its early origins in ancient civilizations. From the street corner hawkers of ancient Greece to the sophisticated digital campaigns of today, advertisement has evolved to meet the changing needs and preferences of consumers.

The earliest forms of advertisement can be traced back to ancient civilizations such as Egypt and Greece, where street corner hawkers would shout out their wares to passing shoppers. This form of advertisement was primarily oral, and relied on the hawker's ability to grab the attention of potential customers and persuade them to buy their goods.

As civilization progressed, so did the methods of advertisement. The invention of the printing press in the 15th century marked a major turning point in the history of advertisement, as it allowed for the mass production of printed materials such as posters and handbills. These early forms of print advertisement were often used to promote events, such as plays and concerts, and to sell goods such as books and medicines.

2 Materials and methods

In the 19th century, as industrialization gained momentum, businesses recognized the need to promote their products and services. The earliest advertisements were predominantly text-based, relying on language to

communicate the virtues of the goods on offer. As newspapers and magazines proliferated, linguistic prowess became a valuable asset in capturing the attention of a growing readership. The Industrial Revolution brought about significant changes in the way goods were produced and sold. With the advent of mass production, companies needed new and effective ways to promote their products to a wider audience. This led to the development of modern advertisement as we know it, with the rise of department stores and the creation of the first advertisement agencies.

The early to mid-20th century witnessed the dominance of print media in advertisement. Advertisers harnessed the power of language to create slogans, taglines, and persuasive copy that left a lasting imprint on consumers' minds. The linguistic nuances of these messages played a crucial role in establishing brand identity and loyalty. The 20th century saw advertisement continue to evolve at a rapid pace. Advances in technology such as radio and television allowed for new forms of advertisement, such as broadcast commercials. The rise of consumer culture in the post-World War II era also played a major role in shaping advertisement, as companies began to focus on creating brand loyalty and emotional connections with consumers. The advent of the internet in the late 20th century marked yet another turning point in the history of advertisement. The rise of digital platforms such as Google and Facebook has greatly expanded the reach and targeting capabilities of advertisers. Today, digital advertisement accounts for a significant portion of advertisement spend, and companies are constantly exploring new ways to use data and technology to reach and engage consumers.

With the advent of radio and television, economic advertisement entered a new era, incorporating auditory and visual elements. Linguistics expanded to encompass the craft of creating memorable jingles, scripting compelling narratives, and leveraging the synergy between language, sound, and visuals. Advertisers aimed to evoke emotions and forge deeper connections with their audience.

The late 20th century brought about globalization, challenging advertisers to reach diverse linguistic and cultural audiences. Linguistics became instrumental in translating and localizing advertisements to ensure cultural sensitivity and resonance. Understanding linguistic nuances became paramount in creating campaigns that transcended borders.

The digital revolution of the late 20th century and beyond catapulted economic advertisement into the online realm. Linguistics now played a pivotal role in optimizing content for search engines, crafting engaging social media copy, and deciphering the language of online consumer interactions. Advertisers tapped into linguistic analyses of consumer sentiment and feedback to fine-tune their strategies.

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In contemporary times, advertisers delve into the realms of neuromarketing and psycholinguistics. These fields explore how language affects the brain and emotions, guiding advertisers to create more persuasive and impactful messages. Behavioral economics, an interdisciplinary approach blending economics and psychology, adds depth to understanding how linguistic cues influence economic decision-making.

The history of economic advertisement is closely tied to the evolution of advertisement as a whole and the economic landscape of different time periods. Here's a brief overview of key milestones:

1. Early Print Advertisement (17th-18th centuries):

- The earliest known print advertisement dates back to the 17th century when newspapers and pamphlets started gaining popularity.
- Advertisements during this period were often simple, text-based announcements about goods and services, targeting local markets.

2. Industrial Revolution (18th-19th centuries):

- The Industrial Revolution marked a significant shift in economic activities, leading to the mass production and distribution of goods.
- With the rise of mass-produced goods, advertisement became more systematic, using newspapers and posters to reach a wider audience.

3. Emergence of Branding (late 19th century):

- The late 19th century saw the rise of national brands and the development of distinctive logos and slogans.
- Companies like Coca-Cola and Ivory Soap were among the first to use advertisement to create brand awareness and loyalty.

4. Radio and Television Era (20th century):

- The 20th century witnessed the advent of radio and television, revolutionizing advertisement by introducing new audio-visual mediums.
- Companies began to use catchy jingles and visual storytelling to promote their products and services.

5. Madison Avenue and the Golden Age of Advertisement (1950s-1960s):

- Madison Avenue in New York City became synonymous with the advertisement industry during this period.

- Agencies focused on creating memorable, emotionally resonant campaigns for television, further shaping the modern advertisement landscape.

6. Digital Revolution (late 20th century to present):

- The rise of the internet and digital technologies transformed advertisement in the late 20th century.
- Online advertisement, social media marketing, and targeted digital campaigns became increasingly prevalent, allowing businesses to reach specific demographics more effectively.

7. Economic Downturns and Advertisement Strategies:

- During economic downturns, advertisement strategies often adapt to reflect consumer sentiments and economic conditions.

- Some companies choose to invest more in advertisement during recessions to maintain or gain market share, while others may reduce spending.

8. Data-Driven Advertisement (21st century):

- Advances in data analytics and technology have enabled highly targeted and personalized advertisement campaigns.

- Companies use consumer data to tailor advertisements based on individual preferences and behaviors.

Throughout these stages, economic advertisement has played a crucial role in shaping consumer behavior, influencing purchasing decisions, and reflecting the economic climate of the time. The methods and platforms may have evolved, but the fundamental goal of promoting goods and services to drive economic activity remains constant.

The earliest forms of advertisement can be traced back to ancient civilizations such as Egypt and Greece, where street corner hawkers would shout out their wares to passing shoppers. This form of advertisement was primarily oral, and relied on the hawker's ability to grab the attention of potential customers and persuade them to buy their goods.

As civilization progressed, so did the methods of advertisement. The invention of the printing press in the 15th century marked a major turning point in the history of advertisement, as it allowed for the mass production of printed materials such as posters and handbills. These early forms of print advertisement were often used to promote events, such as plays and concerts, and to sell goods such as books and medicines.

The history of economic advertisement and its place in linguistics is a multifaceted and dynamic journey that involves the intersection of economics, marketing, communication, and language studies.

In the 19th century, with the rise of industrialization and increased production, businesses began to recognize the need for advertisement to promote their products.

Early advertisements were often text-heavy, using language to convey information about the features and benefits of products.

Print media, such as newspapers and magazines, became prominent platforms for advertisement. Linguistics played a role in crafting persuasive messages to attract consumers.

Advertisers focused on the use of language, including slogans and catchy phrases, to create memorable brand associations.

The advent of radio and television brought new dimensions to economic advertisement. Advertisers now had to consider not only the linguistic aspects of print but also the auditory and visual elements.

Jingles, scripts, and visual storytelling became crucial components, with linguistics playing a role in understanding how language could evoke emotions and influence consumer behavior.

As markets globalized, advertisers faced the challenge of reaching diverse linguistic and cultural audiences. Multilingual advertisement became more common, necessitating an understanding of linguistic nuances and cultural sensitivities.

Linguistics played a role in translation, localization, and adaptation of advertisement messages to resonate with specific linguistic communities.

The rise of the internet and digital technologies revolutionized advertisement. Linguistics became crucial in optimizing online content for search engines, creating engaging social media copy, and understanding how language influences online consumer behavior.

Data-driven approaches, including linguistic analysis of consumer feedback and sentiment, gained importance in tailoring advertisement strategies.

Recent trends incorporate insights from neuromarketing and psycholinguistics. Advertisers explore how language affects the brain and emotions to craft more persuasive and effective messages.

Behavioral economics, a field combining economics and psychology, contributes to understanding how linguistic cues influence economic decision-making.

Despite the many changes that have occurred in the world of advertisement over the centuries, the fundamental goal remains the same: to persuade consumers to buy a product or service. What has changed is the methods used to achieve this goal, as well as the ways in which consumers receive and interact with advertisement. As technology continues to advance and consumer preferences change, it is likely that advertisement will continue to evolve in new and exciting ways.

3 Conclusion

In conclusion, the history and evolution of advertisement reflects the evolution of human civilization and the way of communication. From shouting the wares on street corner to sophisticated digital campaigns, the way of advertisement has changed with the changing needs and preferences of consumers. With the advent of digital platforms, advertisement has reached new heights of reach and targeting capabilities, and the future of advertisement is expected to bring more innovation and new ways to connect with consumers.

The history of economic advertisement has evolved in tandem with advancements in media and technology, with linguistics playing a crucial role at each stage. From the early text-heavy advertisements to the sophisticated linguistic analyses of contemporary digital marketing, language continues to be a powerful tool in shaping economic narratives and consumer behavior.

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Analysis of tools for detecting unauthorized changes to multimedia data based on the Markov chain model

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Abstract: This article analyzes methods for detecting unauthorized changes to multimedia data based on the Markov chain model and related problems. The article discusses the application of the Markov chain model for determining manipulations with multimedia materials, especially with images and videos. It analyzes how the Markov chain model's capabilities are particularly effective in detecting unauthorized changes in images, developing its algorithms, and detecting manipulations using them. The article will also discuss the main difficulties and problems that arise in the analysis of multimedia data, as well as the advantages and limitations of tools for fast and effective analysis of various volumes of material. This article focuses on the application of the Markov chain model and its importance in the field of digital vocabulary in detecting manipulation of multimedia materials.

Keywords: Markov chain model, multimedia data, unauthorized modification, manipulation detection, digital vocabulary, image manipulation, video analysis, document analysis, statistical analysis, analysis algorithms, signal analysis, network tools, network sharing, cybersecurity, analysis methods, multimedia analysis tools, deep fake technologies, cyber fraud, network security, security management, image and video editing, manipulation detection, document storage, multimedia analysis tools.

1 Introduction

Digital forensics and multimedia data manipulation have become a serious threat and threat in recent years[1]. The increase in the number of crimes related to image manipulation between 2020 and 2024 shows that the number of crimes related to image manipulation is increasing from year to year. This has further increased the need and need for this area(table 1).

Image manipulation is not only a technical problem, but also causes social and legal problems. These types of crimes often involve personal rights violations, reputational damage, and even fraud. Altered images, false information and their illegal distribution can lead to attacks on the privacy of citizens, which will lead to serious material and moral damage.

Table 1.

Digital forensic field manipulation of multimedia data associated with crime statistics.

Years	image manipulation , the number of crimes associated with	the mobile device, the manipulation of the number of crimes related to	online scams , the number of crimes related to the
2020	1500	3000	5000
2021	1800	3500	6000
2022	2000	4000	7000
2023	2300	4500	7500
2024	2500	5000	8000

This problem requires the development of special software tools for detecting and investigating digital forms, especially image manipulation. For example, tools such as EnCase Forensic, FTK (Forensic Toolkit), X1

Social Discovery, and PhotoDNA can effectively help you analyze digital evidence. Programs like PhotoDNA are most effective at detecting image manipulation, providing a high level of accuracy when quickly detecting manipulated images.

Along with the increase in the number of crimes, the size of their economic and social damage also increases[2]. In 2020, approximately US \$ 500,000 in damages were incurred as a result of crimes related to image manipulation, and by 2024, this damage reached US \$ 800,000(Figure 1).This indicates the need for knowledge and resources in the areas of numbers, image manipulation, and digital forensics. Thus, the effective fight against manipulation of digital and multimedia information, as well as the introduction of advanced technologies to prevent and investigate such crimes, are urgent problems. To reduce threats to data security and personal rights, Forensic analysis methods should be further developed(Figure 1).

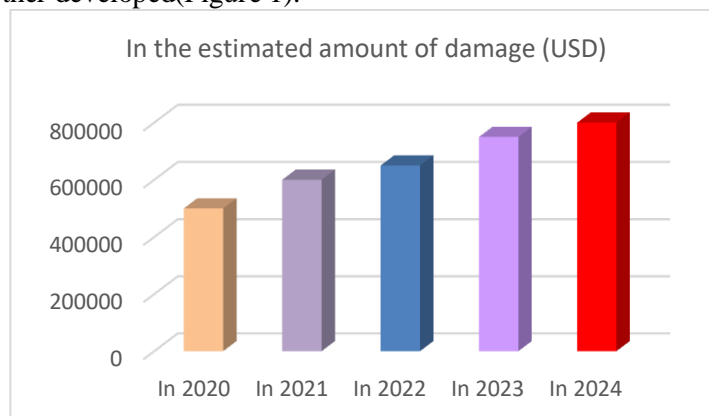


Figure 1. Diagram of the amount of damage caused by crimes committed by manipulating multimedia data.

2 Identifying Image Manipulation in Markov Chain Models

In the field of digital forensics, there are several software tools for detecting image manipulation, analyzing documents, and performing other formal analyses in the Markov chain model. The following software tools are widely used in forensic science and digital science:

1. EnCase Forensic is a very popular and widely used program in the digital economy. It is mainly useful for analyzing digital evidence, recovering files stored on a computer, examining the file system, and analyzing images. EnCase also helps you detect manipulations, such as changes to file systems, and recovery of deleted or hidden files. Another useful feature of EnCase is the ability to automatically analyze documents and images, which helps Forensic professionals quickly view large amounts of data. This digital data processing application is considered an ideal tool for storing, analyzing, and detecting errors in documents(Figure 2).

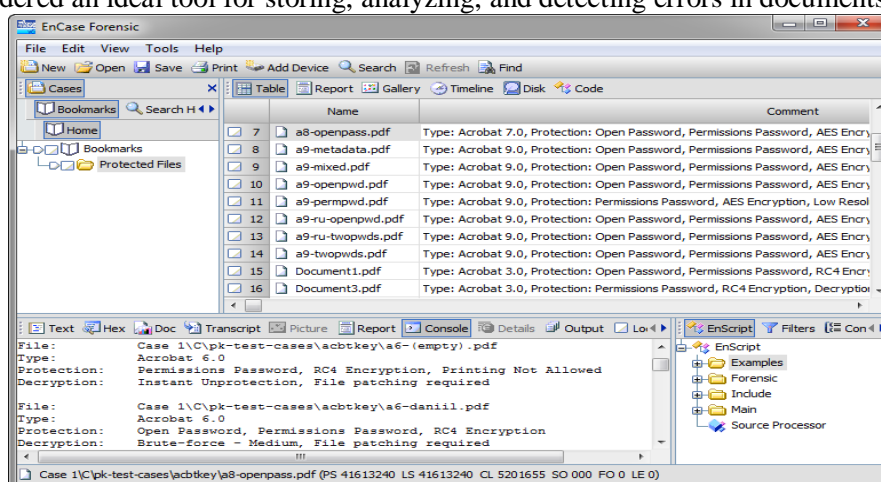


Figure 2. Overview of the EnCase Forensic software tool used for analyzing multimedia documents and images.

2. FTK (Forensic Toolkit) is another important tool widely used in Forensic digital analysis. The FTC mainly works effectively for disk analysis, file recovery, and detection of manipulated or hidden data. This program is especially useful for creating detailed reports on the analyzed data and quickly scanning a large number of files. FTK allows users to recover deleted files, especially data in various formats such as images and documents. It alsoworks as a powerful tool for detecting changes and manipulations performed on files, which

plays an important role in Forensic research. The FTK interface is also intuitive and allows users to quickly analyze data(Figure 3).

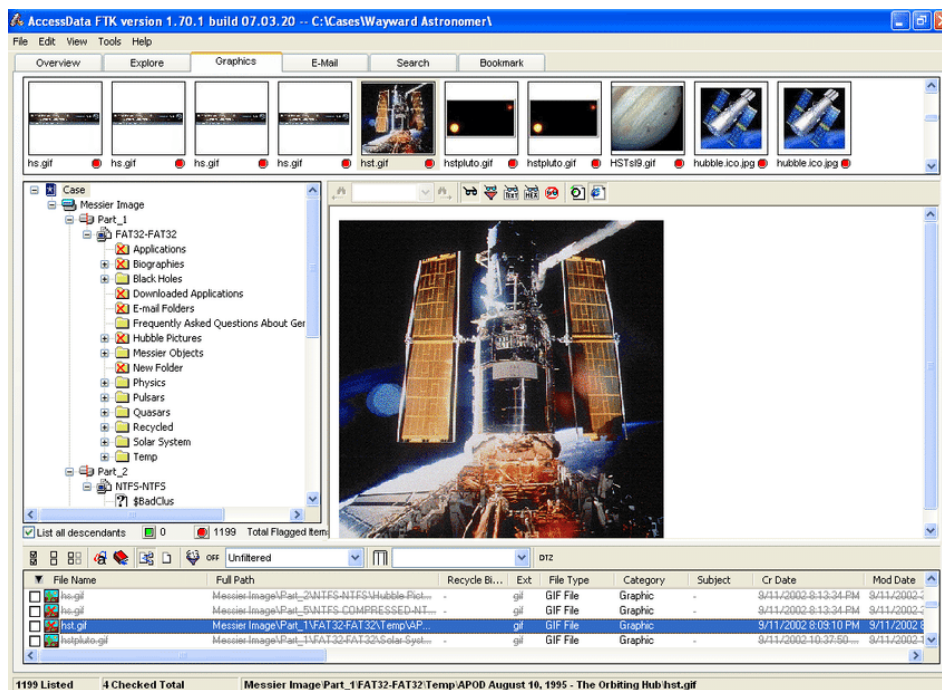


Figure 3. Overview of the FTK (Forensic Toolkit) software tool used to detect manipulated or hidden information.

3. X1 Social Discovery - is a software tool designed to collect and analyze information from social networks and web pages. It is also used incriminology, including the study of images and documents. The app allows you to track and analyze all social media activity, including changed or deleted messages, messages, and user profiles. The software, in particular, is used by law enforcement agencies and digital specialists to identify facts related to user actions and information in social networks. In addition, X1 Social Discovery allows you to quickly and efficiently index files, detect changes, search through posts and messages, and create reports on collected data. This program is known for its high efficiency and accurate results when analyzing social networks and online resources(Figure 4).

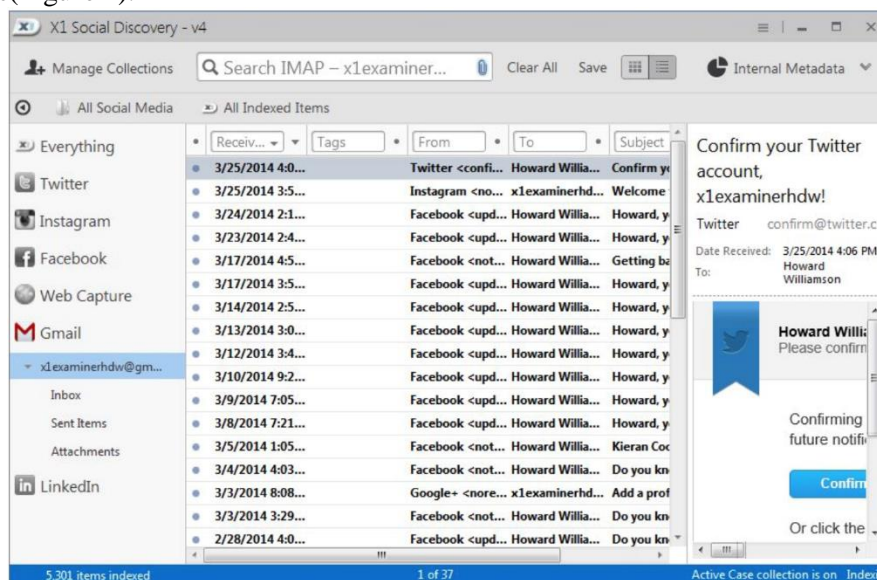


Figure 4. Overview of the X1 Social Discovery software tool used to detect social networks and data changes in online resources.

4. Cellebrite UFED (Universal Forensic Extraction Device) is a powerful Forensic tool widely used for extracting and analyzing data from mobile devices and other digital devices. This app is specifically designed to recover and analyze data from mobile devices (smartphones, tablets, SIM cards, SD cards, and other mobile devices). With Cellebrite UFED, you can restore and analyze images, messages, calls, contacts, geolocation data, and various other data stored on your phones. It also allows you to access data by restoring deleted data, locking security on devices, or cracking passwords (if possible). These features are particularly important for law

enforcement agencies and digital security professionals. Cellebrite UFED provides the ability to get complete and detailed information from mobile devices, helping to identify not only images and messages, but also other important information stored on devices(Figure 5).



Figure 5. Overview of the cellebrite UFED hardware and software tool used for checking images, messages, and other mobile data.

5. PhotoDNA — is a special software tool designed for image identification and manipulation detection. It was originally developed by Microsoft and is currently used by social media, police, and other law enforcement agencies. The main goal is to identify crimes related to child exploitation or pornography, as well as to check cases of manipulation or modification of images and videos[8]. PhotoDNA compares images with a digital "signature". This signature takes into account the features of the image (such as colors, textures, and shapes) and assigns each image a unique identification number. PhotoDNA then compares this number with a global image database and quickly identifies similar images. This software tool is also effective for detecting manipulated or altered images, which means that if the original image identification number has changed, the image shows that it has been manipulated. This tool is mainly useful for detecting content associated with a file exploit and for combating the distribution or retention of such images[9]. PhotoDNA is used by many online platforms and law enforcement agencies because it scans large images very efficiently and quickly to help identify violations. In addition, PhotoDNA provides personal information and personal security, since it only works with images and their digital "signatures", which means that the original images will not be changed or personal data will not be damaged(Figure 6).



Figure 6. Mechanism of operation of the PhotoDNA software tool.

3 Analysis of tools for video and image manipulation detection

The software tools used in forensics and digital science cover a wide range of needs, from detecting image manipulation to extracting data from mobile devices and analyzing documents. These tools are effectively used to investigate crimes, examine digital evidence, and detect manipulated images.

An analysis of the capabilities and effectiveness of the above tools is given in Table 2 [10,11]:

Table 2.

Analysis of tools for detecting unauthorized changes to multimedia data based on the Markov chain model

Software tool	usage scale	speed	efficiency
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EnCase Forensic	more than 80%	95% fast and efficient image and file analysis	90% detection of manipulated
FTK files (Forensic Toolkit)	80%	change detection at 60% speed	85% detection of file system manipulation
X1 Social Discovery	more than 70%	90% detection of modified social media posts	80% recover modified social media data
Cellebrite UFED	75%	detect images and messages from mobile devices at 85% speed	95% recover deleted
PhotoDNA data	over 90%	detect processed images 95%	identify images and detect manipulation 98%

The number of crimes related to digital forensics and changing multimedia data has increased significantly in recent years. Along with the increase in the number of crimes, the effectiveness of software tools used to detect image manipulation and digital manipulation is important, while tools such as EnCase Forensic, FTK, PhotoDNA are highly effective in detecting manipulation of images and documents. These tools effectively help not only in detecting crimes, but also in combating them.

4 Conclusion

As of 2020, accurate data on the number of crimes and strategies to combat them are collected using image manipulation and digital manipulation detection tools. At the same time, technologies and methodologies used in the field of digital analytics have been rapidly developing in recent years and are becoming increasingly relevant in analyzing data from social networks, mobile devices, and other digital sources. This, in turn, provides more effective approaches to combating digital crimes and their consequences.

To prevent and combat cybercrime, it is important to promote innovation in the digital economy and choose the right software tools. In addition, through the analysis of social networks, mobile devices and other digital resources, the ability to detect and prevent the latest crime trends is increasing. This will be an important factor in the efficient use of data and technology, reducing crime growth, and fighting crime.

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Significance of Non-verbal Communication in the Process of Teaching

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Abstract: Communication with people is achieved through words. While using words and body language in verbal communication, sign language is used with the deaf and dumb. Sending messages to others can be with our words, sometimes only with our body language. As educators teaching in different branches, we need words and body language to communicate with students influentially. Correct use of body language ensures that the message is conveyed to students more effectively and rapidly.

Keywords: non-verbal communication (body language) 1.gestures 2.facial expressions 3.classroom management

1 Introduction

Non-verbal communication or body language is the unspoken part of communication that we use to reveal our true feelings and to give our message more impact. Communication is made up of so much more than words. Nonverbal cues such as tone of voice, gestures and posture all play their part. Besides, body language plays a vital role in teaching English, especially as a second language.

2 Methods

Terms used in oral communication are variable. Bodily responses are automatic. Therefore, it conveys emotions directly and is very difficult to control. People first communicate with body language. Then they use verbal expressions as support. According to Tosun and Yildiz, (2015) "The duty of the teacher is to vaccinate the honesty and trust as a moral value because through teaching diligently you can convince students" [7].

1. Words are not always enough to convey the message;
2. Nonverbal signals are more productive;
3. Nonverbal messages are more realistic;
4. Nonverbal messages are more memorable;
5. Nonverbal signals can comfortably express feelings that are too irritating to be expressed in words;
6. Moral values can be delivered easily by actions rather than words.

3 Result

Teachers need to know the basic techniques of using body language to be successful in classroom management and maintain discipline in the classroom productively. In this context, it is necessary to teach or remind some techniques to teacher candidates before they teach their subject. In this study, we will share the opinions of new and experienced teachers on the use of body language and give some recommendations to pre-service teacher candidates. You have probably heard the statistic that only seven percent of a message is conveyed through words, and that the other 93 percent comes from nonverbal communication. This is often quoted out of context and is therefore misleading.

4 Discussion

Using body language in teaching offers several benefits that can enhance the learning experience for students [1-2]. Here is why it is crucial in this context:

1. Clarity and Comprehension: English language learners often rely on visual cues to understand the

meaning of words or phrases. Body language, facial expressions, and gestures help to provide additional context and clarity, making it easier for students to comprehend the language being taught.

2. Engagement and Participation: Using expressive body language can make language learning more engaging. Animated gestures, facial expressions, and movements can captivate students' attention, especially when explaining complex grammar rules or new vocabulary.

3. Cultural understanding: English teachers often have students from diverse cultural backgrounds. Sensitivity to cultural differences in body language is crucial, as certain gestures or expressions may carry different meanings in various cultures. Teachers must be aware of these nuances to avoid misunderstandings.

4. Building Confidence: For students learning English as a second language, uncertainty about pronunciation and vocabulary is common. Body language can help convey patience, encouragement, and support, thereby building the confidence of learners to express themselves in English.

5. Effective Communication: Teachers can use their own body language to model effective communication skills such as active listening, empathy, and clarity, which are essential for language learners to develop their speaking and listening abilities.

6. Non-verbal Correction and Feedback: In language learning, non-verbal cues are often used for correction or encouragement. For instance, a teacher's nod of approval or a gentle point to the correct answer can reinforce learning without interrupting the flow of the student's speech.

It is taken from Mehrabian's Communication Model, which states that body language is more important than tone of voice and choice of words when communicating true feelings. But Mehrabian makes clear that his study dealt only with communications involving emotions and attitudes. So, it is not applicable in all cases. However, it does help to explain why it's so tough to gauge sentiment when we cannot see people – on email or messaging apps, for example. It is also part of the reason for the rise in use of emojis, even in business communication. Being aware of body language in others means that you can pick up on unspoken emotions and reactions. It's a valuable form of feedback, but it can easily be missed if you're not aware of what to look out for [6]. So, let's explore the most important nonverbal clues – some with negative interpretations, and others that are positive signs.

If someone's exhibiting one or more of the following, negative behaviors, they will likely be disengaged, disinterested or unhappy:

1. Arms folded in front of the body.
2. Minimal or tense facial expression.
3. Body turned away from you.
4. Eyes downcast, maintaining little contact.

Being aware of what these signals mean can help you to adjust what you say – and how you say it. You can show empathy for someone's unhappiness, for example, explain yourself more clearly, or work to calm a heated situation. If someone exhibits these signs during a negotiation, focus on engaging their interest and putting them at their ease. Then, if the negative behavior stops, you'll know that they're ready to negotiate with you effectively – and more open to persuasion. Other types of body language can indicate that someone's bored by what you're saying. This might be in a presentation, a team meeting, or even a one-on-one chat. Here are some of the most common signs of boredom;

1. Sitting slumped, with head downcast.
2. Gazing at something else, or into space.
3. Fidgeting, picking at clothes, or fiddling with pens and phones.
4. Writing or doodling.

You can re-engage people by asking them a direct question, or by inviting them to contribute an idea. Additional signs of negative body language include:

1. Nail biting: suggesting insecurity or stress.
2. Locked ankles: also associated with anxious thoughts.
3. Rapid blinking: which may indicate uncertainty or concern.
4. Tapping/drumming fingers: often a mark of impatience or boredom.
5. Fidgeting: more evidence that someone's disinterested or distracted.

Positive Body Language Examples

People also use their body language to convey positive feelings, such as trust, interest and happiness. Spotting these signs can reassure you that others are engaged with what you're saying and at ease with the situation [5]. What's more, by adopting these behaviors yourself, you can support your points, convey ideas more clearly, and avoid sending mixed messages. Here are three specific ways to use positive body language to your advantage:

1. Body Language for a Good First Impression

Your nonverbal signs play a big part in people's first impression of you. Here are ways to

appear trustworthy, engaged, confident, and calm:

1. Have an open posture. Be relaxed, but don't slouch. Sit or stand upright and place your hands by your sides. Avoid standing with your hands on your hips, as this can communicate aggression or a desire to dominate.
2. Use a firm handshake. But don't get carried away! You don't want it to become awkward, aggressive, or painful for the other person.
3. Maintain good eye contact. Try to hold the other person's gaze for a few seconds at a time. This will show them that you're sincere and engaged. But avoid turning it into a staring contest!
4. Avoid touching your face. If you do this while answering questions, it can be seen as a sign of dishonesty. While this isn't always the case, you should still avoid fiddling with your hair or scratching your nose, so that you convey trustworthiness.
5. Smile! Warm, sincere smiles are attractive, reassuring – and infectious!

Body Language for Effective Public Speaking. Positive body language can help you to engage people, mask any presentation nerves, and project confidence when you speak in public. Here are a few tips to help you do this:

1. Have a positive posture. Sit or stand upright, with your shoulders back and your arms unfolded by your sides or in front of you. Don't be tempted to put your hands in your pockets, or to slouch, as this will make you look disinterested.
2. Keep your head up. Your head should be upright and level. Leaning too far forward or backward can make you look aggressive or arrogant.
3. Practice and perfect your posture. Stand in a relaxed manner, with your weight evenly distributed. Keep one foot slightly in front of the other to keep yourself steady.
4. Use open hand gestures. Spread your hands apart, in front of you, with your palms facing slightly toward your audience. This indicates a willingness to communicate and share ideas. Keep your upper arms close to your body. Take care to avoid overexpression, or people may focus more on your hands than your ideas.

If you notice your audience's concentration dip, lean slightly forward while you speak. This suggests that you are taking them into your confidence and will help to regain their attention. Body language is a range of nonverbal signals that you can use to communicate your feelings and intentions. These include your posture, facial expressions, and hand gestures. Your ability to understand and interpret other people's body language can help you to pick up on unspoken issues or feelings. You can also use body language in a positive way to add strength to your own verbal messages – both in person and on screen. This is particularly important when you're meeting people for the first time, speaking in public, or taking part in interviews or negotiations [3-4].

Nonverbal communications in teaching are important. Effective methods in teaching process

Do Not Sit at the Table or in The Chair Unless Necessary. It is essential that young teachers do not sit in a chair for classroom control unless they have a physical illness, except that they take class attendance before starting the lesson. Because when the teacher makes eye contact with the student, it can be understood whether the student is following the lesson or not. An educator sitting in his chair cannot be expected to have a productive lesson and be aware of his students. For this reason, it is the right thing for teachers not to sit down but stand unless they must.

Do Not Move Too Much While Teaching but Stand Firm in Front of the Board to See Every Student. Teachers sometimes misunderstand being active while teaching. For instance, the teacher walks in almost every direction in the classroom. Movement in the classroom is important, but only as needed. However, the teacher should take a firm position while standing. This stance gives the teacher a more confident, powerful air. Try to stay comfortable and flexible by keeping the legs slightly wider than hip-distance. The legs should not be tense, and the teacher should not lock his knees. Humpback is prevented by keeping the back and head upright. This stance is an indication that the teacher is in control with self-confidence and able to influence the listeners.

Walk Around the Classroom from Time to Time and Stop and Talk While Speaking. The teacher should not stand still while lecturing. Legs should be firmly on the ground, and the speaker should occasionally walk in the classroom, and the head, arms, and feet should be in harmony while speaking. If the classroom is not wide enough to walk, you can walk in front of the board and go to the right and left corners. Walks in the classroom should not be meaningless. Too much of anything can make students uncomfortable, either. Wandering too much in the classroom can be distracting. This situation can create a tense atmosphere in classroom management. You can walk from one end of the classroom or stage to the other. In the transitions of your speech, emphasis can be placed on the words. When you change the subject after a few minutes, walk again. This movement will ensure the continuity of the subject and the commitment to the narrative on the audience. As you learn these moves, you won't believe how powerful they are. Your perspective will change, and you will gain full control over students.

Keep Your Palms Facing the Students. Your face must be in a smiling format, and it will be more influential in student control if your palms are facing the students while speaking. Good gestures begin with your palms facing the audience. Your arms should make circular movements in harmony with each other. The arms should be wide when speaking and should not meet each other. Your arms should move outward and not cling to

your body. Your hands and arms should be away in the air about 40-45 cm in front of the body.

Do Not Touch Your Face and Head Too Much While Talking. Do not put your hands on your head too much while talking. Sometimes the hands may go towards the face, the nose may itch, it is normal, but when this happens constantly, it causes discomfort to the audience. Keeping your face open, smiling and having your hands turned towards the students are influential. Therefore, your movements should be on balance, and your hands should not go to the head or face too often. Speakers are usually tense in the first minutes of their speech, so they use their hands involuntarily. If someone already uses his hands too much as indicators in the air while talking, keeping balance can be challenging. In this state, the best thing is to control your movements by using the energy from your tension and adding passion to your speech. Use your hands or fingers while giving examples. For example, you can count first, second, third and draw students into the conversation by asking their opinions. This attitude will also be efficacious in class management.

Never Cross Your Arms, and Do Not Lean on Anything. Do not lean against a table, wall, or any other place. Sometimes, the instructor teaching the subject may lecture depending on something or covering his arms. The meaning of these gestures is a sign that you are weak and closed to the ideas of others. Therefore, never cross your arms before or behind you for operative classroom management.

Do Not Hold an Object That You Can Play with Your Hands. Teachers can carry pens or phones in their hands or their pockets, and it is normal for them to use them from time to time. However, holding a pen or phone too often and playing with these tools will negatively affect the student audience listening to you. It may distract students or cause them to unintentionally use their phones or pencils. All these movements may make you think that you are bored or not confident in yourself. This body language can cause you to break away from your students in terms of classroom management and make classroom management inextricable. Sometimes teachers may think of banging on the wall or table to attract attention. This way is wrong. Knocking anywhere on the table creates tension in the classroom and cools the student off rather than drawing attention.

Look at More towards the Back and Middle Rows Than Front. The student sitting in the back and the middle is often out of sight and can devote himself to other errands. He can play with his phone or talk to his friend. In class management, the teacher should center the class and look backwards, forwards, in the middle, backwards and forwards as in the 'W' pattern. Do not focus on just one student while watching students. In this case, other students may think that you are just teaching that person. In addition, the student you care for may be uncomfortable, bored, embarrassed, and distracted - instead, glance at all students in the classroom. Move your gaze to different corners in the class. To do this, apply the W pattern and follow the pupils with your eyes frequently in this pattern.

Remember to Smile, Do Not Seem Like a Wall and Do Not Act Like a Robot. The best favor to do to students is the smile you give them. Smiling is something that anyone can achieve quickly. Smile at your students and make them feel happy to be in the classroom with your eyes. Students will not want to be there if they are not satisfied with you. Teachers are not born with good body language, but they can get through this with practice and experience.

5 Acknowledgements

It has been proven that people trust body language more than words that comes out of mouths. In our daily lives, politicians, teachers, and senior managers know how to use body language fruitfully and even receive special training on this subject. While expressing their feelings and thoughts, people who support their verbal communication with body language and use body language correctly can make themselves reliable people. We can impress the audience with body language. Body language is a type of nonverbal communication. In classroom management, it is important what kind of message our body language gives to students. The educator needs to know body language in terms of where to stand in the classroom, how frequently to move, how far the distance between legs should be, how to use arm movements, facial expressions, and mimics efficiently.

6 Conclusion

It is apparent that body language is necessary for education. People who commit themselves to teaching should have body language courses. However, they may acquire that over time. In conclusion, sending messages to others happens with our words, and now and then, it is conveyed with only our non-verbal communication. As instructors educating students in various branches, we use words and non-verbal communication to manage them persuasively. Proper utilization of non-verbal communication guarantees that the message is passed on to learners more viably and quickly. In this context, it is recommended that pre-service teachers take body language courses to manage classes successfully in their future service.

7 Author Contributions

Authors' works were significant in the development of the theoretical framework and provided support in data collection. The article was conducted a through review of the final manuscript, played a role in the conceptual development and made valuable additions. All the used works of authors made substantial contributions to the article and have given their approval for the submitted version.

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Scan me!



Fun ways in Learning English

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Abstract : Learning English might seem complex. Even in academic settings, students often encounter challenges when trying to grasp the language. Educators, acting as guides, need to be innovative in selecting the most effective teaching approaches. Utilizing learning methods that lack excitement or are deemed dull doesn't enhance students' English proficiency, instead, it can lead to boredom and a lack of motivation. The key for students is to find joy in every aspect of the learning journey, turning it into an enjoyable experience. This approach fosters a relaxed atmosphere conducive to learning. Engaging in fun learning activities naturally enhances students' English skills, alleviating the stress associated with learning. Thus, learning methodologies should be tailored to meet students' individual needs. This paper does not only rely on research, but also reflects the author's viewpoint on making English learning enjoyable. It outlines various entertaining methods for learning English, enabling students to discover pleasure in the process.

Keywords: Fun, acquiring English skills, approaches, strategies, enjoyable ways

1 Introduction

Mastering English is a pathway to global connectivity. Today, English transcends its status as a mere language; it stands as a universal medium of communication. Utilizing English facilitates interaction with individuals from diverse cultural backgrounds and geographic locations, fostering global connections. Moreover, proficiency in English enhances one's prospects for success, opening doors to employment opportunities with greater ease. Furthermore, learning English cultivates essential life skills among students, enriching their personal and professional development.

Studies indicate that proficiency in English as a second language contributes positively to the development of one's native language skills. Research suggests that students can enhance their vocabulary and literacy levels by engaging in the study of a foreign language (Mahu, 2012). For certain individuals, mastering English can be intimidating, similar to confronting a daunting creature. In Uzbekistan, English is considered a foreign language, leading to unfamiliarity among students with its vocabulary. Consequently, students encounter challenges in their English learning endeavors.

Various challenges and obstacles in learning English may arise for different students. Numerous factors contribute to unmet learning goals, among which incorrect learning strategies stand out. The role of Language Learning Strategy (LLS) is pivotal in the learning journey. Sartika (2019) highlights a significant disparity in the utilization of learning strategies between successful and unsuccessful learners. Educators ought to transform learning activities into enjoyable experiences. They should explore innovative and imaginative teaching approaches to address students' learning difficulties, including their lack of engagement and focus on the subject matter (Avila, 2015). Nevertheless, paramount is the necessity for students to derive enjoyment from each learning endeavor, viewing it as an enjoyable experience. This aspect contributes significantly to fostering a comfortable atmosphere conducive to effective learning. Engaging in learning activities will naturally enhance students' English proficiency.

Therefore, Learning methods need to be tailored and adjusted according to students' requirements.

Subject of the Study

The target learners comprise freshmen aged 18–21, enrolled in the International Relations faculty at the University of World Economics and Diplomacy in Tashkent. This group encompasses 20 students, with a gender distribution of 13 boys and 7 girls, representing various nationalities such as Uzbek, Russian, Tajik, Kazakh, and Afghan. Prior to admission, students are required to undergo an entrance test administered by the State Test Center for University entry, with most students possessing at least a B1 level, while some have attained a B2 proficiency

level. Additionally, applicants have the option to obtain a B2 certificate through the Multilevel Language Proficiency test, and IELTS exam which contribute to their overall test score.

According to the CEFR companion (2020), learners have developed sufficient receptive skills to understand basic and factual information on common topics encountered in daily life, work-related scenarios, or areas of personal interest, provided the content is presented clearly and in a familiar manner. In terms of their productive skills, they are capable of delivering a straightforward description of various subjects within their field of interest in a relatively fluent manner, presenting ideas in a sequential order. They can also generate simple, coherent texts relevant to their field of interest.

When examining students' language proficiency across various sub-skills including accuracy, vocabulary, and pronunciation, it is evident that they possess an ample vocabulary and demonstrate moderate accuracy. This enables them to effectively communicate on a diverse range of everyday topics such as family, hobbies, interests, current events, work, and travel, albeit occasional use of circumlocutions, errors, and influence from their mother tongue (CEFR, 2020). While some individuals have acquired English skills through formal education within school settings, others have sought additional instruction through supplementary courses. Interestingly, in certain schools where English is not part of the curriculum, students have studied languages such as German or French instead. Furthermore, there are learners, particularly those from Afghan backgrounds, who have not only encountered English in academic settings but have also immersed themselves in informal environments, utilizing the language among friends, family, and in various social contexts. These disparities in exposure to English contribute to variations in language proficiency levels within the classroom.

As part of the broader spectrum of English for Specific Purposes (ESP), the English for Academic Purposes (EAP) course is designed to align the language instruction with the specific content students need. By synchronizing the EAP curriculum with relevant subject matter, the goal is to foster students' enhancement in academic reading, writing, and critical thinking skills, employing various effective methods and approaches. In order to encourage students to critically and accurately assess the ideas, opinions, or arguments presented by others within the content, it is advisable to equip them with higher-order thinking skills. As Smith (2012) suggests, the cultivation of college-level writing skills is dependent on fostering college-level reading abilities. Additionally, the course aims to provide students with industry-specific vocabulary, expressions, and language to facilitate effective communication among peers, customers, and clients. ESP instructors must meticulously allocate time for various activities during teaching, taking into account the learners' available study time. Hughes (2019) emphasized the importance of efficient time management in ESP instruction to effectively achieve the learning goals. Additionally, unlike general English proficiency (EGP) courses, ESP programs typically have shorter durations, necessitating careful planning of the course schedule. The course spans a duration of approximately six months, with breaks scheduled for holidays. Classes are held twice a week, each session lasting 80 minutes, specifically on Tuesdays and Thursdays. With nearly two days between classes, students have adequate time to allocate for completing their assignments. The course is conducted during the morning hours, as students typically arrive with a refreshed mindset and ample energy to kickstart their day positively and efficiently.

2 Methods

In order to find out needs and wants, strengths and weaknesses of learners following methods were used: questionnaires and interviews.

1. Do you lean towards independent study or formalized courses?
2. What methods do you employ to enhance your pronunciation skills?
3. What's your approach to acquiring new vocabulary?
4. How do you ensure consistent practice in spoken English?
5. How do you solidify your grasp of grammar principles?
6. Are there any specific tools or memory aids you utilize to memorize challenging language components?
7. Could you share any strategies you employ to advance your vocabulary beyond basic terms?
8. Are there particular study methods or mnemonic devices that you find effective?
9. Do you incorporate multimedia resources like movies, podcasts, or songs into your language learning journey?
10. How do you adjust your learning strategy when faced with unfamiliar accents or dialects?

This paper also delves into the author's viewpoint on enjoyable methods for learning English. It provides detailed insights into learning English in a stress-free manner, emphasizing fun and engaging approaches. Additionally, it shares the personal experiences of an English learner who embraced enjoyable methods in their language acquisition journey. The paper critically examines relevant literature to offer a comprehensive

understanding of effective English learning methods. Overall, it aims to broaden readers' perspectives on learning English, particularly through enjoyable approaches.

3 Results

3.1 Present Situation Analysis

To assess the current language proficiency of the learners and understand their preferred learning styles and methods, a questionnaire was designed. This aimed to investigate the strategies employed by students in their language learning process. Subsequently, based on the questionnaire result, the curriculum would be tailored to address any gaps between the desired learning outcomes and the current teaching methods.

The findings indicated that 65% of the learners expressed dissatisfaction with their language learning approach, while the remaining 35% demonstrated proficiency in English using the current methods. It was clear that most of the learners could manage the tasks and perform through the use of traditional approaches which indicates the learners weak points. However, there were some students who could use several fruitful methods appropriately and this shows their strenghts.

3.2 Wants Analysis

During a classroom question session, it became evident that students' primary desires are closely linked to achieving competence in their respective fields. Given the necessity for active participation in oral communication within their careers, attaining fluency in English is often a top priority. Cowling's research in 2007 revealed that learners labeled their previous courses as unhelpful because they did not accurately reflect real-world scenarios, particularly in business settings. Building on this, Chan (2018) suggests that students universally seek to learn authentic language. They aspire to become proficient employees capable of effectively engaging with customers from diverse backgrounds, managing interpersonal conflicts, offering solutions, and delivering presentations in a professional manner. Emphasizing the importance of training that mirrors real-life situations, students stress the need for practical strategies in conflict resolution and the development of soft skills such as effective communication and adaptability.

3.3 Lacks Analysis

Based on the survey findings, we observed a deficiency among learners in productive skills, a scarcity of specialized vocabulary knowledge, and a restricted understanding of the cultural subtleties and norms relevant to the field of international relations. It means that the learners used conventional methods to absorb a alnaguage which caused them to get bored and dismotivated.

4 Discussions

The needs assessment highlighted that students are deficient in productive skills, notably in speaking, thematic vocabulary, and understanding diverse people needs, preferences, and cultural norms. In terms of their desires, the analysis revealed their aspiration to become proficient and fluent language users through fun ways. However, each lesson does not provide opportunities for oral practice through discussions, role-plays, presentations, dialogues, and peer discussions. Additionally, vocabulary development is not emphasized sufficiently in every lesson to facilitate smooth acquisition of the targeted language in each session.

Learning English presents challenges, and it's crucial for teachers to employ effective methods for instruction. Engaging students' interest can be achieved through enjoyable approaches. By incorporating activities that make learning enjoyable, teachers can capture students' full attention during the learning process. With numerous methods available for learning English, students often gravitate towards those that are enjoyable. Starting with intriguing content can spark students' interest and foster a fun learning environment, which ultimately cultivates their enthusiasm for learning English. Below are some suggested methods worth exploring.

Mingling with foreigners

Interacting with foreigners is an effective method for enhancing students' speaking skills. Visiting tourist destinations frequented by foreign visitors, such as the historical city, Samarkand, provides opportunities for students to engage in conversations. They can initiate discussions by greeting the foreigners and inquiring about their nationality, the weather, and their names. Foreigners are usually receptive to answering such questions. Therefore, students should use polite language when asking. Engaging in English conversations with foreigners can evoke a sense of pride, envisioning oneself being perceived by locals for engaging in something uncommon (Suwartono, 2018). Preparing questions and responses in advance can also be beneficial. This practice enhances students' confidence in speaking with foreigners. Direct interaction activities like this provide valuable learning opportunities, particularly in understanding different cultures.

Listening to/watching different channels

Technology significantly influences the teaching and learning processes, playing a pivotal role in enhancing the quality of education. Technology has become inseparable from the teaching and learning process, as it permeates our surroundings. It serves as a versatile tool for educators to teach a wide range of subjects, including English. For instance, students can engage in enjoyable English learning experiences by listening to/watching their favorite channels. Watching TV programs presents a viable option for learning English in an enjoyable manner, considering students' habitual viewing patterns. With many students dedicating approximately 5 hours per day to television consumption, it's evident that TV offers a broader array of programming compared to other electronic entertainment platforms. Utilizing movies is an efficient method for enhancing the listening skills of foreign language learners, concurrently providing valuable insights into English culture. Students can explore various programs like movies, news, and entertainment to bolster their language proficiency. Moreover, with the accessibility of numerous TV channels from around the world via the internet, learners have ample opportunities for exposure to diverse linguistic and cultural contexts. Television serves as a prime example of a valuable repository of authentic materials. Its significance lies in its capacity to furnish substantial amounts of second language (L2) spoken input, thereby aiding in the enhancement of vocabulary acquisition, listening comprehension, and other facets of L2 learning.

Listening to slow songs

Listening to music is one of the simplest methods for English language acquisition. Opting for slower-paced songs facilitates comprehension. According to Suwartono (2019), songs offer authentic, memorable, and rhythmic language examples. They serve as motivational tools for students who enjoy repeatedly listening to and emulating their musical idols. Students can focus on understanding the clarity of lyrics rather than the musical accompaniment. Regardless of your music preferences, incorporating songs into your English learning routine can enhance your listening and speaking abilities, vocabulary, and pronunciation. It exposes you to words and expressions beyond traditional classroom learning. Moreover, it transforms the language learning experience into an enjoyable and entertaining one. Songs represent captivating and culturally diverse materials readily applicable in language classrooms. Listening to slow songs offers valuable insights into grammar and pronunciation, enriching students' understanding of these aspects. Additionally, the rhythmic patterns, tones, rhymes, and vocabulary choices in songs add an entertaining dimension to learning. This approach ensures that students remain engaged and interested in learning English through music. Moreover, listening to slow songs serves as an effective method to relax and calm students' minds.

Watching videos on YouTube platform

Another option is incorporating YouTube videos into the learning process. In today's world, YouTube has become a part of daily life for people worldwide, particularly teenagers. These videos often feature captivating visualizations and animations. Using YouTube videos as supplementary material in English classes can enhance students' understanding and knowledge of their lessons, while also making the learning process more enjoyable and meaningful. Moreover, it facilitates easier memorization of lesson content and encourages students to take interest in and thoroughly enjoy the entire video. There is a wealth of educational videos available on YouTube that can

assist students in learning English effectively. Additionally, students have the option to download and save these videos for convenient access to the material anytime.

Listening to podcasts

Podcasts offer a valuable opportunity to enhance listening skills and acquire new knowledge. They aid in expanding vocabulary and refining pronunciation. Furthermore, they contribute to the improvement of speaking abilities. Regular exposure to spoken language, such as through podcasts, encourages the brain to mimic what it hears, as it is inherently wired to do so. Podcasts provide authentic, unscripted conversations, incorporating slang, idioms, and natural speech patterns, akin to real-life interactions. Access to transcripts for podcasts allows learners to delve deeper into the content. By reading the transcript before listening to the podcast and then revisiting it afterward, learners can develop focused listening skills and gain a comprehensive understanding of the topic discussed. Learners should review the podcast transcript and identify challenging words for pronunciation. They should record themselves pronouncing these words and compare their pronunciation to that of the native speaker. This step is often overlooked by many English learners, but the difference in improvement is evident between those who do and those who don't. Furthermore, learners shouldn't limit themselves to simply repeating the transcript. They ought to try expressing their thoughts about the podcast topic. This encourages the use of new vocabulary and expressions, fostering more natural speech. For introverts, podcasts can be an invaluable tool. If a learner is someone who is uncomfortable with making mistakes or feels self-conscious, practicing speaking with podcasts can be incredibly beneficial. This allows them to practice in a private setting, leading to increased confidence when speaking in front of others. While some English teachers may advise you to simply "be more confident and speak up in class," overcoming these feelings is easier said than done.

Chatting, Emailing, and Messaging?

Engaging in genuine interactions can enhance students' English speaking skills. One effective method for acquiring a second language involves immersing oneself in natural environments where the language is spoken. Social media platforms such as Facebook, Yahoo Mail, and Yahoo Messenger can serve as valuable tools for communication in English. Through these platforms, students can connect with individuals from various parts of the world and engage in conversations. For some students, speaking directly in front of others may be daunting, leading to a lack of confidence. However, by communicating through chat or email, students have the opportunity to compose their responses thoughtfully and without the pressure of immediate interaction. This method reduces the burden and nervousness associated with face-to-face communication. Even during written communication with Uzbek pen friends, students should consistently utilize English. With widespread internet access and the multifunctionality of cell phones, students can effectively engage with their pen friends. Through this interaction, students have the opportunity to learn from each other. Their linguistic skills, particularly vocabulary acquisition and writing proficiency, as well as their ability to respond spontaneously, will gradually improve over time.

Using digital games

Incorporating games into English Language Teaching (ELT) can indeed revolutionize the classroom experience. Not only do games offer genuine tasks that mimic real-world language use, but they also tap into intrinsic motivation, making the learning process more enjoyable and effective. Here are some key benefits of integrating games into the ELT classroom, along with practical ideas for implementation in both remote and online settings.

Digital games offer a multitude of opportunities for language learning. Their intricate storylines and connections to various media forms like books and movies provide rich material for language practice. Additionally, the social aspect of gaming, where players collaborate and exchange ideas, fosters communication skills. Engaging with digital games also promotes the development of digital literacy by requiring players to interpret and produce meaning within the game's narrative.

In English classes, gamification can manifest in straightforward ways, such as implementing a token system where students earn points redeemable for rewards like selecting a song or additional break time. Other strategies include group challenges to unlock new learning materials, allowing learners to select difficulty levels, and even designing the entire course content as a game for more immersive integration. Several educational apps incorporate elements of gamification to enhance learning experiences. For instance, Kahoot! turns quizzes into competitive games, rewarding points for correct and quick responses. Quizlet offers a feature that turns flashcard sets into matching games, while Educandy and Baamboozle allow users to gamify vocabulary practice easily. While the mentioned tools offer engagement, this article emphasizes the utilization of authentic games for learning purposes while cautioning against the pitfalls of using game elements solely for disguised testing or extrinsic motivation, which may detract from the genuine essence of gameplay. It distinguishes between the superficial skill-and-drill approach, often associated with edutainment, and the diverse, dynamic methods through which games inherently teach, which are often subtle yet highly effective. Engaging in English learning through e-games prevents students from feeling bored and instead fosters enjoyment during the learning process. E-games are readily accessible, whether through CDs, cell phones, computers, or the internet, further enhancing their appeal and convenience.

Amateur writer

Writing is a vital language skill that students need to develop proficiency in. Engaging in writing activities is essential for enhancing students' English writing skills as it aids in grammar and vocabulary acquisition. Without consistent practice, students cannot enhance their writing abilities. Students can begin by composing summaries, critical reviews, tips, or other relevant information. They can utilize colored papers or loose binder sheets for their writing practice. Passing their work to either their English teacher or fellow students who are proficient in English for editing, before submitting it to the school's Wall Magazine, is intended to enhance students' writing skills and ability to articulate their thoughts effectively. These practices aim to encourage students to develop their writing skills and produce high-quality passages. Collaborating with editors brings a sense of pride when their efforts yield successful result, with their articles being published and read by others.

Conversation with a partner

A highly efficient method to accelerate English learning is by immersing oneself in situations that demand regular English practice. Engaging in frequent conversations with native English speakers allows learners to apply their grammar and vocabulary lessons effectively. Utilizing an online native English-speaking tutor is the most enjoyable and efficient method to achieve fluency in English. By scheduling sessions at your convenience, you ensure regular opportunities to converse with a native speaker and enhance your conversational abilities. This approach is far more engaging than simply reading scripted dialogues from a textbook or practicing sentences silently in your mind. Boost your English conversational skills by seeking out English-speaking friends online. You could find fellow language learners nearby or engage in exchanges via email, instant messaging, or Skype. Check out Conversation Exchange, a free platform facilitating language learners' connections for mutual language practice. In a language exchange, you converse with someone studying your native language while you practice speaking English with them. This reciprocal arrangement allows both parties to enhance their language skills.

Storytelling with AI

Our society has become fascinated with artificial intelligence. So, why not join the bandwagon and begin learning English with AI? Not only will this aid in honing your communication abilities, but it will also enhance your proficiency in expressing yourself effectively in English. Follow these guidelines to embark on your storytelling adventure with AI:

- Seek out an AI platform specializing in storytelling, offering a variety of genres, themes, and prompts to choose from, such as GPT-3, Hugging Face, and OpenAI.
- Start with shorter stories and gradually tackle more challenging ones as you become more accustomed to the technology.
- Allocate specific time slots for practicing storytelling with AI to establish a routine and track your

progress.

- Utilize the instant feedback feature provided by AI platforms to pinpoint areas for improvement and focus on enhancing them.
- Share your stories. Sharing your creations on social media, writing forums, or with friends can provide valuable feedback and help refine your storytelling skills.
- Enjoy the process! Don't worry too much about perfection. The goal is to develop your storytelling abilities while having fun. Storytelling with AI presents an excellent opportunity to boost your English language skills while engaging in an enjoyable and stimulating activity. With the provided tips and strategies, you can kickstart your journey toward becoming a confident and captivating storyteller in no time. Let AI be your new ally in English learning, and start practicing storytelling today

5 Conclusion

The primary objective of the needs analysis is to determine the requirements, desires, and deficiencies of the learners by employing interviews and questionnaires. This assessment aims to address various inquiries, including the learners' existing language skills, familiarity with language in international settings, course expectations, English language usage in the specific context, course objectives, practical scenarios and communication tactics in international relations, the significance of cultural competence, crucial vocabulary and terminology, and efficient methods for learning the target language. In order to assess the current language skills of the learners and guide curriculum modifications, a present situation analysis was carried out. The findings from these evaluations showed that 65% of the learners exhibited low proficiency in language, whereas 35% performed satisfactorily. Most of the learners do not utilize fun ways of language learning. In place of enjoyable techniques, they tend to use conventional approaches more. From the preceding discussion, it's evident that English learning has become a necessity. Engaging and enjoyable English learning methods contribute significantly to students' enjoyment and retention of the language, preventing boredom in the learning process. There are several entertaining ways to learn English. Firstly, interacting with foreigners facilitates students' confidence in speaking by engaging them in conversations. Secondly, watching TV programs enhances students' knowledge and listening skills.

Another method involves watching videos on YouTube, which facilitates easy memorization of students' favorite content. Furthermore, listening to the radio stimulates students' imagination through verbal and auditory cues. Engaging in chatting, emailing, or messaging in English serves as a means to enhance vocabulary and confidence, with the added benefit of conversing with foreign friends. E-games offer an interactive platform that captivates students and facilitates their involvement in learning. Through gameplay, students unknowingly acquire English language skills. Aspiring writers can also practice by composing summaries, critical reviews, tips, or other informative content to bolster their grammar and vocabulary proficiency. These approaches not only cultivate students' enthusiasm for English learning but also foster a natural acquisition of the language.

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Integrative Approaches in Teaching Foreign Languages and Its Analysis

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Abstract: This thesis examines and discusses some of the main issues related to the implementation of an integrative approach in the educational process and students' foreign language preparation.

Key words: Integrative approach, intra-subject integration, interdisciplinary integration, education and training process, foreign languages.

1 Introduction

At the current stage of the development of society, the complex training of students, consisting of a number of consecutive, consecutive stages of professional growth, which provides a multivariable result, the development and formation of a moral and mature person who can actively participate in social life, is an urgent problem is considered

The leading link of such training is humanitarian, which allows to form a free person with the ability of independent creative thinking and constant self-improvement.

In the educational process, a special demand is placed on the process of teaching a foreign language, its effective implementation in the context of the interdependence of teaching all types of speech activities, the active inclusion of humanitarian, country studies and cultural aspects in the teaching content possible

The term "integration" was firmly established in the 1980s in the work on pedagogy. Originally derived from the Latin word "*integratio*", which means to restore, complete, round up any parts, even before this term was widely used in the professional vocabulary of various fields of knowledge to designate the relevant process. [1,4].

In the Philosophical Encyclopedic Dictionary [2,203] we can see that the definition of integration has been developed, filling it with such a concept as "the aspect of the development process related to the integration of parts and elements into a whole". We find a close definition in the "logical dictionary-reference" [2,203], which defines integration as "*...the wholeness, the unity of any elements, the restoration of any unity.*" In the exact sciences, integration can be understood as the sum of its weight with respect to some parameter, and the integral is "a whole quantity considered as the sum of its infinitesimal parts" [3,48].

2 Methods and materials

In English literature, the term "*integrate*" [3] is widely used to describe the process of convergence and linking of disciplines that occurs alongside the process of differentiation. In biology, integration is understood as "... the order, consistency and integration of functions and structures characteristic of a living system at certain levels of organization" [2,203].

In psychology, we find "*group integration*" defined as "*coherence, orderliness and stability of the system of processes within the group*" [4,19]. Philosophers define integration as the process of forming connections that ensure the interdependence of elements and the emergence of an "integral feature" [1, 51], A. D. Ursula defined the term "*integration*" as the unification of any parts into a single whole, and used it as a previously autonomous used to describe the interdependence processes of elements as a single population [5,113].

In all the above definitions, on the one hand, a single trend is observed, which indicates the interdependence of individual elements, and on the other hand, the formation of a whole. Each element interacts with others on the basis of consistency, order, stability. Thus, in the interpretation of the term "integration" by private sciences, first of

all, it can be understood as the process of uniting into a whole, restoring some kind of unity, and integration is the process of forming a whole.

In pedagogy, integration is defined as "the highest form of expressing the unity of goals, principles, content, and forms of organizing the educational process, which is carried out in two cycles of education, aimed at strengthening the entire educational system" [2,16]. A. P. Belyaeva plays an important role in theoretical justification and practical implementation of the idea of integration in pedagogy. Summarizing the data of special sciences and analyzing the definitions of integration in philosophy, A. P. Belyaeva deepens this concept and emphasizes that integration in any sciences is the process and result of creating an integral whole [3].

3 Results and discussion

Currently, our independent republic is experiencing a unique period of development in the field of education. The vital needs of our time require raising the level of educational work in schools to a higher level and educating the future generation who have thoroughly studied foreign languages, is to teach them to develop their logical thinking and to be able to express their thoughts in English, to form a modern worldview in them. If we use an integrative method in our education system, it will certainly be justified, and this approach is currently used in the education system of many countries. This article describes the purpose and content of this approach.

The integrative approach in pedagogy is a unique method, which means mixing, adding and connecting different branches of science. The word "integration" also refers to the integration of separate parts. In education, integrative integration is usually used between disciplines, but if we implement this method within the discipline itself, much more advanced results will be achieved in the teaching of that particular subject. or, tasks presented through problem situations that develop thinking can be linked to vocabulary memorization. Y.A. Kamensky said about this in pedagogy: *"Knowledge that a person learns should not be isolated, fragmented, but focused on interdependence and integrity", "Integration is not only connecting educational elements, maybe it means to find a solution to problems that cannot be answered by the help of one science, using the proportionality of other sciences."* Cross-curricular integration: in this, learning materials from one course are combined with learning materials from another course that are similar in essence, and this helps the student to master the subject, the textbook. Interdisciplinary integration provides a direction to actively search for new pedagogical solutions, to have an effective and reasonable impact on students, and to develop the creative potential of pedagogical staff. As a result of the development of the scientific and pedagogical foundations of the integration of academic subjects and subjects, the effectiveness of education increases and excessive effort and stress are prevented. The goal of today's education is to educate a creative person who can reveal all his potential. This is the concept of "innovation", which requires changes within the system.

By introducing the term "integration" into the methodology, we rely on the same meanings that are present in foreign language pedagogy and others. We understand it in the framework of the curriculum we have developed as follows: integration is the integration of educational content, forms, methods, principles and elements of language education into a whole in scientific, professional, general education and humanitarian fields. Describing integration as a process helps to highlight the following essential and constant steps of this procedure:

- *determining the factor that makes up the system;*
- *creating a new structure of the program;*
- *content processing;*
- *performance testing.*

The invariants in the list can be fundamental in the development of a curriculum for schoolchildren. Integration arose out of a desire to model a holistic learning process.

Determining the goals of integration is related to the conscious need and the ability to connect individual topics, topics, sections. The choice of integration objects is determined as follows: intra-disciplinary integration is carried out to accelerate and speed up the program, and if you wish, you can expand it due to components, courses close to each other, inter-disciplinary integration is carried out. By selecting the structural objects required for integration, select the constant variable components - the components of your structure. The definition of the integrating factor that makes up the system means finding a basis for integration. It is not possible to integrate knowledge without a system-forming factor acting as an integrator.

Whole disciplines and even systems of science can act as a system-forming factor. For example, some authors [4, 7] consider "their" technical knowledge to be an integrator of sciences, others include teaching methodology to the factor that makes up the system, and others include psychology.

In the program developed for students, the educational text, which is a material at the same time, is an integrator and a system-forming factor:

- 1) a foreign language for learning a subject;
- 2) for interdependent teaching of all types of speech activity;

- 3) formation of necessary skills and qualifications;
- 4) to get acquainted with the language system;
- 5) to ensure the formation of spiritual culture and the system of universal human values.

According to A. P. Belyaeva, the development of scientific knowledge is always characterized by two main opposing trends: integration and differentiation, emphasizing the dialectical unity of the processes of integration and differentiation, they do not coexist with each other and do not follow each other, but in each other and in the other. appears [3]. According to the principle of the unity of differentiation integration, the integrative approach to teaching should reflect the content in a differentiated form, which allows to reflect the unity of the general through integration and the uniqueness through differentiation.

In the lesson with an integrative approach, efforts are made to improve the principle of creativity, personal development, and independent learning skills in the student's mind activation of educational activities, achieving a high level of learning material. Integration prevents the fragmentation of knowledge in its place.

It should also be mentioned that there are negative aspects of integration in education. Above, only the positive aspects of this direction were highlighted. The negative aspects of integration include the following: an increase in the density of the lesson, a decrease in details, spending a lot of time on preparing for the lesson. Therefore, in providing integrated education, the pedagogue is required to have a high level of knowledge and universality in the lessons [13]. The advantage of integration is not narrow knowledge, but its goal is to develop an active professional.

4 Conclusion

In conclusion, it should be said that foreign language programs conducted with the help of an integrative approach provide students with opportunities for self-awareness and self-development. Through this approach, the world image is fully formed in the minds of students, their worldview and extra-linguistic knowledge about the country where the language is being studied increases. Of course, the approach that creates such opportunities meets the demands of modern society.

The structured sequence scheme regularly corresponds to the stages and specific forms of education [10].

Thus, integration issues are solved by adding or replacing blocks of content that vary depending on the educational stage and age group of students. The composition of variable modular blocks is differentiated. Country studies, cultural, general scientific blocks are immutable. Although a lot has been said about integration, nevertheless, to date, different subjects and even different departments of the same subject are closed, self-sufficient, other aspects of the subject and other academic subjects. is presented as something almost unrelated. Students should be able to see the functional relationships between different disciplines and their components, identify the generality of methodological cycles in the acquisition of knowledge.

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Ways of using computer technologies in assessment

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Abstract: This article presents ideas and reflections on computer technologies and their use in assessment in education. In the ever-evolving landscape of education, the integration of technology has revolutionized teaching methodologies, making computer literacy a fundamental aspect of modern culture. This article explores the transition from traditional assessment methods to technology-based assessments, highlighting the effectiveness and effectiveness of computer-based testing (CBT) and computerized adaptive testing (CAT). By leveraging various information and communication technologies (ICT), educators have streamlined the assessment process, enhancing not only the administration but also the analysis of test results. The article delves into the multifaceted role of technology in educational assessment, emphasizing its capacity to facilitate learning outcomes assessment and support higher-order learning objectives. Moreover, it discusses the pivotal role of pedagogical diagnosis in leveraging computer systems for assessing student knowledge and monitoring learning processes. Through a comprehensive analysis of the current landscape, the article presents findings from studies on the impact of computer technologies on academic achievement and course attitudes, considering factors such as course content, digital literacy levels, and instructional time. Finally, it underscores the importance of international support in integrating pedagogical and information technologies into educational practices, emphasizing the need for a unified understanding of pedagogical technology and its implications for optimizing educational processes and enhancing learning outcomes.

Key words: Technology-based assessment, Computer-based testing (CBT), Computerized adaptive testing (CAT), Information and communication technologies (ICT), Pedagogical diagnosis, Educational outcomes, Digital literacy, Learning processes, Academic achievement, Instructional methodologies.

1 Introduction

With the development of technology, the presence of a single computer is enough for teaching using technical tools. The computer successfully took over the functions previously performed by television, film projector, slide projector, etc. In addition, the quality of information transmission, storage, and imaging has increased significantly. By now, computer literacy has become an important sign of culture, and in the future it will become a necessity for every person, wherever he works. Therefore, computer work, teaching to use a computer will undoubtedly become a common job in the near future. Modern information technology tools include: computer, scanner, video camera, video camera, LCD projector, interactive whiteboard, fax modem, telephone, e-mail, multimedia tools, Internet and Internet networks, mobile communication systems, database management systems, artificial intelligence systems can be introduced.

2 Materials And Methods

2.1 Subject Of The Study

For a very long time, until the arrival of computers, paper-based tests were the only assessment method available to educators & trainers.

They would need to:

- create a set of questions
- print copies
- distribute the papers to the learners

- wait for the learners to complete and submit the test
- grade the tests manually and write feedback
- prepare reports

It was time-consuming, to say the least.

Only when technology-based assessment systems arrived did the idea of pen-and-paper assessments become redundant and slowly give way to a better, much more effective system. One of the most common tools is computer-based assessment software, in which an instructor uses a web-based assessment platform to create and share an assessment. Then, the instructor provides a link to the students who take the assessment online. The online assessment creator automatically takes care of all of the administrative tasks—tracking who has completed the test, collecting data such as how much time students spend on each question, and even grading the tests and providing feedback to the students.

This phenomenon is considered as a new way of measuring educational outcomes and is well known as technology-based assessment. John and

Wheeler (2008) state that because of current advances in ICT, assessment of learn-

ing is now experiencing change in ways that have lead it to revision of the methods, rationale and process of testing. In addition, Jonassen et al (2009) point out that the use of technology to support assessment is not only done by converting traditional forms of assessment into a digital format, such as computer-based testing, quizzes or surveys, but it can also be used to assess higher-order learning outcomes.

2.2 Methods

In testing, terms such computer based testing (CBT) and computerised adaptive testing (CAT) are some of the test systems that use ICT as the basis for administrating the test. To gain more insight, the various uses of ICT in testing are elaborated. COMPUTER-BASED TESTING (CBT) In testing, the method of using a computer that acts as the test deliverer is called computer-based testing (CBT). According to Jonassen et al. (2009), computer-based testing has been used to make the testing process simpler for teachers and administrators and to facilitate faster scoring of students' work by using scanned sheets and asking students to perform the test on a computer. In computer-based testings, the functions of the computer are as the test medium and as the scorer. The computer can also analyse the test results to check the test item's performance. Milset al. (2002) state that nowadays, many tests for licensure, certification and admission are done using CBT as a common form of test delivery. CBT has been an option or sole means of test delivery by many large-scale, high-stakes testing programs. In essence, the use of computers as the basis of assessment has spread widely.

In order to organize a computer system for assessing students' knowledge and monitoring of learning, first of all, it is necessary to diagnose the quality of teaching in the modern education system, that is, to effectively manage the processes in it, without determining its condition, in education no one doubts that it is impossible to achieve the goal. It is possible to determine the final knowledge and skills of students in the educational process based on various criteria and approaches, to apply modern information technologies to these processes, and to control their real compliance with the set didactic requirements.

Pedagogical diagnosis includes determination, control, assessment, collection and analysis of statistical data, as well as forecasting the future development of this process. If we pay attention to the fact that the diagnosis of students' mastery in methodological literature is recorded as the level of achievements achieved by them, then the purpose of pedagogical diagnosis is the analysis of the progress of the educational process and its evaluation in a timely manner. In order to organize a computer system for assessing students' knowledge and monitoring of learning, first of all, it is necessary to diagnose the quality of teaching in the modern education system, that is, to effectively manage the processes in it, without determining its condition, in education no one doubts that it is impossible to achieve the goal. It is possible to determine the final knowledge and skills of students in the educational process based on various criteria and approaches, to apply modern information technologies to these processes, and to control their real compliance with the set didactic requirements.

3 Results

3.1 Present Situation Analysis

The most important thing to control is the control function, to clarify the level of knowledge, skills and competences achieved by students, their approaches to cognitive activities, the level of development of their mental activities according to the indicators of knowledge acquisition. gives the opportunity.

Its second important task is teaching, which improves the knowledge, skills and competences acquired by the student, and ensures control of its systematicity. In the process of such control, students are engaged in returning and strengthening the studied material. Checking knowledge on the basis of computer technologies

provides an opportunity to extract the main points from the studied material, as well as to determine the content of acquired knowledge, skills and qualifications.

The third task of monitoring - diagnosis, helps to get information about the shortcomings, deficiencies, errors, the number and character of the students' acquired knowledge, skills and competences. Control through diagnosis in the teaching process is important as it helps to choose an effective method of education to a certain extent.

On the basis of computer technologies, the teacher receives information about the educational process, its future, predictable situations from its predictive function when monitoring students' knowledge. .

It provides an opportunity to control on the basis of predicting whether or not specific knowledge, skills and competencies intended for a certain part of the educational material have been sufficiently formed at a certain stage of the educational process. The results obtained according to a certain scientific prediction are used to create a model of the students' future activities. Such prediction helps the teacher to get clear conclusions for planning and implementation of future teaching.

The developmental task of knowledge control is manifested in the development of students' knowledge activities and their creative abilities. The development of speech, memory, attention, imagination, will and thinking abilities of students during the control process based on computer technologies is clearly felt. The developmental task of supervision is important because it affects the formation of the characteristics of a person, such as abilities, inclinations, interests and needs.

In addition, it has a guiding function in controlling the knowledge that students are gaining, and the teacher determines its essence, the extent to which the goal of teaching has been achieved by an individual student or the whole group, that is, how the learning material is It is determined by the amount and how deep it is absorbed. Thanks to such control, the teacher learns the mistakes and shortcomings, and understands what approaches should be emphasized in improving students' knowledge, skills, and abilities. The guiding task of supervision greatly helps the student to know himself well in terms of various characteristics, to understand and fairly evaluate his acquired knowledge, abilities and opportunities.

4 Discussions

In the literature, some studies conclude that using computer technologies have positive effects on academic achievement and course attitude (Brinkley-Etzkorn, 2018; Göker & İnce, 2019; Karaoğlu, 2008; Lim & Newby, 2019; Lin et al., 2018; Mouza et al., 2014; Sheffield et al., 2015; Zarzycka-Piskorz, 2016), as well as studies that contradict these findings (Batıbay, 2019; Korkmaz et al., 2019). The effect of the using computer technologies depends on the combination of many factors, such as the used, the content of the course, the level of students' digital literacy and time. Factors that help student teachers' academic success and positive attitudes towards the course are that usage of ict are different and remarkable compared to traditional methods, they ensure active participation in the assessment and make the lesson enjoyable.

5 Conclusion

Relevant organizations of foreign countries provide close support in the introduction of pedagogical and information technologies to the educational process. The term "pedagogical technology" is based on the concepts of "technology", "technological process". These concepts mean a technical document about the sequence of work performed to obtain a finished product in industry, and a complex of methodological activities in science in education. The main way to understand pedagogical technology is to focus on clearly defined goals, to establish regular interaction with the learner, and to teach through the behavior of the learner, which is the philosophical basis of pedagogical technology. Interaction should form the basis of pedagogical technology and fully cover the educational process. The term pedagogical technology was defined by each didactic scientist based on his own point of view. A complete and unified definition of this concept has not yet been adopted. Among these definitions, the definition given by UNESCO is the most appropriate. At present, how effective it is if a subject of general secondary education is completely or partially passed using ICT, or the pedagogical principles of using ICT, its psychological characteristics, and its influence on the cognitive process complex research of its mechanism and factors, as well as many other aspects, is becoming relevant. This leads to the formation of a new content and essence in the educational system, in particular, the organization and implementation of educational processes, the development of educational and methodological support, especially the improvement of the efficiency of passing and mastering training sessions is creating a foundation.

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Advantages of task-based language learning and teaching

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Abstract: Task-based languages learning classes contain students of mixed abilities. It shows a gap-fill requiring students to differentiate between the uses of certain prepositions or verb forms a 'task', or is an activity which asks students to discuss the possible solution to a riddle a 'task'? You may well have your own views on this, certainly the colleagues who co-habit the staffroom in language learning. To conclude, all classes are mixed ability to one extent or another. Extreme cases, when you have near native level speakers with beginners, can be very challenging for the teacher. In these cases, it's important to remember that all students will get something out of the class, but not necessarily the same things, and not necessarily what you aim to teach them. These techniques have offered valuable contributions to the investigation of the reading process. Many students might consider a 'task' such as discussing the possible solution to a riddle a diverting (interesting, amusing, etc) pastime, but may see no language learning aim involved.

Key words: ESP vocabulary teaching and learning, vocabulary teaching strategies, vocabulary learning styles, categories of ESP vocabulary, categories of vocabulary teaching techniques.

1 Introduction

What is, and is not, a 'task'? A question much debated. Is a gap-fill requiring students to differentiate between the uses of certain prepositions or verb forms a 'task', or is an activity which asks students to discuss the possible solution to a riddle a 'task'? You may well have your own views on this, certainly the colleagues who co-habit the staffroom I find myself in during coffee breaks do. There tends to be a lot of disagreement in that staffroom ('Tasks' which do not involve the use of language eg: painting a fence [Long, 1985] is deliberately disincluded at the minute for, I hope, obvious reasons). A question less frequently considered is what students consider a task to be, and whether or not they are aware that they may be involved in one.

2 Methods

I think most students would consider completing a gap-fill of the types mentioned above a 'task'; they might also consider it a very demanding 'task' (or not). Many students might consider a 'task' such as discussing the possible solution to a riddle a diverting (interesting, amusing, etc) pastime, but may see no language learning aim involved. Take for example, the common activity type: "You are going to the North Pole - choose a maximum of ten items from the following list of twenty-five that will you take". A typical student interaction might be:

Student A: Tent?

Student B: Yes.

Student A: TV?

Student B: Ha ha! Ok.

Student A: Number 6?

Student B: Ok.

This is an all-too-common student interaction pattern in my experience resulting in 'We've finished!' after about twenty-five seconds of 'interaction'.

3 Results and discussion

However, many writers on the subject would consider discussion of what to take to the North Pole a 'task' as it involves 'meaning-focused communication' ie: the students are primarily concerned with getting their ideas across to each other, as opposed to 'form-focused communication' in which the students are concerned with using particular linguistic forms accurately (although Widdowson 1998 states the case for both). What has gone wrong with this 'task' then? Obviously, the students thought they were supposed to solve the problem as quickly as possible, but what was the teacher's intention in engaging the students in this task in the first place? Quite possibly to cause the students to use a structure such as: 'If we don't take the tent, we'll freeze to death', or even: 'If we didn't take the tent, we'd freeze to death' (This in line with Skehan 1998 whose model of Task Based Learning suggests the teacher first select the structures the students will most likely require to complete the task [as opposed to the lexis?]). Perhaps the teacher had not made this reselection of structures clear to the students in the first place? In other words, perhaps they were unaware of the teacher's linguistic aim in engaging them in the 'task' (Note: in many common situational interactions such as discussing plans for the next weekend, how the last weekend was spent, buying a railway ticket, shopping for fruit and vegetables, ordering in a restaurant etc. the language items likely to be required for task completion can be very predictable.)

However, a 'task' involving students differentiating between the uses of certain verb forms in a gap-fill, for example, may well be less predictable linguistically and might go something as follows:

Student A: I think we need the present perfect here.

Student B: No, I don't think so. Look it says 'in 1997' - you use the past simple when the date is given.

Student A: Oh? Well, Ok. Are you sure about that?

Student B: Yes. I read about it in my grammar book.

Student A: Really? Which grammar book is that?

Student B: I forget the name; it's the one with the red cover.

Student A: I don't know that one. Mine's got a green cover.

Student B: Green? Yes, I've seen a green one. I was in the library yesterday. It was stupid?

Student A: What was?

Student B: The library, ha ha! - no, sorry - I meant the book was.

Although the example above is fictional, this type of exchange is common (see also Naomi Storch 2001). It also involves both 'meaning focused' and 'form focused' communication in as much as the two students are expressing their opinions on the uses of certain forms, but are not concerned with the forms they use to express these meanings. The criterion that students should express meanings without preoccupation with the forms used to express them is one of the principal tenets of 'Task Based Learning' as advocated by many adherents to this model - I hope the above exchange serves to illustrate the unpredictable nature of much discourse (particularly when discussing a gap-fill exercise), and, consequently, the linguistic features the teacher may decide to help the students notice (Obviously all but the most advanced of learners would be unlikely to use such accurate English as that in my example).

I offer this example as a genuine form of classroom interaction and, as such, a genuine form of interaction generally - most of the people I have come into contact with spent/have spent years of their lives in classrooms. This form of interaction has often been considered not 'genuine' by many ELT writers and practitioners.

Writers on Communicative Language Learning/Teaching have long placed emphasis on meaning driven classroom activity and have suggested that the perceived need for a linguistic form by a student will result in a firmer retention of that form once provided by the teacher or another source (for more on this argument see Wilkins 1976). But what of the student who completes the 'task' without perceiving any linguistic need (as in the discussion of what to take to the North Pole above)?

When does the teacher step in, or does he/she? And who determines what a task is, and what it isn't? Equally, what about the student who has come to the class because he or she wants to know about a grammatical form or the difference between some similar items of lexis? Does this student get a look in or is he/she engaged in a riddle-solving task because, like the doctor, the teacher knows best? ('Yes, I know you want to know about the present perfect Maria, but we are learning how to book railway tickets today') (Come back tomorrow?).

Rereading Byrne's 1976 'Teaching Oral English' recently I noticed that he does not give precedence of one 'P' over another in his Presentation, Practice, Production model. 'Production' could well precede 'Presentation' and 'Practice' for example.

If this progression were followed it would not be very different from many versions of TBL i.e.: task first, help with linguistic necessities, give them some restricted practice then back to the task. (I use the word 'restricted' deliberately as the same model could be described using Scrivener's Authentic, Restricted, Clarification (ARC) model in which he suggests that the ordering of 'A', 'R' or 'C' can, and should - depending on the situation in hand - be varied). I think Donn Byrne may have shared this view all those years ago. So, whence now, or from, TBL? Have we already been there a number of times? Are we setting out on the same journey again? (Not to mention Michael Lewis's OHE, or Leo Van Lier's AAA etc).

So, now to the task of painting the fence. A meaningless, onerous 'task' to Tom Sawyer became a coveted option for many of his friends. He felt he had nothing to gain from it personally, but when 'presented' to his friends they saw the benefits.

Perhaps he would have excelled as a language teacher had he only been a real person: he provided incredible motivation. Our students are real people and perhaps they too could gain by discourse on North Pole necessities if they knew what the task was all about - after all, it is not too likely that many of them will ever pack a rucksack and head off there. I am not advocating the traditionally accepted view of PPP here, more a 'let them know what you are doing' view to teachers.

More importantly: 'let them know why you are doing it' - their views may be less ELT fashionable than yours, but, most probably, equally as valid. And, if they know why they are engaged in a task - whether it be riddle solving, completing a gap-fill, or painting a fence - they might just gain a bit more from it.

4 Conclusion

So, now to the task of painting the fence. A meaningless, onerous 'task' to Tom Sawyer became a coveted option for many of his friends. He felt he had nothing to gain from it personally, but when 'presented' to his friends they saw the benefits. Perhaps he would have excelled as a language teacher had he only been a real person: he provided incredible motivation. Our students are real people and perhaps they too could gain by discourse on North Pole necessities if they knew what the task was all about - after all, it is not too likely that many of them will ever pack a rucksack and head off there. I am not advocating the traditionally accepted view of PPP here, more a 'let them know what you are doing' view to teachers.

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Exploring the Rich Tapestry of English Philology: Unraveling the Threads of Language Evolution

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Abstract: Furthermore, the article delves into the role of key figures in the history of English Philology, from the pioneering efforts of early lexicographers like Samuel Johnson to the groundbreaking linguistic theories of modern scholars such as Noam Chomsky. It explores the methodologies employed by Philology to analyze language evolution, including corpus linguistics, etymology, and comparative philology, highlighting the interdisciplinary nature of the field. Through close examination of literary texts, manuscripts, and linguistic artifacts, the article unravels the threads of language evolution, revealing the interconnectedness of past and present linguistic forms. It showcases the resilience and adaptability of English as it assimilates new words, concepts, and idioms from diverse linguistic traditions, while also preserving traces of its historical roots. Ultimately, this article celebrates the rich tapestry of English Philology as a vital discipline for understanding the complexities of language change and continuity. It underscores the importance of studying language evolution not only for scholarly pursuits but also for fostering cross-cultural understanding and appreciation in an increasingly interconnected world.

Key words: Pivotal historical moment, individual lives, linguistic traditions, assimilate, pioneering effort, linguistic influences, evolution, historical roots, methodologies

1 Introduction

English Philology stands as a venerable discipline at the intersection of history, linguistics, and literature, offering a captivating journey into the evolution of the English language. Rooted in the meticulous study of texts, manuscripts, and linguistic phenomena, Philology delves deep into the past to illuminate the intricate pathways of linguistic development. From the ancient epics of Old English to the digital vernacular of the twenty-first century, English Philology unveils the diverse layers of language, culture, and identity woven into the fabric of English literature. This comprehensive exploration seeks to unravel the threads of language evolution, tracing the historical trajectory of English Philology and its enduring relevance in contemporary scholarship.

2 Origins and Evolution of English Philology

The origins of English Philology can be traced back to the early scholars who sought to unravel the mysteries of language and its historical transformations. The term "Philology" derives from the Greek words "philos," meaning love, and "logos," meaning word or study. Thus, Philology encompasses the love and study of language, encompassing both linguistic and literary aspects [1, 231].

The study of philology provided the foundation for English Philology to flourish. Philology, which encompasses the analysis of written texts, grammar, and linguistic structures, emerged as a scholarly pursuit in ancient civilizations such as Greece, Rome, and India. It laid the groundwork for the systematic analysis of language and literature, paving the way for the development of disciplines such as linguistics, literary criticism, and textual scholarship.

In the context of English Philology, the discipline evolved alongside the English language itself. As English transformed from its Germanic origins into a global lingua franca, Philology embarked on a quest to trace the linguistic metamorphosis through the ages. The emergence of Old English literature marked a significant milestone in the development of English Philology, providing a rich corpus of texts for scholarly inquiry.

3 Old English: The Cradle of English Literature

The journey of English Philology begins with the rich corpus of Old English literature, which includes masterpieces such as "Beowulf," "The Dream of the Rood," and the works of Caedmon. These texts, often composed in the poetic form of alliterative verse, offer a glimpse into the cultural, religious, and social landscapes of early medieval England [2, 124].

Old English, also known as Anglo-Saxon, was spoken in England from the mid-5th century to the mid-12th century. It is the earliest form of the English language that is comprehensible to modern readers. Old English literature reflects the Germanic roots of the English language, with influences from Latin, Celtic, and Scandinavian languages.

Philology meticulously analyzes the linguistic features, vocabulary, and syntax of Old English texts to decipher their meaning and significance within the broader context of Anglo-Saxon society. They examine the poetic conventions, such as kennings and caesuras, that characterize Old English poetry.

4 Middle English: A Tapestry of Dialects and Influences

With the Norman Conquest of 1066, Middle English emerged as the dominant literary language in England, blending Anglo-Saxon roots with Norman French influences. The works of Geoffrey Chaucer, particularly "The Canterbury Tales," exemplify the linguistic diversity and literary experimentation of the Middle English period [3, 98].

Middle English literature reflects the linguistic evolution of English during the medieval period. It incorporates elements of French vocabulary and syntax, reflecting the cultural and political influence of the Norman conquerors. Middle English texts also feature regional dialects and linguistic variations, reflecting the linguistic diversity of medieval England.

English Philology delves into the regional dialects, linguistic borrowings, and poetic conventions of Middle English literature, shedding light on the dynamic evolution of the English language during this transformative era.

Philology examines the manuscript tradition of Middle English texts, tracing the transmission and reception of literary works in medieval England. They also explore the social and cultural context of Middle English literature, examining issues such as class, gender, and religion in medieval society.

5 Early Modern English: Shakespeare and the Renaissance

The Early Modern English period witnessed a resurgence of literary creativity and linguistic innovation, epitomized by the works of William Shakespeare, Christopher Marlowe, and John Milton. English Philology explores the linguistic complexities of Shakespearean drama, from the rhythm and meter of iambic pentameter to the lexical richness of coined words and idiomatic expressions [4,45].

Early Modern English, which was spoken from the late 15th century to the late 17th century, represents a transitional stage in the evolution of the English language. It saw the standardization of English grammar and spelling, as well as the expansion of English vocabulary through contact with other languages, particularly Latin and Greek.

By examining original manuscripts and textual variants, philologists unravel the nuances of Early Modern English syntax, semantics, and pragmatics, offering fresh insights into the enduring legacy of Shakespearean language. They explore the linguistic devices and rhetorical techniques employed by Early Modern writers, shedding light on the stylistic conventions of the period.

6 Modern English: Globalization and Linguistic Diversity

In the age of globalization, English Philology grapples with the ever-expanding boundaries of the English language, as it continues to evolve and adapt in diverse sociocultural contexts. From the rise of World English's to the emergence of digital communication, philologists explore the impact of globalization on language variation, standardization, and language contact phenomena.

By engaging with contemporary texts, media discourse, and digital communication platforms, English Philology remains at the forefront of linguistic inquiry, navigating the complex intersections of language, technology, and identity in the modern world. Philologists analyze the language of social media, advertising, and popular culture, tracing the diffusion of linguistic innovations and the emergence of new linguistic norms [5, 134].

7 The Role of English Philology in Linguistic Research

English Philology plays a crucial role in advancing our understanding of language structure, variation, and change. Philology employ a range of methodological approaches, from textual analysis to corpus linguistics, to investigate the linguistic features of English texts.

Textual analysis involves the close reading and interpretation of written texts to uncover their linguistic and literary properties. Philology examine the vocabulary, syntax, and discourse structure of texts, identifying patterns of language use and stylistic variation. They also analyze the historical context and cultural significance of texts, shedding light on the social and ideological dimensions of language.

Corpus linguistics involves the systematic analysis of large collections of text, known as corpora, to identify patterns of language use across different genres, registers, and varieties. Philology compile and annotate corpora of English texts, enabling quantitative analysis of linguistic phenomena such as word frequency, collocation, and syntactic variation.

English Philology also intersects with other subfields of linguistics, such as sociolinguistics, psycholinguistics, and historical linguistics [6, 112]. Philology collaborate with scholars from diverse disciplines to address research questions related to language acquisition, language change, and language policy.

8 English Philology and Literary Analysis

In addition to its linguistic focus, English Philology encompasses the study of literature and literary texts. Philology apply linguistic methods and theories to analyze the form, structure, and meaning of literary works, illuminating the interplay between language and literature.

English Philology also explores the historical and cultural context of literary works, examining the social, political, and intellectual currents that shaped the production and reception of literature. Philology consider issues such as authorship, audience, and genre, situating literary texts within broader literary traditions and movements.

By integrating linguistic and literary analysis, English Philology offers a comprehensive approach to the study of literature, enriching our understanding of the relationship between language and literary expression. Philology engage with a diverse range of literary genres and periods, from classical poetry to contemporary fiction, exploring the stylistic innovations and thematic concerns of literary texts [7, 164].

9 Applications of English Philology in Education and Beyond

English Philology has practical applications in education, language teaching, and cultural heritage preservation. Philology contribute to the development of language curricula, teaching materials, and assessment tools for language learners of all ages and proficiency levels.

In language teaching, English Philology provides insights into the structure, usage, and variation of English, helping educators design effective instructional strategies and activities. Philologists develop pedagogical resources, such as grammar guides, vocabulary lists, and pronunciation tutorials, to support language learners in their language acquisition journey [8, 54].

English Philology also plays a role in the preservation and promotion of cultural heritage, particularly in relation to endangered languages and minority dialects. Philology document and archive linguistic data from diverse linguistic communities, preserving linguistic diversity and promoting language revitalization efforts.

Beyond the classroom, English Philology informs public discourse and policymaking in areas such as language planning, language policy, and language rights. Philology advocate for linguistic diversity and multilingualism, highlighting the social, economic, and cultural benefits of linguistic pluralism.

10 Challenges and Future Directions in English Philology

English Philology faces several challenges and opportunities in the digital age. The proliferation of digital texts and online communication platforms has revolutionized the way we produce, disseminate, and analyze language data.

One challenge is the digitization and preservation of literary and linguistic resources. Philologists must adapt to new technologies and digital tools for text encoding, annotation, and analysis. They also face ethical and legal issues related to copyright, intellectual property rights, and data privacy.

Another challenge is the democratization of language data and the accessibility of linguistic resources. Philologists must address issues of data bias, representation, and inclusivity in their research and scholarship. They also need to engage with diverse linguistic communities and stakeholders to ensure that language research benefits society as a whole [8, 190].

Despite these challenges, English Philology continues to thrive as a vibrant and interdisciplinary field of study. Philologists are exploring new research topics and methodologies, from computational linguistics to cognitive poetics, pushing the boundaries of knowledge and innovation in language research.

11 Conclusion

English Philology serves as a beacon of scholarly inquiry, illuminating the intricate tapestry of English language and literature across the ages. From the ancient runes of Old English manuscripts to the digital vernacular of the twenty-first century, philologists unravel the threads of linguistic evolution with precision and passion. As we continue to explore the rich legacy of English Philology, we gain a deeper appreciation for the enduring power of language to shape our past, present, and future.

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Problems of socialization in preschool children

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Abstract: The article examines the problems of socialization in preschool-aged children, which represents a crucial stage in personality development. Key obstacles to successful socialization are identified, including a lack of parental communication, isolation from peers, the influence of digital technologies, excessive control or lack of attention, family conflicts, and difficulties adapting to social groups. Proposed solutions include active parental involvement, fostering social skills, limiting the use of gadgets, creating a supportive family environment, and providing psychological and pedagogical support. The article emphasizes the importance of addressing these challenges early to ensure children's harmonious development and successful integration into society.

Key words: Socialization, preschool children, parent-child interaction, peer relationships, digital technologies, family environment, emotional development.

1 Introduction

The socialization of preschool children is a critical process that shapes their ability to function effectively in society. During the early years of life, children undergo rapid development in various areas, including language acquisition, emotional regulation, cognitive abilities, and social skills. It is in these formative years that children begin to learn the essential values, norms, and behaviors that will guide their future interactions with others. Socialization is not just about learning to interact with peers, but also about understanding societal roles, developing empathy, and forming positive relationships with adults and peers alike. Preschool-aged children, typically between the ages of three and seven, are at a pivotal stage in their social development. This is a time when they begin to transition from the home environment, where they have been primarily cared for by family members, into a broader social environment, such as a kindergarten or daycare setting, where they are exposed to a variety of new experiences and social interactions. It is during this period that children are expected to learn important skills such as sharing, cooperation, conflict resolution, and the ability to express their emotions in socially appropriate ways. However, this process is not without challenges.

In this context, understanding the problems and barriers to the socialization of preschool children is crucial for both parents and educators. By identifying the challenges and exploring effective strategies for fostering healthy social development, we can ensure that children are equipped with the necessary skills to navigate and succeed in the increasingly complex and interconnected world. This article aims to explore the various factors influencing preschool children's socialization, identify the common challenges they face, and suggest practical solutions to support their social and emotional growth.

2 Features of Socialization in Preschool Children

Preschool age (from 3 to 7 years) is characterized by the intensive development of personality. During this period, children learn to interact with others, develop speech, master basic behavioral patterns, and begin to understand the rules governing social life. The main agents of socialization for preschoolers are:

- Family. Parents and close relatives play a primary role in shaping a child's behavior, values, and emotional stability.
- Kindergarten. Socialization occurs through interaction with peers, educators, and participation in group activities.

- Social environment. This includes contacts with family friends, neighbors, and other individuals outside the immediate family circle.

Despite the importance of this period, several factors may hinder proper socialization.

Main Problems of Socialization

1. Lack of Parental Interaction

Modern life often leads to parents spending insufficient time with their children. Work, household responsibilities, and the use of gadgets reduce the amount and quality of live communication. This can result in speech delays, emotional instability, and difficulties in interacting with others.

2. Isolation from Peers

Some children do not attend kindergarten or have limited contact with other children. This hinders the development of communication, cooperation, and conflict resolution skills, making it difficult for the child to establish social connections in the future.

3. Influence of Digital Technologies

From an early age, children actively use phones, tablets, and other gadgets. While technologies can be beneficial, excessive use decreases live communication, negatively affecting socialization skills, empathy, and understanding of others' emotions.

4. Overprotection or Lack of Attention

Some parents excessively control their child, limiting their independence and opportunities to form social connections. In other cases, children grow up in conditions of emotional or physical neglect, leading to difficulties in building trusting relationships.

5. Aggressive or Conflictual Family Environment

Conflicts between parents, lack of harmony, and even exposure to violence negatively impact a child's emotional state. Children in such environments may adopt destructive behavioral patterns, complicating their interactions with others.

6. Difficulty Adapting to Groups

In kindergartens, children often face challenges adapting: fear of new surroundings, rejection by peers, and tense relationships with educators. These factors can cause stress and slow the process of socialization.

3. Ways to Address the Problems of Socialization in Preschool Children

To ensure the successful socialization of preschool children, it is essential to recognize and address the various factors that may hinder their social development. Several strategies can be employed to overcome these challenges and support children's ability to form positive relationships, communicate effectively, and adapt to social settings. Below are some detailed solutions to the problems of socialization faced by preschoolers:

1. Active Parental Involvement

Parents play a fundamental role in the early socialization of their children. Active involvement in a child's life, especially during the preschool years, is crucial to building emotional security and a strong sense of self. By engaging in meaningful interactions such as reading together, having conversations, playing, and participating in activities, parents can enhance their child's social and emotional development.

Quality time: Set aside time each day for one-on-one interaction with the child, engaging in activities that foster emotional bonding, such as shared storytelling, problem-solving games, or simple discussions.

Positive role modeling: Parents should model positive behaviors like empathy, kindness, and respect in everyday interactions. Children are keen observers and often imitate the behavior they see at home.

2. Encouraging Play and Peer Interaction

Play is one of the most powerful tools for socialization during the preschool years. Through play, children learn to share, cooperate, negotiate, and manage conflicts—all vital social skills that will serve them throughout their lives.

Group play: Enroll children in group activities, such as playdates, team sports, or preschool clubs, where they can interact with peers and practice socializing in a structured setting. These interactions help children build friendships and learn the importance of teamwork.

Role-playing games: Encourage children to engage in imaginative and role-playing activities, which allow them to explore different social roles and scenarios, such as "playing house" or acting out different characters. This builds empathy and perspective-taking skills.

3. Reducing Dependence on Digital Devices

While digital technologies can be useful for educational purposes, excessive screen time can negatively impact a child's social and emotional development. Overreliance on gadgets may limit opportunities for face-to-face interaction, thereby stunting the development of communication skills and empathy.

Setting screen time limits: Create rules for limiting screen time, especially when it comes to passive activities like watching TV or playing video games. Encourage more interactive and physically engaging activities such as outdoor play, arts and crafts, or building games.

4. Creating a Supportive Family Environment

The home environment plays a significant role in a child's ability to socialize effectively. A stable, emotionally supportive, and conflict-free home allows children to feel secure, which in turn makes it easier for them to form positive relationships outside the home.

Emotional support: Parents should create an emotionally safe environment where children feel valued, understood, and supported. This enables children to develop confidence and the ability to express themselves openly.

5. Preparation for Kindergarten and Social Settings

Transitioning from home to a social environment like kindergarten can be challenging for many preschoolers. Preparing children for this transition can make the process smoother and less stressful.

Gradual introduction: Before starting kindergarten, gradually introduce children to the new environment. Spend time visiting the school, meeting the teachers, and familiarizing children with the classroom setting. This reduces anxiety and helps children feel more confident in new situations.

Social readiness skills: Teach children the basic social skills they will need in school, such as raising their hand, waiting their turn, and following simple instructions. Role-playing these behaviors can help children feel more comfortable when they are put into real-life situations.

4 Conclusion

The socialization of preschool children is a fundamental aspect of their overall development, laying the foundation for their ability to form meaningful relationships, adapt to new environments, and successfully integrate into society. While the process of socialization during early childhood can be fraught with challenges, such as limited parental interaction, peer isolation, and the overuse of digital technologies, these obstacles can be mitigated through targeted strategies and a supportive environment.

Active parental involvement, encouraging peer interaction through play, limiting screen time, and fostering a positive and emotionally supportive family atmosphere are all critical factors in promoting healthy socialization. Additionally, preparing children for transitions, such as entering kindergarten, and providing professional support when needed can help ensure that children develop the necessary skills for effective communication, empathy, and conflict resolution.

Ultimately, by addressing these issues early and offering tailored support, we can ensure that preschool children are equipped with the emotional intelligence and social skills needed to navigate the complexities of the modern world. A strong foundation of socialization during these formative years not only enhances children's happiness and well-being but also contributes to their long-term success in both personal and professional spheres.

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Effective Methods of Developing Writing Skills through Reading

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Abstract: It is possible for the student to acquire basic language skills that will be used throughout his / her life, with the first teaching process of reading and writing planned correctly and effectively. Writing has always been a painful activity for learners. The fact that the duration of the course is limited and that other activities focused more take place in the language teaching puts this skill to the background. The excuse that the students are not well-equipped to do some writing activities can be counted as the reasons given by the related course teachers. Hence, second language learners constantly struggle to achieve language proficiency; therefore, they find it hard to produce written texts. However, reading materials will set a good model for which they can transfer into their own writing. The goal of this study is to put forward writing skills.

Key words: Reading, Model, Structure, Language, Comprehension, Writing Skills

1 Introduction

The aim of today's foreign language teaching is to enable the learner to use the target language correctly and communicate effectively. In other words, the aim is to help the acquisition and development of comprehension and expression skills. In accomplishing this goal, the knowledge areas necessary for learning a foreign language can be developed efficiently through various teaching materials and activities used in the classroom. One of the instructional materials that can be used in this context is the literary genres that are thought to enrich the classroom environment with various features. These genres, which have been widely used in language teaching since the end of the twentieth century, are thought to contribute to the development of basic language skills. As a matter of fact, the fact that there is a close relationship between language and literary genres reveals that these types will contribute to the development of learner's language skills by reflecting various features and vocabulary of foreign language.

2 Methods

The use of literary genres as a teaching technique in the context of foreign language learning and teaching is also very useful for teaching knowledge topics such as vocabulary, grammar and pronunciation in addition to skill development. In addition to the contributions of literary genres, which are loaded with many functions in foreign language teaching, the fact that they reflect the social and functional aspects of language increases the importance of these teaching materials. While these genres present different aspects of language to the learner, they enable the learner to encounter the actual use of the language in different situations and environments, gain linguistic and cultural awareness, and they direct him to use the foreign language correctly.

3 Result

In foreign language teaching, writing skill, which is seen as the last stage of language skills and thought to be the most difficult skill, requires the use of foreign language in writing correctly and in accordance with the rules (Demirel, 2016). This skill can only be improved by practice. It is thought that reading, which is thought to

be combined with writing in practice, will improve the writing skill by providing development of thinking. As Öz (2011) states, “writing skills are directly related to reading skills.” It is aimed that learners in foreign language teaching actively use the information they have gained in the classroom with writing activities and express their thoughts in a foreign language in writing (Güzel & Barın, 2013). These goals can be achieved through various writing activities.

4 Discussion

Demonstrating writing proficiency relies on language proficiency in that language. Without language proficiency students cannot achieve in foreign language learning. Reading is a useful learning tool that can close this gap. Written texts are useful language input sources. Reading, as being one of the four basic skills, is an activity that requires understanding. “Reading is the activity of seeing, perceiving, comprehending and making sense of all words, sentences or writing with all its elements (Durmuş, 2013). In other words, “Reading is the activity of deriving meaning from written symbols through the collaboration of cognitive behaviors and psychomotor skills” (Demirel, 2016). This activity is carried out with the coordination of mind and eye and the meaning of written expressions. Reading is one of the most important sources of information (Fletcher & Portalupi, 2001). One of the important objectives of reading is to enable the foreign learner to understand and interpret the written text in the target language correctly (Güzel & Barın, 2013). Text, meaningful structures consisting of consecutive sentences, words and visuals. All kinds of information, feelings and thoughts are placed in this structure in a logical order (Gargiulo, 2007). According to Elhabiri (2012), the definition of the text is made in different ways according to daily and scientific language. It is a written whole consisting of multiple sentences as it is understood from the word "text" in everyday language. Within the framework of linguistics, not only written words but also oral words are called text.

However, during language acquisition, students regard writing as the most difficult skill. This may be due to the lack of clarity of the objectives and expectations of the teacher concerned or the curriculum prepared. One issue that most foreign language teachers are mistaken about the concept of writing is to expect students to write a complete essay individually without any help. However, when the foreign language teaching process is taken into consideration, it cannot be observed. In fact, the process is the same in teaching mother tongue. Depending on the level of the student, activities such as writing a sentence, a paragraph, a list or note-taking can also be considered as a writing activity in the process followed. (Storch, 2005). Therefore, it is known that activities to gain writing skills have many benefits in language learning and teaching process.

As stated in Akpınar's (2007) study, writing skills are very important in terms of revealing the weak points of the students and guiding them on this issue. In general, it is possible to state that an effective writing lesson or any writing activity has many consequences for foreign language teachers to deal. In short, writing skills are thought to help achieve the following objectives:

- Reinforcing the structures or words taught,
- Creative thinking of students,
- Determining students' levels,
- Seeing the learning process more clearly,
- Teaching punctuation marks,
- Improving students' language skills,
- Better learning of other skills,
- Transforming students' competence into performance.

5 Acknowledgements

In the classroom environment where foreign language teaching is carried out, reading and writing skills in that language can only develop as long as the practices and exercises that attract the attention of the students are performed. In this context, reading skills can be improved by reading practice, and writing skills can be improved by writing practice. These practices include some activities that should be done before, during and after the main activity. Story as being one of the literary genres written in the target language for the development of reading skills is also very appropriate to use the story and similar resources can be used because it is short and more appropriate for classroom environment.

6 Conclusions

Generally speaking, the aim of today's foreign language teaching is to enable the learners to acquire high-level language skills such as creative and critical thinking, communication, using the target language correctly, including skills such as understanding, interpreting and explaining what they read in the target language. In this context, basic language skills are discussed in four groups as reading, writing, speaking and listening. Foreign language teaching is also a combination of these skills in an interactive way. Reading and writing skills are internal activities that do not require mutual communication. It is stated that these two skills are interdependent, complementary and contribute to the development of each other. As Kuta (2008) points out, reading and writing are interdependent processes that improve each other reciprocally. If one process is neglected, the other is damaged. Especially reading activities contribute to the development of writing skills by providing input for writing activities while contributing to the development of reading skills at the same time.

2 Author Contributions

Authors' works were significant in the development of the theoretical framework and provided support in data collection. The article was conducted a thorough review of the final manuscript, played a role in the conceptual development and made valuable additions. All the used works of authors made substantial contributions to the article and have given their approval for the submitted version.

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Enhancing the Vocabulary Development through Short Stories

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Abstract: Numerous studies have demonstrated the many benefits of employing short stories in language instruction, including real content, cultural enrichment, language advancement, and personal development. A short tale is one of the most suitable literary forms to utilize in a language course. This study was conducted to investigate enhancing vocabulary development through short stories. Numerous research studies indicate that using short stories to teach vocabulary has a favorable impact. They find that short stories are engaging resources for vocabulary growth. It is advised to utilize short stories to help kids expand their vocabulary in light of the findings.

Key words: numerous, real content, cultural enrichment, language advancement, personal development, utilize, favorable.

1 Introduction

Teaching Vocabulary is an essential component of learning the English language since it is the primary means of communication. It will be hard for the pupils to converse with each other if they have no vocabulary. In a similar vein, Vocabulary is crucial to learning English. Consequently, gaining a large vocabulary is essential to improving one's reading and communication abilities. Vocabulary can be used by students while they read, write, speak, and listen. Both directly and indirectly, students acquire vocabulary. If they are proficient in vocabulary, they can express their views and understand those of others [6]. Teaching vocabulary entails introducing new knowledge into the mental lexicon system. Given the significance of vocabulary in both language acquisition and communication, any language teaching program must assist students in gaining a broad vocabulary [5]. Furthermore, learning vocabulary is thought to be a challenging endeavor for individuals learning a foreign language [3]. Vocabulary instruction be included in language instruction. Most EFL students struggle with a lack of vocabulary and become irritated when they can't find enough words to explain what they're thinking or when they don't understand the meaning of important vocabulary words in a passage. As a result, they quickly stop speaking, writing, or reading comprehension because they find it to be so difficult, demanding, and tiresome.

2 Methods

Telling short stories can be a highly useful tool for expanding one's vocabulary and improving one's foreign language skills. Using short stories to teach vocabulary gives students a wide comprehension of the new words they encounter in the stories. For learners, the process of learning English is engaging and entertaining thanks to short stories. The reader is then entertained by the short story since it reveals the resolution of the tale. Thus, this is piquing the reader's interest in reading the narrative. Because this piques students' interest in reading stories, the teacher must select appropriate stories for the class to use. Choosing stories that pique students' interests is crucial to increasing their learning. Instructors must possess creativity and the ability to make the subject matter understandable and engaging for the pupils [4]. One strategy to help someone learn English more fluently is to teach them vocabulary. The following steps should be followed to use the short tale as a teaching tool:

- The instructor describes the short story's typical opening, which is something like "Once upon a time" or "One day."
- The instructor gave a brief overview of the story's characters by stating their names.
- The teacher and the pupils talk about the location and time of the short story's setting.

- The pupils follow the teacher as they speak the names of the characters and the important terms.
- By posing a question to the student, the teacher and students go over the major plot of the short tale section by section.
- The instructor presents the short story's resolution.
- The instructor asks the class about the story's content or requests that they tell it in their own words to wrap up the lesson.

3 Result

It is crucial to identify strategies to expand their vocabulary to help children enjoy language learning tasks and prevent readily developed frustration. The most helpful vocabulary is those that are necessary for all English language learners, regardless of whether they are using it in formal or casual contexts and for speaking, listening, reading, or writing. Second, the instructor ought to give vocabulary the attention it deserves. This principle addresses the best ways to instruct and acquire knowledge for the students. Educators must distinguish between the treatment of high-frequency words and low-frequency terms. Thirdly, throughout all four-course strands, the instructor should focus on high-frequency words. It is necessary to employ high-frequency language throughout the majority of a course. It should be given conscious consideration in instruction and research, and it should be applied to convey ideas through speaking, listening, reading, and writing. Easy access to high-frequency language is also necessary for a routine that is both productive and receptive. Fourth, educators ought to help students reflect on and take ownership of their education. This is a crucial idea that ought to guide decision-making and instruction.

4 Discussion

Short stories are brief texts that can typically be read quickly, which piques students' interest in learning the language. A short story is a type of fiction that is typically written in prose. A short tale is a fictional work of writing that is shorter than a novel, and it will pique kids' interest in reading. One type of media that is used to entertain people is the short narrative. English has piqued the student's interest thanks to short stories. Short stories are usually written in a shorter narrative style and prose than novels. The short story is read aloud in one sitting because it is narrative fiction. A short story is conventionally described as a prose narrative that is at least 2000 words long. A short story can help students become better readers and expand their vocabulary. Pupils' English language skills can be enhanced by reading short stories. Among other experts, short stories can make studying easier and more enjoyable for pupils. For learners, short stories provide an engaging and appealing process [1]. The goal of expanding one's vocabulary and learning a foreign language can be accomplished in large part by reading short stories. Because short stories contain psychological elements, they can be a very powerful tool for vocabulary development. Through context, stories enable readers to deduce meaning and make educated guesses about what might happen next. Additionally, short stories aid in the student's acquisition of new vocabulary by allowing them to utilize it in context and in discourse. A short story is a literary piece that is engaging to read and discuss. Poetry, short stories, fairy tales, folklore, films, fables, anecdotes, and songs are examples of literary works that contain short stories. As we all know, short stories are meant to be enjoyable. But the short stories are about other texts as well as narrative texts. Students who read a lot are said to have a large vocabulary [2]. Short stories are an excellent way for teachers to introduce terminology to their students and help them construct various contexts in which they can communicate, exchange ideas, and express themselves.

5 Acknowledgments

Based on the explanation above the short story has many positive impacts on student's knowledge in the language field. Focusing on the improvement of vocabularies. It shows a good impact on the other student's language skills as well. The enrichment of vocabulary helps students to be able to communicate easily and fluently, to be more understanding in reading a certain text, to be able to write with the various words they know, and also to adjust them to understand a story based on listening context. Selecting a story based on student interest has become a challenge for the teacher to anticipate the student's boredom during the learning effective literary work to teach language skills because the content of the text provides a student the opportunity to explore various words that are easy to understand. Besides, it also lets the student know about the structure of the sentences and also adjusts students to understand the variety of vocabulary based on the context. Despite the many advantages that have been clarified by several studies, it suggested further research to do an experiment based on the level of student proficiency. To measure the effectiveness of the short story, it would be better if the teaching process classified the students whether they are in the level of beginner, intermediate, or advanced level. Besides, it also makes the teacher easy to select a text based on their level of ability and fluency.

6 Conclusion

It is clear from the description above that the short narrative has a significant positive influence on students' language proficiency, concentrating on expanding vocabulary. It also demonstrates a positive effect on the language proficiency of the other students. Expanding their vocabulary can aid kids in communicating more effectively and fluently, reading a book with more comprehension, writing with a wider range of words, and adapting their understanding of stories to fit the contexts in which they are heard. To anticipate the students' ennui during the learning process, teachers now face difficulty when choosing a story based on student interest.

Author Contributions

The purpose of this study was to increase the vocabulary of the pupils using a narrative text as the source material. According to the aforementioned claim, the researcher came to the conclusion that short stories aid in students' learning development because they are engaging and provide the reader with more enjoyment. The study demonstrates the significance of reading short stories for the acquisition of language abilities, particularly vocabulary, and how they can serve as effective means of contextualizing and introducing new languages. Short stories are a useful tool for EFL vocabulary learning.

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Mining waste - source of environmental pollution

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Abstract: In this article mining wastes and their negative impact are considered. The main wastes and tailing ponds of the mining industry located on the territory of Kyrgyzstan are the wastes of mining enterprises since the times of the Soviet Union. At present, the problems of these tailings are of regional and global nature. The aim of the study is to give a geo-ecological assessment of this problem.

Key words: waste, tailings, mining, mining industry, geoecology, pollution of nature, uranium, ore, etc.

1 Introduction

Most of the territory of Kyrgyzstan is located at an altitude of more than 2500 m above sea level. The territory below 1500 m is only 1/8 of the country's territory. Permafrost covers 4% of the country's area (8,000 km²) and stores 650 billion cubic metres of fresh water. Also, the subsoil of the mountains of Kyrgyzstan is rich in various mineral resources, and their exploitation makes a significant contribution to the economic development of the country. For example, gold production alone accounts for 11 per cent of the country's GDP, 40 per cent of industry and 48 per cent of exports.

However, in accordance with the goal of sustainable development, it is necessary to take into account not only the economic side of the problem, but also the environmental side.

As we know, it is necessary to emphasise that all mining operations are harmful industrial facilities. In particular, mining wastes containing various toxic and radioactive substances are very dangerous for the environment. In general, as a result of all activities related to mining (exploration - extraction - processing, metallurgical processing, etc.), a large amount of rocks and slags generated during production are excavated and accumulated on the surface of the earth.

2 Relevance of the problems and research materials

In addition, the current stage of development of the mining industry is due to the fact that the amount of mineral-rich ores is decreasing and the technology of extraction of valuable minerals is gradually improving (more precisely, valuable minerals are extracted as environmentally friendly). and if possible with the help of new technologies). This process increases the number of storage facilities for waste treatment.

One of the most dangerous environmental problems of Kyrgyzstan, as well as other Central Asian countries, began with the mining and production of uranium and toxic chemical elements (antimony, silicon, vanadium and nickel).

Today Kyrgyzstan is one of the most environmentally dangerous regions of the planet in terms of radioactive poisoning. In a relatively small territory of the country, there are 49 uranium waste storage sites and 80 accumulation sites of processed rock. In these places 70 million m³ of highly toxic radioactive waste is buried, which corresponds to 14 m³ for each inhabitant of the republic [1]. Depending on the type and concentration of the mined ores, these waste repositories contain various fine radionuclides, heavy metal compounds harmful to health, and toxic substances used as reagents in mineral extraction. The latter include cyanides, acids, sulphates, nitrates and others.

Currently, the largest waste storage facility in the country is the Kumtor cyanide waste storage facility with a total design volume of 100 million m³ ha. The fact that these Kumtor waste storage facilities are located in the headwaters of the Naryn River and in the glacier zone creates a very dangerous situation.

Waste metals such as antimony and mercury are disposed of in sludge pits and slag ponds. However, the amount of waste from sorting antimony and mercury is relatively small compared to other mining operations. For example, the volume of accumulated waste at the Aidarken and Kadamjai plants is 15 million m³. They also occupy many territories and damage the environment to a certain extent.

Large amounts of such anthropogenic wastes on the earth surface are located in some regions of the country (Mailuu-Suu, Sumsar, Kan, Kadamzhai, Ak-Tuz, etc.) have created an extremely dangerous environmental situation at the regional level [2].

About groundwater contamination in the area of Kara-Balta mine tailings dump location (Kara-Balta) The analyses carried out showed that the area of contaminated water extended up to 15 km and the contamination was very intense and persistent. It was also known that groundwater contamination had moved towards the city and low-lying settlements [3]. Alarming, groundwater and groundwater contamination has led to a reduction in uranium mining and continues unabated, even as the amount of waste in waste storage facilities decreases.

A critical geo-ecological situation has developed in the regions where most mining enterprises operate. Here the most acute problem is the pollution of nature and deterioration of human health in large settlements [2].

Forced storage of a huge amount of waste, its removal, transportation, neutralisation, storage, burial requires huge financial costs, alienates territories for their disposal, and disturbs the ecology as a whole [4].

The majority of waste storage facilities in Kyrgyzstan are located in the basins of the Naryn, Mailuu-Suu and Chui rivers, so they are transboundary in nature. Out of 36 waste storage facilities, 31 contain radioactive waste, including 28 direct uranium production wastes (total volume 8.2 million m³), 3 thorium-containing polymetal production wastes. Non-ferrous metal and chemical production waste in 5 landfills (5.15 million m³). Waste from the former lead-zinc plant is stored in 3 waste repositories in Sumsar. Here, according to the Ministry of Health and Social Welfare, the amount of cadmium exceeds the norm 320 times and manganese 9 times [5].

The total exposure power of each uranium waste repository is 30-100 thousand $\mu\text{R/s}$. And in the upper part of waste repositories it ranges from 27 to 60 $\mu\text{R/s}$, in some places this indicator reaches 600-1000 $\mu\text{R/s}$, exceeding the MPC by 20-50 times. Thus, in general, artificial gamma radiation in these zones is possible. Thus, the annual radiation rate is 5 times more per person [6].

Long-term protection measures against various natural phenomena (landslides, heavy rainfall, floods and inundations) were not provided during the construction of these waste storage facilities. In addition, no sanitary protection zones were organised to protect settlements. As a result, the territories of the republics of Kyrgyzstan, Kazakhstan, Tajikistan and Uzbekistan, where more than 5 million people live, remain in acute environmental danger [7].

3 Conclusion

In general, the following factors determine the emergence of the crisis situation in the region:

- mining extracts rocks from the lower layer of the earth's crust to the surface, and toxic zinc, lead, manganese, sometimes considered particularly toxic;

- mercury, arsenic, cadmium, and easily soluble or completely insoluble minerals are also extracted from it. As these rocks undergo the process of destruction, the volume or surface area increases by a factor of 3-10 and accumulates as waste at the earth's surface, and the filtration coefficient increases by a factor of 100-120;
- as mentioned above, the surface area and filtration coefficient increased several times, the waste rock poor in composition (valuable components are separated) becomes more convenient for precipitation and runoff. It is easily washed away and drains away together with ground and surface waters;
- as a result of the above processes there is intensive pollution of ground and surface waters;
- in addition to polluting the hydrosphere, surface residues are spread by the wind and pollute the environment with dust. Thus, toxic compounds in the form of dust harm the soil and plants.

The most dangerous part of mining waste accumulating on the surface is that its harmful effects last for a very long time. For example, according to geochemical monitoring at Canada's Elliot Lake mine, mine tailings have been contaminating groundwater for 120 years. No one knows how long these contaminations will last.

According to calculations by the World Bank, the TACIS project and Kyrgyz experts, the country will need \$24 million to solve the problems with radioactive waste storage facilities. Firstly, it is difficult for the current budget of the country to allocate such an amount at once. Secondly, we believe that solving these issues, which have a regional scale, concerns not only Kyrgyzstan. This is due to the fact that almost all of the current waste storage sites are remnants of mines mined during the former Soviet Union. Also, the mined mineral resources were used in the interests of the countries that were part of the Soviet Union. Therefore, this should be a problem of the immediate neighbourhood.

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