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CONSTRUCTION AND ARCHITECTURE

ДОСЛІДЖЕННЯ ТРУДОМІСТКОСТІ ОСНОВНИХ МОНТАЖНИХ ОПЕРАЦІЙ ПРИ ЗВЕДЕННІ ВЕЛИКОПРОГОНОВИХ ПОКРИТТІВ

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RESEARCHING OF THE LABOR INTENSITY OF THE MAIN INSTALLATION OPERATIONS DURING THE CONSTRUCTION OF LARGE-SPAN COATINGS

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Анотація

Для виконання досліджень трудомісткості основних монтажних процесів при зведенні великопрогонних залізобетонних та металевих покриттів були відібрані шість реалізованих проектів. Були проаналізовані стадії передпідйомного укрупнення покриттів та підйому покриттів на проектні відмітки. Отримані результати досліджень підтверджують, що найбільш ефективні конструктивно-технологічними рішення – це варіанти примусового підйому покриттів з використанням вертикальних напрямних чи підрозувальних колон.

Abstracts

For researching of the labor intensity of the main installation processes during the construction of large-span reinforced concrete and metal coatings, six implemented projects were selected. The stages of pre-lift enlargement of coatings and lifting of coatings to design elevations were analyzed. The obtained results of research confirm that the most effective structural and technological solutions are options for forced lifting of coatings using vertical guides or growing columns.

Ключові слова: конструктивно-технологічні рішення, підйомні модулі, великопрогони покриття, методи підтягування та виштовхування.

Keywords: structural and technological solutions, lifting modules, large-span coatings, methods of pulling and pushing.

Актуальність проблеми

З усього комплексу операцій по утворенню покриттів великорозмірних промислових та цивільних об'єктів найбільш складними є операції по зведенню великопрогонних покриттів. Диференційний підхід до монтажних операцій по зведенню покриттів на всіх етапах зведення, починаючи від доставки окремих складових покриттів майбутніх покриттів на будівельний майданчик до операцій по остаточному закріпленню сегментів великопрогонних покриттів на проектних відмітках дозволяє проаналізувати трудомісткість всіх операцій по складуванню, передпідйомному укрупненню, переміщенню покриттів на проектну висоту та остаточне закріплення покрівельних конструкцій в проектному положенні [1]. Визначення найбільш трудомістких монтажних операцій дозволяє проектувальникам зосередити свої зусилля саме на вдосконаленні цих операцій з метою випрацювання більш технологічних конструктивно-технологічних рішень по зведенню великопрогонних покриттів

промислових та цивільних об'єктів, в першу чергу, в умовах щільної забудови.

Аналіз публікацій

Аналізом особливостей зведення великопрогонних залізобетонних та металевих покриттів займалися провідні вітчизняні та закордонні вчені. Серед українських вчених слід відзначити науковий внесок Федоренка П.П. [2], Назаренка І.І. [3], Нижніковського Г.С. [4], Черненка В.К. [5], Тонкачєєва Г.М. [6], Осипова О.Ф. [7]. Серед закордонних вчених аналізом технологічних рішень по зведенню покриттів з використанням методів вільного та примусового підйому займалися Rowinski, L. [8], Engel, H. [9], Friedman, D. [10]. Сучасні технології використання безкранових технологій при зведенні покриттів, також, представлені в звітах концернів FAGOLI ASOTECH [11], SARENS GROUP [12]. В наукових працях вказаних авторів та звітах виробничих концернів, наряду з детальним відображенням технологічної послідовності методів монтажу покриттів, не приводиться аналіз трудомісткості

складових процесів зведення великопрогонових покриттів.

Мета роботи

В справжній роботі за мету ставилось виконання досліджень трудомісткості монтажних операцій по складуванню, передпідйомному укрупненню покрівельних конструкцій, підйому сегментів покриттів на проектну висоту та остаточному закріпленню великопрогонових покриттів в проектному положенні. Визначенні в результаті досліджень, найбільш трудомісткі складові процесів зведення, служать орієнтиром для вдосконалення відомих та розробки новітніх конструктивно-технологічних рішень зведення великопрогонових покриттів.

Виклад основного матеріалу досліджень

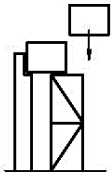
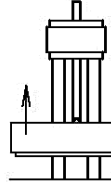
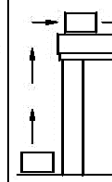
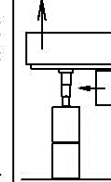
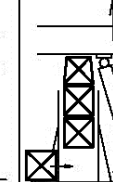
Для виконання комплексного дослідження конструктивно-технологічних особливостей зведення найбільш складних конструктивних елементів ВБ, в саме залізобетонних та металевих ВП, реалізовані проекти відбирались за умови передпідйомного часткового або повного укрупнення конструкцій покриттів на низьких стендах методом

вільного підйому за допомогою самохідних кранів та подальшого переміщення сегментів покриттів на проектну висоту методом вільного підйому кранами або методами примусового підйому (переміщення) підтягуванням чи виштовхуванням з використанням гідропідйомників (109). Згідно з технологічними особливостями, притаманними окремим варіантам зведення, були відібрані шість реалізованих проектів, які сформували чотири групи ММ. Конструктивно-технологічні характеристики (КХТ) та принципові схеми підйому досліджуємих варіантів зведення великопрогонових покриттів представлені в Таб.1.

Технологічні особливості досліджуємих варіантів зведення наступні: *Варіант 1 (група ММ 1)* – укрупнення сегментів покриття на низьких стелажах за допомогою кранів та вільний підйом сегментів покриття підтягуванням за допомогою стрілових самохідних кранів на проектну висоту з наступним приєднанням до раніш змонтованих конструктивних сегментів блоку покриття у горизонтальній площині з використанням монтажних опор [13].

Таб.1

Конструктивно-технологічні характеристики та принципові схеми підйому (переміщення) досліджуємих варіантів зведення великопрогонових покриттів

Конструктивно - технологічні характеристики досліджуємих варіантів зведення покриттів	Одиниця вимірювання	Принципові схеми підйому (переміщення) покриттів в процесі зведення					
		 ММ 1 В 1	 ММ 2 В 2	 ММ 3 В 3	 ММ 3 В 4	 ММ 4 В 5	 ММ 4 В 6
Загальна довжина покриття	М	180,0	96,0	126,0	47,2	58,8	144,0
Загальна ширина покриття	М	96,0	54,0	84,0	37,5	101,5	48,0
Загальна висота покриття	М	8,6	3,8	1,6	3,6	4,1	6,7
Площа змонтованої конструкції покриття	М ²	17 280,0	5 184,0	10 584,0	1 770,0	5 968,2	6 912,0
Повна маса змонтованої покрівельної конструкції	ТН.	4 018	1 200	3 080	1 009	4 200	1 100
Висота проектного закріплення покриття	М	28,0	34,0	15,4	19,2	24,4	24,0
Загальний час всіх складових процесу зведення покриття	ГОД	5 080,9	565,8	1 527,2	1 026,0	623,2	533,0
Передпідйомне укрупнення покриття - коефіцієнт "N"	—	0,078	1,000	0,033	0,050	1,000	1,000

Варіант 2 (група ММ 2) - утворення конструктивно-технологічного блоку покриття 100% готовності на стелажах за допомогою кранів та примусовий підйом підтягуванням з використанням вертикальних напрямних та гідравлічних підйомників тягнучого типу, змонтованих на оголовках колон [3].

Варіант 3 (група ММ 3) - укрупнення сегментів покриття на низьких стендах за допомогою кранів та примусове переміщення підтягуванням фрагментів покриття з використанням гідравлічних підйомників тягнучого типу та напрямних, змонтованих в похилих і горизонтальних площинах [14, с.163 – 164].

Варіант 4 (група ММ 3) - укрупнення сегментів покриття на низьких стендах за допомогою кранів, вільний підйом укрупнених сегментів покриття за допомогою кранів на проектну висоту та примусове переміщення сегментів покриття підтягуванням по напрямних в горизонтальній площині [15].

Варіант 5 (група ММ 4), – утворення монолітного з/б ВП блоку покриття 100% готовності на рівні фундаментів за допомогою кранів та примусове вертикальне переміщення виштовхуванням блоку покриття з почерговим спіранням ригелів покриття на гідропідйомники та оголовки підрозувальних колон[8, с. 20 – 22].. *Варіант 6 (група ММ4)* - утворення конструктивно-технологічного блоку покриття 100% готовності на стендах за допомогою кранів та примусове переміщення блоку покриття виштовхуванням зі спіранням ригелів покриття на оголовки стволів підйомників, нижче підрозування яких виконують гідравлічні підйомники, попередньо закріпленні на фундаментних плитах [3].

Для провадження порівняльного аналізу ефективності конструктивно-технологічних рішень, використовуваних при зведенні ВП, були виконані розрахунки розподілу трудомісткості основних монтажних операцій для кожного реалізованого проекту. Для цього, згідно класифікації Гребінника Р.А. [16, с.27 – 35] складові монтажних процесів були розділені до трьох основних груп – транспортування «А», підготовчі роботи «В» та монтажні

роботи «С». Розподіл трудомісткості між основними монтажними операціями $A_1 \div A_3, B_1 \div B_8, C_1 \div C_7$, які формують монтажні процеси А, В, С, розраховувався за формулою:

$$P_i' = \frac{P_i}{\sum_{i=1}^n P_i} \times 100 (\%)$$

де P_i' - процентна складова трудомісткості i -ї монтажної операції (%),

P_i - трудомісткість i -ї монтажної операції (люд. $\times$ год.⁻¹),

$\sum_{i=1}^n P_i$ - сумарна трудомісткість всіх монтажних операцій (люд. $\times$ год.⁻¹)

Розраховані значення P_i' приведені у вигляді гістограм на Рис.1. Також, в Таб. 1 міститься інформація по ступеню передпідйомного укрупнення сегментів покриттів, яка характеризується коефіцієнт передпідйомного укрупнення покриття

$$N_i : N_i = \frac{F_i}{\sum_{i=1}^n F_i} (-)$$

де N_i - коефіцієнт передпідйомного укрупнення покриття

(-), F_i - площа i -го піднімаемого укрупненого сегменту покриття (м²),

$\sum_{i=1}^n F_i$ - площа всіх піднімаемий укрупнених сегментів покриття (м²)

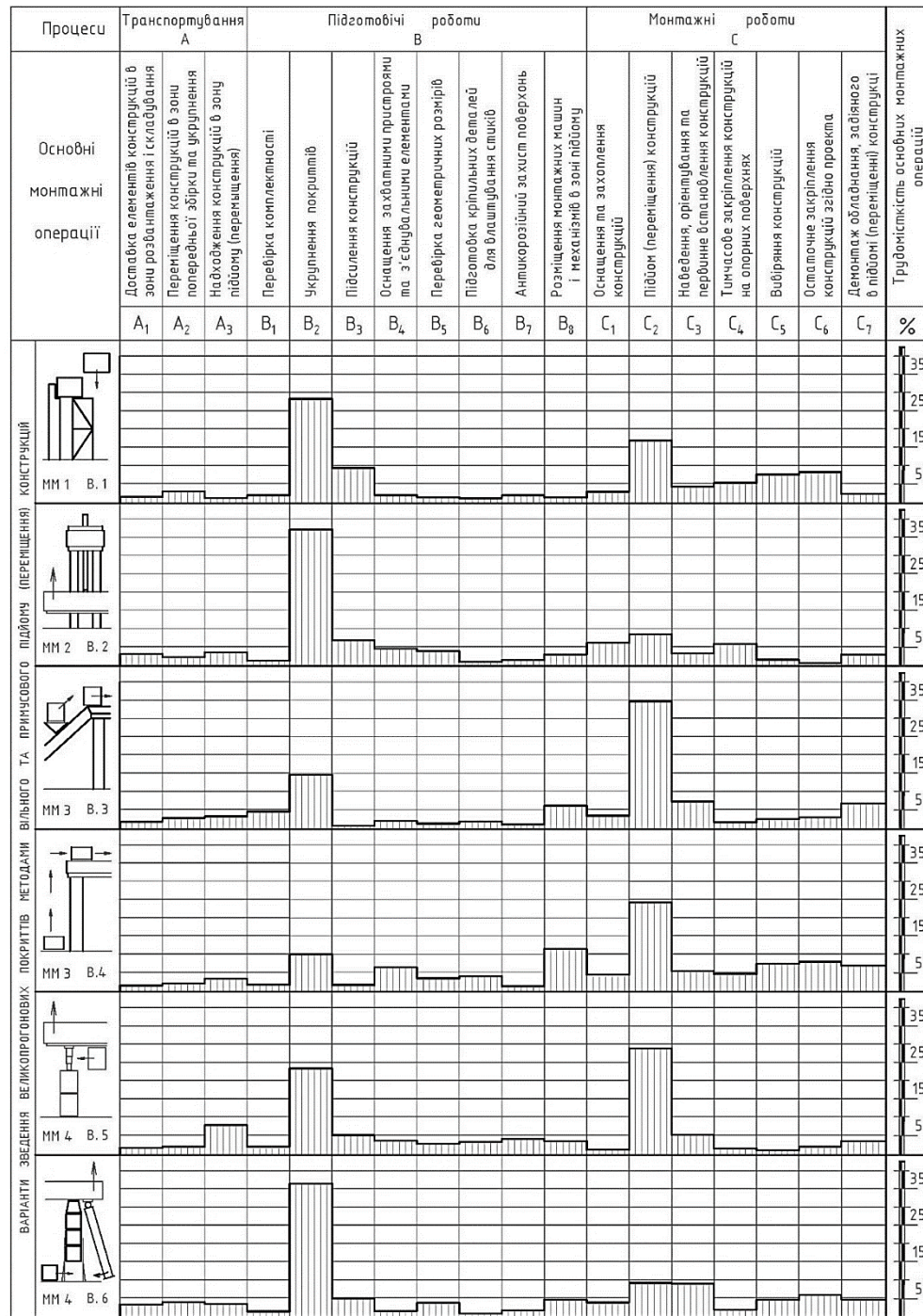


Рис.1 Гістограми процентних складових трудомісткості монтажних операцій при зведенні великопрогонових покриттів згідно монтажних варіантів В1 ÷ В6

Для розрахунків процентної складової трудомісткості, окрім даних КТХ зведення покриттів згідно монтажних варіантів 1 ÷ 6, використовувались матеріали інституту «Укрспецмонтажпроект» [17] та ДСТУ «Металеві конструкції» [18]. Отримані результати розрахунків P_i' дозволяють виконати порівняльний аналіз варіантів зведення покриттів В1 ÷ В6.

Так, для складової «Транспортування А₁» монтажного процесу сумарні показники P_i' для Варіантів 1 ÷ 6 знаходяться в діапазоні:

$$6,9 \leq \sum A_1 \div A_3 \leq 11,9 (\%)$$

- максимальний показник P_i' , а саме, при доставці конструкцій в зону підйому А₂ = 6,8 (%) характерний для варіанту В5 (ММ4) – примусове переміщення покриття зі спиранням на колони, підрошуванні зверху. Висока трудомісткість операцій А₂ для В5 обумовлена поелементною доставкою 728 основних і 126 допоміжних монтажних внутрішніх та зовнішніх сегментів збірних колон з рівня фундаментів на монтажні площадки, розташовані в зоні верхнього підрошування [19]. Послідовність подачі основних та допоміжних конструктивних сегментів в зону підрошування показані на Рис.2.

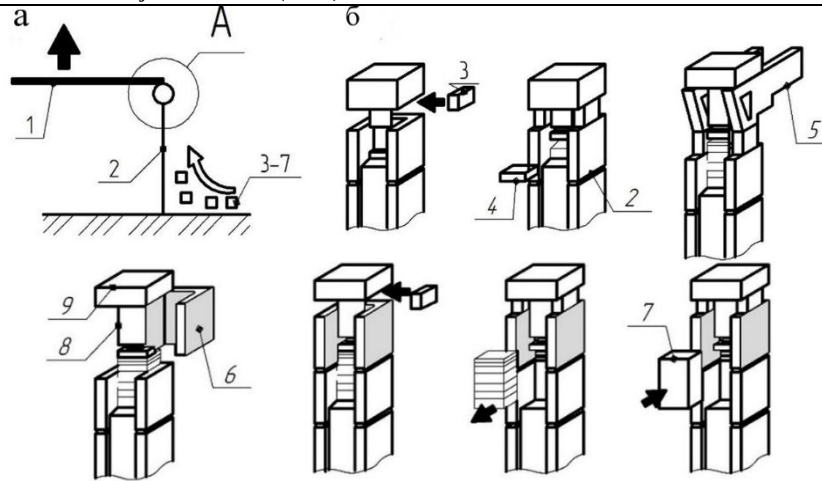


Рис. 2 Підйом покриття методом верхнього підрощування колон: а - загальна схема верхнього підрощування колон, б - послідовність процесу підрощування колон, «А» - зона підрощувальних робіт, 1 - покриття, 2 - підрощена колона, 3 - допоміжний боковий сегмент, 4 - допоміжний сегмент під підйомник, 5 - допоміжна балка, 6 - зовнішній сегмент колони, 7 - внутрішній сегмент колони, 8 - гідравлічний підйомник, 9 - опорний блок покриття

Згідно конструктивно-технологічного рішення, в процесі примусового виштовхування несучи ригелі покриття почергово спирались на корпуси гідропідйомників, допоміжні монтажні балки, зовнішні бокові монтажні сегменти, зовнішні та внутрішні секції підрощувальних колон. Відстань від зони складування сегментів колон на фундаментах до зони монтажу, при цьому, постійно збільшувалась, що призводило до пропорційного збільшення часових затрат на доставку конструктивних сегментів колон в зону підрощування [20].

Для складової «Підготовчі роботи В₁» монтажного процесу сумарні показники P_i' для Варіантів 1÷6 знаходяться в діапазоні:

$$33,8 \leq \sum B_1 \div B_8 \leq 61,6 (\%)$$

- найбільші показники P_i' на етапі підготовчих робіт мають операції по передпідйомному укрупненню конструкцій покриттів В₂. Процентна складова трудомісткості операцій по утворенню частково укрупнених сегментів покриттів або повнозбірних конструктивно-технологічних блоків покриттів на низьких стендах з використанням кранових технологій знаходиться в діапазоні:

$$10,0 \leq B_2 \leq 37,4 (\%)$$

- з усіх досліджуваних варіантів найбільший показник P_i' операцій по передпідйомному укрупненню покриттів мають варіанти В2 (ММ2) = 37,4 (%) та В6 (ММ4) = 36,2 (%). Для варіанту В2 процес укрупнення КТБ покриття розмірами 96 × 48 м, площею 5 184 м² і масою 1 200т тривав 58 змін. [21]. Для варіанту В6 укрупнення КТБ покриття розмірами 144 × 48 м, площею 6 912 м² і масою 1100 т тривало 53 зміни [3].

- найменший показник P_i' операцій передпідйомного укрупнення покриттів характерний для варіантів В3 (ММ3) = 14,4 (%) та В4 (ММ3) = 10,0 (%). Для варіанту В3 кожен сегмент покриття мав розміри - довжина 84,0 м, ширина 4,7 м, висота 1,2 м. Маса сегменту – 110 т. Укрупнення 28 сегментів покриття тривало 163 зміни [22]. Для варіанту В4 укрупнені сегменти мали характеристики - довжина 47,2м, ширина 7,5м, висота 3,6м, маса 201,8т. Предпідйомне укрупнення 5 сегментів тривало 107 змін [23].

Для складової «Монтажні роботи С₁» процесу зведення покриттів сумарні показники P_i' для Варіантів 1÷6 знаходяться в діапазоні:

$$27,9 \leq \sum C_1 \div C_7 \leq 57,2 (\%)$$

- найбільші показники P_i' на етапі монтажних робіт мають операції по підйому (переміщенню) укрупнених сегментів покриттів або повнозбірних конструктивно-технологічних покрівельних блоків в проектне положення С₂. Процентна складова трудомісткості С₂ з використанням кранових та безкранових технологій підйому (переміщення) знаходиться в діапазоні:

$$8,7 \leq C_2 \leq 34,2 (\%)$$

- з усіх досліджуваних варіантів найбільші показники P_i' для операцій С₂ мають варіанти В3 (ММ2) = 34,2 (%) та В5 (ММ4) = 27,1 (%). Для варіанту В3 причиною високої трудомісткості операцій С₂ були складнощі по утриманню в стабільному горизонтальному положенні сегментів покриттів шириною 4,7м під час переміщенні по похилим напрямним (в пересувних просторових опорах виникав великий обертовий момент) та наступному подоланню кута, який утворював стик торців похилих та горизонтальних напрямних. Операції по примусовому переміщенню 28 укрупнених сегментів покриттів з рівня фундаментів до місця остаточного проектного закріплення на висоті 15,4м виконувались дуже повільно і тривали 46 змін [22]. Для варіанту В5 висока трудомісткість операцій С₂ була пов'язана з великою кількістю переміщень допоміжних конструктивних елементів для верхнього підрощування кожного ярусу проектних колон (Рис.2). Робочий хід гідропідйомників, задіяних в підрощуванні колон, був всього 190мм, а висота центральних та бокових несучих сегментів колон 950мм. Загалом, для утворення 14 колон, було виконано 6440 переміщень допоміжних та несучих конструктивних елементів в зоні підрощування. Підйом з/б блоку покриття методом виштовхування зі спіранням на оголовки підрощувальних колон на висоту 24м тривав 23 зміни; - найменші показники P_i' операцій підйому (переміщення) покриттів в місця остаточного закріплення С₂ характерні для варіантів В2 (ММ2) = 8,7 (%) та В6 (ММ4) = 9,1 (%). Так, для

варіанту В2 примусове переміщення блоку КТБ покриття масою 1200т на висоту 34м методом підтягування з використанням гідропідіймників крокового типу, розташованих на оголовках колон несучого каркасу, з залученням 20 монтажників тривало всього 10 змін [3]. Для варіанту В6 примусове переміщення КТБ покриття масою 1100т методом нижнього підірощування на висоту 24м тривало 12 змін, в процесі підірощування металевих секцій стовбів підіймників були задіяні 22 монтажники [3].

Висновки

- з усього комплексу монтажних операцій найбільшу процентну складову трудомісткості мають операції передпідйомного укрупнення покриттів на фундаментах В₂ та операції по переміщенню покриттів на проектні відмітки С₂

$$10,0 \leq B_2 \leq 37,4 (\%) \quad 8,7 \leq C_2 \leq 34,2 (\%);$$

- між значеннями процентної складової трудомісткості операцій В₂ та С₂ для більшості варіантів зведення існує пряма залежність. При мінімальних значеннях В₂ досліджуемого варіанту зведення маємо максимальні значення С₂. Так, для варіанту В3 В₂ = 14,4 (%) та С₂ = 34,2 (%). При максимальних значеннях В₂ досліджуемого варіанту зведення спостерігаємо мінімальне значення С₂, так, для варіанту В2 В₂ = 37,4 (%) та С₂ = 8,7 (%);

- з урахуванням того, що для варіантів В2 та В6 значення процентної складової трудомісткості при підйомі покриттів С₂ мінімальні (діапазон 8,7÷ 9,1 %), саме варіанти примусового переміщення покриттів методами підтягування (В2 ММ2) та виштовхування (В6 ММ4) заслуговують на підвищену увагу при подальших дослідженнях і розробках нових технологій безкранового зведення покриттів.

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EARTH SCIENCES

USE OF RADAR SATELLITE DATA FOR THE MONITORING OF SNOW COVER

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Abstract

The paper considers the theoretical and practical aspects of exploring the snow cover in a MW band as applied to the SLR facility of the first National man-made satellite «SICH-1». The results obtained from the thematic imagery processing and recommendations with respect the snow melt dynamics prediction are presented.

Keywords: radar sensing; radio wave backscatter; snow cover.

1. Introduction

The snow cover has a substantial effect on the man's everyday life, since its presence is primarily responsible for the energy and water balance of the Earth's surface, which is of vital importance in solving the issues of agriculture, hydrology, ecology, etc.

The intensity of the spring - time floods is in many ways dictated by the snow melting rate. The melt water is conducive to overfilling the water reservoirs and swamps, replenishing the ground water storage, weighting the soil, thereby providing the stored soil moisture whose amount is of great significance for the future harvest. Here, it should be noted that in spite of the benefit derived from the increased water storage one is actually faced with the losses of time and material resources, which are caused by the need to have the drainage system cleared of the snow and by the after-effects resulting from the inundation of economic areas.

Typical of the snow cover is the high spatial variability of physical properties, which is brought about by the macro-, meso- and micro-scale processes in the atmosphere, the type of terrain, and vegetation cover, etc. The snow accumulation within a single climatic region proceeds in a certain fashion peculiar to specific landscape conditions, etc. In this case, the vegetation cover which is in fact the governing factor in the spatial variability is in itself acted upon by this particular phenomenon. The influence of various types of forests in the snow accumulation has been thoroughly studied.

The snow cover thickness is one of the basic characteristics, since there is a relationship between the thickness of snow and its properties, specifically, the linkage to the thermal conditions and, consequently, to their ability to shut out the Earth's surface from external effects. Although the temperature gradients and the resultant snow cover metamorphism appear to be pronounced at a small snow layer depth, the uniformly

thick snow cover undergoing different stages of metamorphism may differ in temperature under the like weather conditions.

Snow may exhibit various physical properties depending upon the form of crystals. As the snow cover is becoming compact, its thickness and thermal conductivity tend to vary. Therefore, it is necessary to allow for its properties throughout the whole period of its existence. Here, of prime importance are the early periods of snow cover formation, snow melting and, what is more essential, the periods involving the drastic variations in the snow cover, resulting in the temperature drops.

Among other no less significant features of the spatial snow distribution is the snow coverage area. The in-situ measurement techniques do not often permit them to be adequately determined, especially in the areas having a small number of observation stations.

The development of the remote sensing methods for exploring the snow cover made it possible to take a new approach to the observation procedures and the analytical treatment of the data being obtained.

It should be pointed out that the optical remote sensing methods involving the use of aerospace carriers, i.e. aerial photography, optical and IR scanners, have gained wide acceptance. However, the efficiency of their application is found to be significantly limited by the requirement for the optical transparency of the atmosphere in a region as the measurement session is being well under way.

The radar - seriented techniques for remote sensing of the snow cover in a MW band have provided the basis for the aerospace radars of the «Cosmos-1500» type [1-3] and have proved to be free from thus limitation.

In the 80s and 90s the studies that were performed with these systems made it possible to predict the processes of spring- time snow melting and the floods on rivers as well as other critical events in the practical

work based on the data collected from the first National satellite «SICH-1» [4].

2. The peculiar features of radar sensing of the snow- covered land surface

The electromagnetic wave backscattering recorded by the satellite- based SLR in the winter-time is largely dependent upon the scattering in the snow layer which represents the conglomerate of ice crystals in the atmosphere. In this case a crucial role is played by the radio-wave scattering effects at the «air-snow» and «soil-snow» boundary. Therefore, while analyzing the observations results the effects of volume and surface scattering should be taken into account.

If the snow cover is present the positive radar brightness contrast between the objects such as river valleys and the territories between two rivers, as observed.

This phenomena is due to the fact that, with the snow cover being present the basic contribution the magnitude of the specific radar cross section (RCS) can be made by the following scattering mechanisms: scattering from the rough «air-snow» boundary, scattering from the volume (internal) snow inhomogeneities, scattering on the rough «snow-soil» boundary [5].

Normally, the scattering from the subsurface soil inhomogeneities can be neglected because of the screening effect of the above-mentioned tree scattering mechanisms.

The relative contribution of the above- listed scattering mechanisms may vary depending upon the snow cover thickness and structure, the temperature of snow and soil and their moisture level and other factors (including time of day). One of the basic parameters specifying the nature of radio wave scattering by the snow cover is the radio wave penetration depth (skin-layer thickness) [6]:

$$\delta = \frac{\lambda \sqrt{\varepsilon'}}{2\pi \varepsilon''} (\varepsilon'' \ll \varepsilon') \quad (1)$$

As is obvious from [6] the real part σ^l is not virtually temperature- and frequency- dependent and is actually a function of the snow density only ρ_s varying from $\varepsilon^l \approx 1.2 \text{ g/cm}^2$ to $\varepsilon^l \approx 2.8...$ at $\rho_s \approx 0.8 \text{ g/cm}^3$. Density, in its turn, is governed by the snow-fall conditions (the wind speed, temperature, etc.) and by the variation in the hydrometeorological conditions over the whole period starting with the snow cover formation and ending with its observation.

The attenuation of radio waves as they propagate in the snow is determined by the loss tangent,

$$tg\delta = \varepsilon''/\varepsilon' \quad (2)$$

whose value at a frequency of $\approx 5 \cdot 10^4$ to $\approx 2 \cdot 10^4$ with a temperature ranging between -5°C and -30°C .

Substituting the values ε' and ε'' in formula (1) for ε we find that in the case of dry snow the skin-layer thickness may be as much as several meters. Assuming that the volume snow mass inhomogeneities (elementary scatters) are uniformly distributed in depth, one can arrive at the conclusion that the RCS magnitude associated directly with the volume scattering is in direct proportion to the thickness of the snow cover which is

dry and uniform in depth. Here, the "air-snow" boundary can be ignored for, two reasons: firstly, there is a "slight" contrast at the "air-snow" boundary and, secondly, the snow surface is relatively "smooth" in a cm wave band (in comparison to the roughness of the open soil surface).

As regards the scattering at the "snow-soil" boundary, the contribution of this mechanism at the negative temperatures also appears to be considerably attenuated, because the values ε of the snow and the frozen-through soil are close to each other. These values are basically determined by the electromagnetic ice parameters (when the free moisture is non-existent). As the snow temperature and its moisture M_v increase (with the emergence of free water) the absorption in the snow shows a significant increase (at $p_s \approx 0.25 \text{ g/cm}^3$ and $M_v \approx 2\%$ and a frequency of 10 GHz the value ε'' increases by 3 orders of magnitude and as high as ≈ 0.1). In this case δ is reduced to a few centimeters; as a result, the scattering from the soil surface becomes fully screened by a sufficiently thin snow cover. With the negative temperatures followed by the positive ones, and particularly at the period of intensive snow melting, a contrast inversion is certain to occur between the river valleys and the areas between the river, i.e. the vast tracts of weekly snow with a weekly developed (practically smooth) surface appears, especially in some water-filled areas, should result in a sharp decrease of the RCS in comparison to the rougher surface of the "air-snow" boundary (wet soil) in the areas between rivers. Here, the dependence δ_0 upon the snow cover thickness since due to the small value δ the entire scattering process occurs in a thin subsurface layer with a thickness, of at most, 1 cm (for $\lambda = 3\text{cm}$).

3. Scientific and practical work on the use of the radar data from the "sich-1" satellite in performing the hydrological forecasts over a snow-melting period.

A wide spectrum of issues resulting from the study of the Earth's surface includes the use of remotely sensed data for hydrological observations. These issues are associated with the need to monitor the snow cover propagation and melting dynamics, the ice cover status on rivers and inland water basin, to determine the spatial characteristics of the water surface, etc.

It should be pointed out that of really topical interest are the hydrological observations, that are made at the period of the spring-time floods. Snow melting and breaking up of ice on rivers and water basins at this time of year is sufficiently dynamic. Therefore, in order to be able to monitor the existence of floods it is necessary to be provided with operational, current and forecasting information which could be obtained from the space-borne remote sensing systems.

Throughout the winter- and spring- time period of 1996 make scientific studies and practical work aimed at making the "SICH-1" SLR data available to the subdivision of the Ukrainian Hydrometeorological Center (UHC) and other national economy-oriented services at the height of intensive snow melting and spring time flood existence. In addition to the reception and the preliminary radar data processing, a good deal of work

have been done to optimize both the techniques for processing the thematic remotely sensed data from spaceborne radars and the principles of coordination with the UHC subdivision that are engaged in making hydrological forecasts.

The examples of using the radar data for hydrological forecasts are given in Fig.1-2. Fig.1 shows the radar image, acquired by the SLR of the "SICH-1" on March 21, 1996 and the results of thematic processing. According to the observation data provided by the spaceborne radar the position of the snow cover boundary is seen to be in good correlation with the results of snow cover measurements.

Since the ground-based observation stations are relatively sparse, this kind of information is of significant interest while working out the snow melting forecasts.

At the same time the radar image examination indicated that there was a correlation between the radar signal intensity and the thickness and water content of the snow cover.

In further studies this can be utilized to generate thematic maps of spatial distribution of the above-mentioned snow cover characteristics. Fig.1 (the thematic map) presents a separation line of zones featuring the different levels of moisture content in the snow cover. According to the hydrometeorological center of Ukraine (HMCU) the moisture content in the northern region is 40 mm and in the southern over 60 mm, which is shown as a dark color tone. All that is evidenced by theoretical calculations.

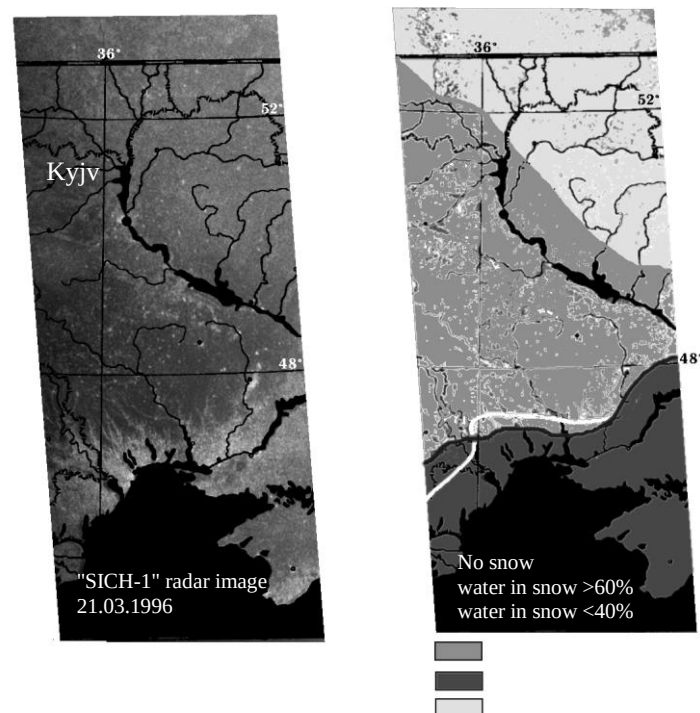


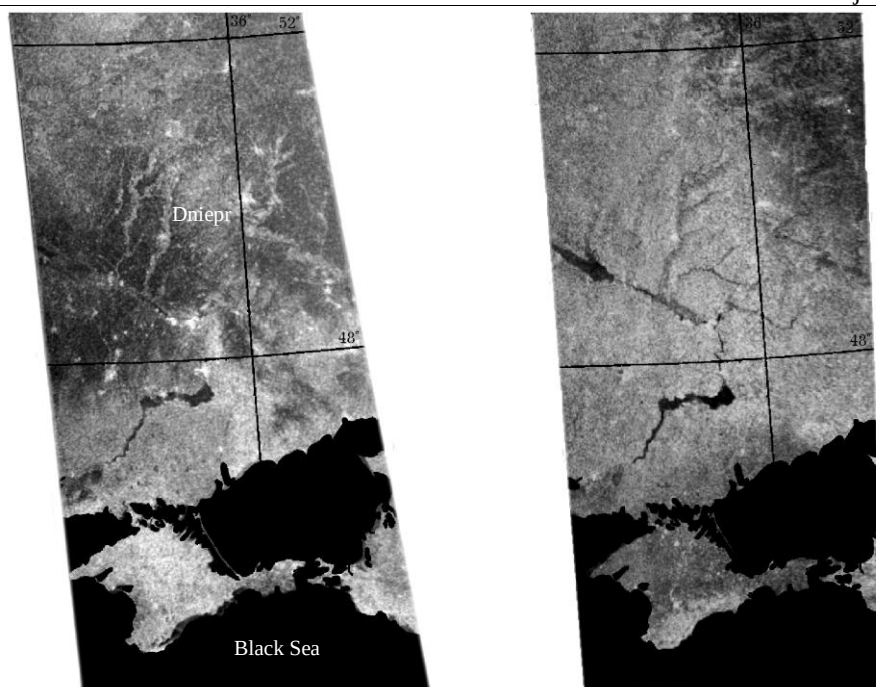
Fig.1. Radar image, acquired by the SLR of the "SICH-1" and the thematic map

The radar information acquired by the SLR of the "SICH-1" in the winter-time can also be used to forecast the underflooded areas over a period of spring-time freshets. For instance, the light color tone in Fig.2 (the radar image acquired on February 24, 1996 shows the plain frozen - up flood plains in the basins of the Dnieper and Seversky Donetz rivers). Meanwhile, the floodplains of those rivers are identified as heaving a dark color tone. Here, the spatial dimensions of the frozen- up floodplains and those of the areas in the spring time are practically the same.

The SLR data processing technique that can be employed to estimate the spatial characteristics of the overflow of large water basins using the elements of the

cluster analysis were examined in [3] and utilized in the experiments, involving the use of the SLR of the "Cosmos-1500" series when the adjacent areas of the Amur river were heavily in undated in 1984 [1].

The application of the above-mentioned technique to identify the underflooded zones in the Central part of Ukraine is exemplified in Fig.3 ("a" - the initial image, acquired in spring; "b" - is the image, acquired in the summer; "c" - interpretation of the image "a"). The floodplains of the Vorskla and Seversky Donetz rivers are not virtually identified in the image "b". They are clearly visible in the image that was acquired in summer.



24.02.96 04.04.96

Fig.2. Radar image

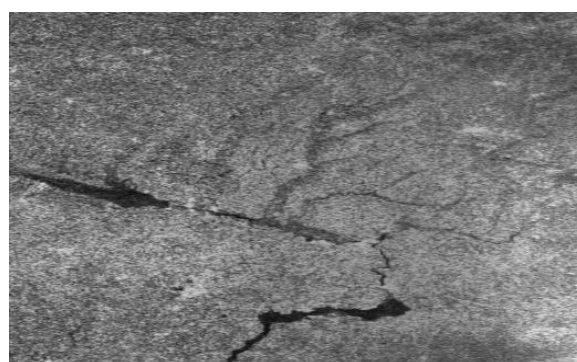


Fig.3 a. Initial image, acquired in spring

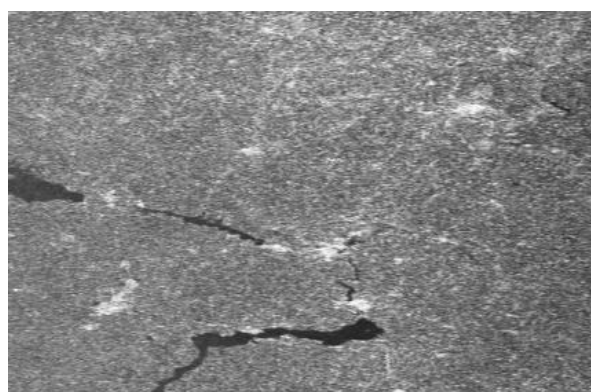


Fig.3 b. Image, acquired in the summer

Dniepr

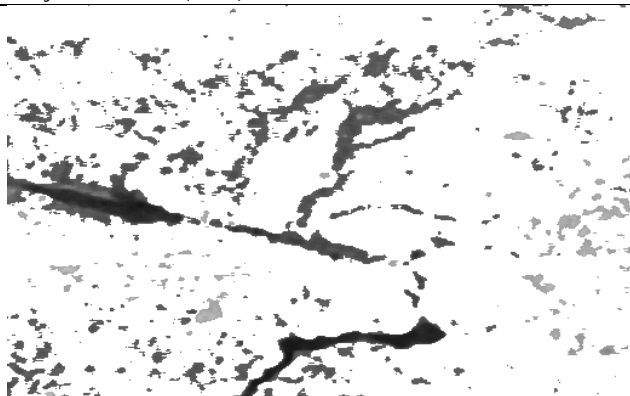


Fig.3 c. Interpretation of the image "a"

Analysis of the radar imagery of the territory of Ukraine, acquired by the SLR of the "SICH-1" over the winter and spring time period of the 1996 suggest that the radar surveying data obtained from space, makes it possible to observe the snow cover propagation dynamics and to define the snow melting boundaries. Besides, the combination of in-situ measurements and the above - mentioned observations may prove to be useful in introducing an operational service to forecast critical events resulting from snow melting processes, overflow of rivers, underflooding of lakes, etc.

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GEOGRAPHY

ŞAHBUZİNİZİBATİ RAYONUNDA TORPAQ MÜNBİTLİYİNİN İTİRİLMƏSİNDƏ MƏNFİ ANTROPOGEN TƏSİRLƏR

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NEGATIVE ANTHROPOGENIC IMPACTS ON LOSS OF SOIL FERTILITY IN SHAHBUZ ADMINISTRATIVE DISTRICT

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Xülasə

Məqalədə Şahbuz inzibati rayonunun torpaq ehtiyatlarının mövcud vəziyyətini və bu ehtiyatlara antropogen təsirlərin xarakterini araşdırılır. Tədqiqatda əsas məqsəd insan fəaliyyəti nəticəsində yaranan mənfi təsirləri müəyyən etmək və onların nəticələrini qiymətləndirməkdir. Tədqiqat zamanı statistik məlumatlar, xəritələr və sahə müşahidələrindən istifadə olunmuşdur. Əldə olunan nəticələr göstərir ki, kənd təsərrüfatı fəaliyyəti, torpaq istifadəsinin intensivləşməsi və digər antropogen faktorlar torpaq eroziyası, məhsuldarlığın azalması və ekosistem tarazlığının pozulmasına və inzibati rayon inkişarının geriləməsinə səbəb olur. Bu tədqiqatın nəticələri, torpaq resurslarının davamlı idarə olunması və ekoloji problemlərin aradan qaldırılması istiqamətində mühüm töhfə verə bilər.

Abstract

The article examines the current state of soil resources of the Shahbuz administrative district and the nature of anthropogenic impacts on these resources. The main goal of the study is to identify the negative impacts resulting from human activity and assess their consequences. Statistical data, maps and field observations were used during the study. The results obtained show that agricultural activity, intensification of land use and other anthropogenic factors lead to soil erosion, reduced productivity and disruption of the ecosystem balance and the regression of the development of the administrative district. The results of this study can make a significant contribution to the sustainable management of soil resources and the elimination of environmental problems.

Açar sözlər: Antropogen təsir, kənd təsərrüfatı, torpaq, münbitlik, iqlim dəyişikliyi, iqtisdi inkişaf.

Keywords: Anthropogenic impact, agriculture, soil, fertility, climate change, economic development.

Aktuallıq: Şahbuz inzibati rayonu relyefinə və yerləşməsinə görə dağlıq inzibati rayondur. Bu amil öz növbəsində inzibati rayonun torpaqlarının degradasiyasına, xüsusilə eroziya (çayların təsiri ilə yuyulma) proseslərinə məruz qalmasına səbəb olur. Şahbuz inzibati rayonu muxtar respublikanın torpaq fondunun 15,2 faizini təşkil etməsinə baxmayaraq, ərazinin dağlıq olması ilə əlaqədar, burada ümumi torpaq fondunun cəmi 2,5%-dən əkin altında istifadə olunur. Məhz, bu baxımdan Şahbuz inzibati rayonunda əkin altında istifadə olunan yararlı torpaqların az olması ilə əlaqədar olaraq ərazidə müasir üsullarla torpaq-bitki tədqiqatların aparılması aktuallıq təşkil edir.

Şahbuz inzibati rayonun ümumi torpaq fondu 81497 ha təşkil edir. Torpaq fondunun 21999 ha dövlət, 54633 ha bələdiyyə və 4865 ha xüsusi mülkiyyətə aiddir. Ümumi torpaq fondunun 29023 ha kənd təsərrüfatına yararlı torpaqlardır. Bu torpaqların 2042 ha əkin altında və 24335 ha isə oruq-otlaq kimi istifadə

olunur. Suvarılan torpaqlar ümumi torpaq fondunun 2,5%-ni təşkil edir [6].

Ərazidə torpaqların ətraflı, elmi surətdə öyrənilməsi çox vacib məsələlərdəndir. Buna görə də muxtar respublikanın digər inzibati rayonları kimi, Şahbuz inzibati rayonunda da S.A. Zaxarovun (1925-28), R.H. Məmmədov (1950-1957), K.A. Ələkbərov, N.A. Əsədov və X.M. Mustafayev (1959-65), H.Ə. Əliyev və Ə.K. Zeynalov (1965-1970), H.C. Mehdiyev (1980-1988), Ə.G. Quliyev (1975-2005), S.Ə. Hacıyev (1985-2019)-ci illərdə torpaqların müxtəlif sahələri üzrə tədqiqatlar aparmış və aparılmış tədqiqatların nəticələrinə əsaslanaraq bir neçə monoqrafiya yazıb çapdan çıxarmışlar (Sahib Hacıyev s. 74-78, 2009).

Bu məqsədlə müxtəlif inkişaf pillələri üzrə Naxçıvan MR-in bütün ərazilərində olduğu kimi Şahbuz inzibati rayonunda da aparılan torpaq tədqiqat işləri nəzərdən keçirilmiş və Şahbuz inzibati rayonunda torpaqlardan səmərəli istifadə etmək üçün ərazidə 1920-ci ildən hazırkı dövrə kimi müxtəlif tədqiqatçılar

tərəfindən aparılan elmi-tədqiqat işləri təhlil olunmuş, mövzunun yerinə yetirilməsində lazımi nəzəri və praktik nəticələrdən istifadə edilmişdir.

Tədqiqat obyektində əvvəlcədən aparılan və bu məqalədə nəticələrini qeyd etdiyimiz yeni tədqiqatımızın məqsədi torpaqlar üzərində antropogen təsirlərin səciyyəvi xüsusiyyəti və yaratdığı problemləri öyrənmək, eyni zamanda həlli yollarını araşdırmaqdan ibarətdir.

Material və metodika: Mövzuya aid ədəbiyyatlar təhlil edilmiş, çöl materialları toplanaraq işin metodikası hazırlanmışdır. Mövzu işlənərkən tarixin ayrı-ayrı inkişaf mərhələlərində xarici ölkələrdə, o cümlədən Azərbaycan və Naxçıvan MR-də torpaq-bitki tədqiqatları aparan alimlərin monoqrafiya, metodik vəsait, müxtəlif mövzulu xəritə materialları və müasir tələblərə cavab verən iş təcrübələrindən istifadə olunmuşdur. Tədqiqat obyektini kimi Şahbuz inzibati rayonu ərazisində yayılan torpaq sahələri seçilmişdir [2. s. 15-37; 3. s.25-65; 4.s. 94-164; 5. s. 24-65]

Mövzunun yerinə yerinə yetirilməsində ədəbiyyat materialları ilə yanaşı tədqiqat zamanı çöl materialları toplanmış və tədqiqat üçün istifadə edilmişdir.

Təhlil və müzakirə: Naxçıvan Muxtar Respublikasının şimal-şərqində yerləşən Şahbuz inzibati rayonu zəngin təbiəti və xüsusi coğrafi mövqeyi ilə fərqlənir. Rayonda yerləşən torpaq resursları həm yerli əhalinin təsərrüfat fəaliyyəti üçün əsas dayaqdır, həm də bütövlükdə regionun ekosistemi üçün həyati əhəmiyyət kəsb edir [1. s. 25-37]. Hər yerdə olduğu kimi Şahbuz inzibati rayonu ərazisində də antropogen təsirlər müxtəlif torpaq sahələrində müxtəlif cür özünü göstərir. Bu təsirlər hündürlükdən, iqlimdən, təsərrüfat sahəsindən, əhali məskunlaşmasından və s. asılı olaraq dəyişir. Bununla belə, müasir dövrdə əhali artımı, kənd təsərrüfatı və sənaye fəaliyyətləri, eləcə də turizm inkişafı torpaqlar üzərində antropogen təzyiqləri artırmaqdadır.

- Şahbuz rayonunun ekoloji xüsusiyyətləri

Şahbuz ərazisi dağlıq və meşəlik relyefi ilə seçilir. Əsas torpaq növləri arasında dağ-qara torpaqları və çəmən-şabalıdı torpaqlar üstünlük təşkil edir. Ərazi iqlimi mülayim qışlar və quraq yaylar ilə xarakterizə olunur. Bu şərait kənd təsərrüfatı üçün əlverişli olmaqla yanaşı, təbii resursların dayanıqsız istifadəsi torpaqların degradasiyasına gətirib çıxarır.

- Antropogen təsirlər və onların nəticələri

Kənd təsərrüfatının təsiri: Əkinçilik fəaliyyəti Şahbuz rayonunda torpaqların əsas istifadəsini təşkil edir. Lakin torpaqların intensiv şəkildə istifadəsi bir çox mənfi nəticələr doğurur:

Monokulturaların əkilməsi torpağın bioloji müxtəlifliyini azaldır. Daimi olaraq eyni bitkilərin əkilməsi torpağın bəzi mikroelementlərdən məhrum olmasına gətirib çıxarır.

Kimyəvi gübrələr və pestisidlərdən istifadə məhsuldarlığı qısa müddətə artırsa da, uzunmüddətli perspektivdə torpaq strukturu və mikroflorasına ciddi zərər vurur.

Suyun qeyri-səmərəli istifadəsi torpaqların şoranlaşması ilə nəticələnir. Rayonda əsasən quraqlıq dövrlərində suvarma problemləri daha qabarıq görünür.

Maldarlığın təsiri : Maldarlıq fəaliyyəti, xüsusilə otlaqların həddindən artıq istifadəsi nəticəsində

torpağın eroziyası güclənir. Şahbuzda dağ yamaclarında intensiv otarma torpağın üst qatının yuyulmasına və məhsuldarlığın azalmasına səbəb olur.

Tikinti fəaliyyəti: Son illərdə rayonda infrastruktur layihələri, o cümlədən yeni yolların çəkilməsi və yaşayış məntəqələrinin tikilməsi torpaq örtüyünün pozulmasına gətirib çıxarmışdır. Xüsusilə tikinti işləri zamanı torpağın üst münbit qatının məhv edilməsi bərpası uzun müddət tələb edən ekoloji problemlərə səbəb olur.

Meşələrin qırılması: Rayon ərazisində meşə örtüyü torpağı eroziyadan qoruyan təbii bir maneədir. Lakin ağacların qırılması nəticəsində torpağın yuyulma sürəti artır. Meşələrin azalması həmçinin torpağın su balansını pozur və bitki örtüyünün bərpasını çətinləşdirir.

Turizmin inkişafı: Şahbuz təbiəti və tarixi abidələri ilə turistlər üçün cəlbedici bir məkandır. Lakin turizmin inkişafı məqsədilə aparılan infrastruktur layihələri və turist axını bəzi təbii ərazilərin çirklənməsinə və torpaq örtüyünün məhv edilməsinə səbəb olur.

İqlim dəyişikliyi : Qlobal iqlim dəyişikliyi təsirləri Şahbuz rayonunda da özünü göstərir. Quraq dövrlərin uzanması və intensiv yağışların artması torpağın münbitliyinə mənfi təsir göstərir. Bu şəraitdə torpaqların eroziyaya qarşı daha həssas olduğu müşahidə edilir.

Nəticə

Şahbuz inzibati rayonunun torpaqlarına antropogen təsirlər təbii ehtiyatların dayanıqsız istifadəsi və müasir inkişaf tələbləri arasında balansın olmaması ilə izah edilir. Bu təsirləri azaltmaq üçün kənd təsərrüfatı, maldarlıq, tikinti və turizm fəaliyyətlərinin daha dayanıqlı üsullarla idarə olunması tələb olunur. Təbiətin qorunması yalnız torpaq resurslarının deyil, eyni zamanda Şahbuz rayonunun gələcək sosial-iqtisadi inkişafının təminatıdır.

Şahbuz inzibati rayonunun torpaqlarını qorumaq və antropogen təsirləri azaltmaq üçün bir sıra tədbirlər həyata keçirilə bilər.

1. Dayanıqlı kənd təsərrüfatı metodlarının tətbiqi: Torpağın münbitliyini qorumaq üçün əkin rotasiyası sisteminin tətbiqi. Orqanik gübrələrdən istifadə edərək kimyəvi gübrələrə olan asılılığın azaldılması. Suvarma sistemlərinin modernləşdirilməsi və su resurslarının qənaətlə istifadəsi torpaqların qorunması üçün çox vacibdir.

2. Maldarlığın idarə olunması: Otlarlardan növbəli istifadə sisteminin tətbiqi torpaqların bərpasına imkan yarada bilər. Həmçinin dağlıq ərazilərdə həddindən artıq otarılmanın qarşısını almaq üçün monitorinq mexanizmləri yaradılmalıdır.

3. Meşə örtüyünün bərpası: Ağacların əkilməsi və mövcud meşə sahələrinin qorunması eroziya riskini azaltmaqla yanaşı, torpağın ekoloji tarazlığını bərpa edir.

4. Maarifləndirmə və təhsil: Yerli əhali arasında ekoloji maarifləndirmə proqramlarının həyata keçirilməsi və təbiətin qorunması mövzusunda təlimlərin təşkil edilməsi vacibdir.

5. Turizmin idarə olunması: Ekoturizm prinsiplərinə əsaslanan inkişaf modeli tətbiq edilməli, təbiətə minimal təsir edən infrastrukturлар yaradılmalıdır.

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The article highlights the main principles of the development of glamping tourism in different regions of the world in the modern period. The authors identify the main advantages of this type of tourism and the threats that arise during the formation of tourist flows in protected areas. The authors note that in many countries in Europe and Asia, glamping tourism is developing thanks to the support of state authorities and local governments. In turn, glamping tourism contributes to ensuring the sustainable development of the territories in which it is implemented.

Keywords: glamping, tourism, territory, sustainable development, camping.

Introduction. In modern life, a person faces numerous challenges every day, including stress and the constant influence of the digital environment, which negatively affects the overall state of health [6]. One of the effective ways to overcome such problems is to restore contact with nature, which is confirmed by numerous scientific studies. Interaction with the natural environment and spending time outdoors, accompanied by a caring attitude towards the environment, contribute to improving physical and mental well-being. In the modern tourism industry, these practices are gaining increasing popularity, becoming the main trend. One of the most striking manifestations of this trend approach is the growth of demand for ecological tourism around the world. Rest within protected areas is very popular, where a new type of tourism is being formed, known as glamping. This concept organically combines elements of the camping subculture and modern ecotourism. Glamping, which emerged as a synthesis of the concepts of "glamorous" and "camping", is a high-class format of outdoor recreation, where comfort and luxury are harmoniously combined with communication with the natural environment. This type of tourism meets the growing demand of modern travelers who seek to enjoy nature without giving up convenience and aesthetics.

Main material. The main factor stimulating the development of glamping tourism in Europe is the growing demand for unique adventures and non-standard forms of recreation. Glamping meets the expectations of modern tourists who seek to combine comfort with nature. The glamping industry itself is a combination of enjoyment of natural landscapes and amenities provided by environmentally friendly, but stylized housing. A feature of such recreation is the possibility of combining luxury with the authenticity of nature. The key role in the development of the market is played by the accessibility and variety of locations for glamping in Europe. Countries like France, Italy and the UK have long attracted tourists with their picturesque landscapes. It is here that the number of glamping locations has grown rapidly, including eco-lodges, yurts, tree houses and safari tents. All of them offer different types of accommodation that satisfy a wide range of tourist

preferences - from families with children to luxury travelers and active nature lovers. The variety of options available allows the glamping format to expand into different markets, making it a popular choice among those looking for an alternative to traditional campsites or hotels.

The development of glamping is actively supported by European governments through the adoption of policies that stimulate sustainable tourism. Many countries are aware of the economic potential of this segment and are weakening legislative barriers to the creation of ecological housing, as well as encouraging private investment through tax breaks or subsidies. In addition, ecotourism is becoming a key direction of the overall tourism strategy of the countries of the region. This not only contributes to the conservation of natural resources through a responsible approach to travel, but also stimulates innovations in the field of glamping infrastructure. New projects are being developed in cooperation with private companies, and existing facilities are being modernized, which has a positive impact on market dynamics. After the lifting of travel restrictions due to the COVID-19 pandemic, the popularity of summer holidays among Europeans has grown rapidly. In response, many glamping service providers are introducing new formats to attract consumers in an increasingly competitive environment. For example, Canopy & Stars, a well-known platform for booking unique accommodation options such as treehouses and yurts, recently expanded its offerings to include themed festival tents, responding to the current demands of its audience and their desire for unconventional ways to spend time outdoors. Large operators specializing in camping and nature recreation are also actively adapting their services to provide improved living conditions. They include amenities such as modern bathrooms, comfortable beds, Wi-Fi access, televisions, cooking equipment and even air conditioning. This approach is particularly popular with family travelers and fans of premium services. Safari operators and companies specializing in extreme tourism are increasingly targeting consumers who are ready to invest in premium experiences, inte-

grating high-end accommodation into their travel packages. At the same time, the growing demand for travel that combines comfort with the opportunity to actively spend time in nature has become an important factor contributing to the increasing popularity of camping among millennials. Such dynamics are predicted to have a significant positive impact on the development of the regional market during the forecast period.

In recent years, Japan, South Korea and Thailand have demonstrated significant changes in consumer behavioral guidelines regarding glamping. In particular, in Japan, the glamping market has experienced significant growth, driven by several key factors [3]. These include the growing demand for unique and unforgettable travel experiences, increasing environmental awareness among the population, and favorable government initiatives aimed at popularizing this type of recreation. Surveys show that the interest of Japanese people in outdoor activities is growing significantly and will have a steady trend of expansion in the near future. This growing demand is consistent with broader trends observed in the global tourism industry. Consumers are increasingly looking for personalized and environmentally friendly travel options. Social networks play an important role in popularizing glamping, providing the opportunity to share personal experiences and raise awareness about the benefits of this type of recreation. In addition, attractive offers from tourism platforms, such as discounts and advantageous travel packages, have a significant impact on the development of the industry. This stimulates additional interest among potential consumers and contributes to economic support for the industry. In South Korea, the development of glamping is closely linked to the involvement of local communities and an emphasis on environmental practices. The integration of cultural aspects into the glamping concept and the maximum use of the country's natural landscapes create a unique experience for tourists. South Korea is famous for its diverse natural landscapes — from rugged mountain peaks to pristine coastlines, which are ideal environments for environmentally responsible tourism. Glamping sites in this country not only promote an environmentally friendly connection with nature, but also activate the role of local communities in their development and maintenance. This approach not only provides economic benefits to communities, but also contributes to the long-term environmental sustainability of tourist sites.

Camping and glamping are deeply rooted in Korean cultural traditions, despite modern technological advances. Local communities actively contribute to creating an authentic atmosphere for these types of recreation, preserving the natural harmony of the environment and developing infrastructure to support sustainable tourism. In Gyeonggi Province, for example, glamping sites such as Pine Valley Glamping in Pocheon combine the comfort of a luxury vacation with environmental awareness, allowing guests to enjoy nature without having to use traditional equipment. The active role of the local community is also evident in the way these sites contribute to the development of local culture and economy. By utilizing local resources and engaging local residents, glamping sites have a positive

impact on the economy and social stability of the environment in which they operate. This interaction creates a harmonious exchange: visitors receive an exceptional experience in comfortable conditions, while communities receive economic support and an incentive to preserve cultural heritage. True authenticity in glamping tourism is achieved through respect for cultural traditions and the active participation of communities in tourism initiatives. In Africa in particular, the community tourism model has become an important factor in socio-economic development. It not only strengthens the position of local populations, but also gives travelers authentic experiences through deep cultural exchange. When indigenous people are involved in the creation of tourism products, national heritage is preserved and becomes part of a vibrant experience for guests. This approach ensures sustainable development of regions and creates multifaceted connections between travelers and locals.

Sustainable tourism encompasses not only environmental conservation, but also the protection of socio-cultural heritage and the well-being of local communities. This becomes vital in regions such as South Africa, where it is important to preserve the richness of cultural traditions alongside natural wealth. African glamping sites offer examples of ecotourism in action: they focus on environmental awareness, minimizing environmental impact and supporting local communities. Babanango Game Reserve in KwaZulu-Natal illustrates this concept, providing guests with an immersion in African landscapes with comfortable modern accommodation. All aspects of the reserve's operations are based on the principles of sustainable development and respect for local culture, making it a model of harmonious coexistence between people and nature.

Partnerships with rural cooperatives and small-scale entrepreneurs play a key role in the development of glamping initiatives, creating sustainable livelihoods and strengthening local economies through new employment opportunities and cultural exchange. In the context of the global transformation of the tourism industry towards more sustainable practices, the development of glamping in Africa emphasizes the need to maintain authenticity by respecting cultural heritage and ensuring the long-term well-being of local communities. One of the important elements of glamping in Africa is the creation of culturally enriched experiences for tourists, which is made possible by close cooperation with local communities. For example, Apex Experience is implementing partnerships with landowners in South Africa, forming a network of eco-cabins and tourism services that integrate isolated regions into the growing ecotourism sector. This model of cooperation not only provides additional sources of income for farmers and hotel owners, but also contributes to the introduction of an environmentally responsible approach to tourism.

One of the brightest examples of such initiatives is the Babanango Game Reserve in the Zululand region of KwaZulu-Natal province. This reserve offers a unique combination of personalized accommodation and interaction with wildlife, allowing travelers to immerse themselves more deeply in the majesty of the African landscape. The glamping concept at Babanango Game

Reserve involves providing modern comforts, while emphasizing the preservation and dissemination of local cultural heritage. This approach attracts tourists who value both luxury and authenticity of cultural experiences. Integrating the traditions and needs of local communities into glamping projects not only ensures the preservation of cultural heritage, but also contributes to the creation of meaningful experiences for tourists. The example of initiatives such as Apex Experience or Babanango Game Reserve demonstrates the potential of glamping as a mechanism that can simultaneously ensure economic development and contribute to the preservation of culture on the African continent. At the same time, the development of environmentally friendly glamping in Africa poses a number of unique logistical challenges that require an innovative approach to ensure the sustainability of these projects. For example, a family that previously led a nomadic lifestyle in South Africa was able to adapt to the new realities and organize their own eco-friendly glamping business during the quarantine. Having moved to Scotland, they created Galloway Glamping in the Dumfries region and the Dark Sky Park in Galloway. The project was implemented with the support of the British Business Bank Startup Loan Program and GC Business Finance. On a 7-acre site adjacent to the Galloway Forest Park, four autonomous wooden houses were built, which ensure that light pollution is minimized and guests are maximally immersed in the beauty of the night sky. The popularization of glamping has also highlighted the issue of its environmental impact, which has made sustainable infrastructure the cornerstone of modern glamping projects. The use of environmentally friendly materials and technologies allows for a high level of comfort without harming the natural environment.

The North American glamping market has been growing rapidly over the past decade, driven by the growing popularity of unusual and luxurious outdoor recreation options. The market is expected to reach \$1,725.7 million by 2030 [5]. Social media is playing a key role in this expansion, as numerous travel bloggers and influencers are actively sharing their glamping experiences, which is significantly fueling interest and demand. The increase in the number of large music festivals and concerts, often held several times a month, is also significantly contributing to the development of this market segment. More and more American cities are using such events as a tool to attract tourists and develop local businesses, which is further popularizing glamping as a modern trend among consumers. Travel web platforms offer attractive discounts and exclusive service packages, making such trips accessible to a wider audience. Short-term weekend trips and city trips, popularized by services like Airbnb, are also contributing to the growth of interest in glamping. This trend covers audiences of all ages: from young people looking for adventure to older travelers who value comfort and nature at the same time. At the same time, the industry faces challenges, including the high cost of equipping comfortable locations with modern infrastructure and the dependence of revenues on seasonality. However, the overall outlook for the glamping market remains optimistic. It is expected that demand will

continue to grow in the coming years due to people's desire to receive unique and authentic emotions that harmoniously combine the spirit of adventure with elements of luxury.

Conclusions. Glamping tourism, which has experienced rapid growth in popularity, integrates elements of luxury with an emphasis on environmental responsibility. This concept demonstrates a harmonious combination of comfort and concern for the environment, attracting environmentally conscious travelers who value minimal impact on nature. Sustainable development practices implemented in glamping areas are characterized by considerable diversity: they include both the use of environmentally friendly materials and the implementation of innovative waste management systems. Such strategies provide guests with the opportunity to stay comfortably while preserving the integrity of the natural environment. An important role in maintaining this balance is played by the development of sustainable infrastructure that allows tourists to immerse themselves in the natural environment without the accompanying negative consequences characteristic of traditional construction methods. The growth in the popularity of eco-glamping has contributed to the implementation of large-scale initiatives aimed at protecting the environment and supporting local communities. These include the use of renewable energy sources, adherence to the principles of "Leave No Trace" and measures to preserve natural heritage for future generations. These efforts not only improve the quality of guests' stay by combining luxury and care for nature, but also contribute to the formation of a deeper connection with the environment and increasing environmental awareness among tourists. Sustainable infrastructure development is the cornerstone of environmentally responsible glamping. Numerous facilities use materials and construction technologies with minimal impact on nature, which creates conditions for the harmonious interaction of humans and the natural environment. In particular, the use of recycled materials or interior elements is common practice. Environmental features of design and construction further strengthen this trend. Energy-efficient solutions, including the integration of solar panels and other renewable energy systems, have become an integral part of eco-glamping spaces. Meanwhile, water-saving strategies such as rainwater harvesting systems or low-flow plumbing help to rationalize water use. In addition, effective waste management and recycling programs help to preserve the pristine beauty of glamping sites. Many glamping sites also place a special emphasis on enhancing biodiversity and preserving and restoring natural landscapes to support local ecosystems. These approaches provide a combination of luxury and environmental responsibility in glamping, which allows it to respond to the growing interest in sustainable tourism.

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MATERIALS SCIENCE AND MECHANICS OF MACHINES

DEVELOPMENT OF CONSTRUCTIVE AND TECHNOLOGICAL CAPABILITIES IN CREATING MODULAR GREEN ROOF SYSTEMS

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Abstract

The increasing environmental concerns and the need for sustainable urban development have led to the widespread implementation of green roof systems. For example, urban heat islands contribute to temperature increases of up to 5°C in heavily built-up areas, while green roofs have been shown to reduce surface temperatures by 20–40°C, improving overall urban climate conditions. Additionally, cities like Toronto and Singapore have reported a significant reduction in stormwater runoff by up to 50% through the integration of modular green roof technologies. In Uzbekistan, green roof initiatives are beginning to gain traction in urban areas like Tashkent, where pilot projects have demonstrated improvements in thermal insulation and water retention, addressing the region's hot and arid climate.

Keywords: Modular green roof systems, Energy-efficient buildings, Eco-friendly construction technologies, Thermal insulation, Arid climate adaptation.

Introduction

The rapid urbanization process has caused a significant reduction in green spaces within cities, leading to environmental challenges such as air pollution, urban heat islands, and stormwater runoff. Green roof systems, particularly modular green roof solutions, have emerged as a promising tool to address these issues. In

Uzbekistan, urban development strategies are increasingly prioritizing sustainable construction techniques, particularly in cities like Tashkent and Samarkand. The country's climate, characterized by hot summers and low annual rainfall, makes green roofs a viable solution for improving building energy efficiency and reducing heat stress.

Table 1.

Comparison of green roof types

Criteria	Traditional Green Roof	Modular Green Roof
Installation Time	Long	Short
Maintenance	Complex	Simple
Cost	High	Moderate
Scalability	Low	High
Weight	Heavy	Lightweight

Concept of Modular Green Roof Systems

Modular green roofs consist of prefabricated components that include vegetation, growing medium, drainage layers, and support structures. Unlike traditional green roofs, modular systems are:

- **Flexible:** Components can be assembled and disassembled with ease.
- **Scalable:** Suitable for small residential buildings and large commercial structures.
- **Cost-effective:** Optimized installation processes reduce construction time and labor costs.

The modular design allows for customization based on structural load capacity, climate conditions, and intended green roof purposes (e.g., stormwater management, thermal insulation, or urban agriculture).

In Uzbekistan, modular green roofs have demonstrated significant energy-saving potential, particularly in residential and educational buildings. Pilot projects in Tashkent have shown a reduction in indoor temperatures by up to 5°C, decreasing reliance on air conditioning systems and lowering energy consumption.

Constructive Capabilities in Modular Green Roof Development

The constructive aspects focus on the structural integrity, material optimization, and compatibility of modular components. Key factors include:

Load-Bearing Design:

Assessment of the building's structural capacity to support green roof loads, including static and dynamic weights.

Use of lightweight, high-strength materials for module frames, such as aluminum, recycled polymers, or composite materials.

Drainage and Water Management:

Integration of advanced drainage layers to manage excess water while retaining sufficient moisture for plant growth. For example, modular green roofs often use multi-layered systems such as geocomposite drainage mats, which combine water retention with efficient drainage. Technologies like hydroactive smart layers can also be integrated to regulate water flow dynamically, adapting to changing weather conditions and minimizing runoff during heavy rainfall.

In Uzbekistan, water management is critical due to limited rainfall. Locally sourced substrates with high water retention capabilities are being explored to ensure sustainable green roof systems.



Figure 1. Modular green roof module

Insulation and Energy Efficiency:

Development of modules with insulating layers to improve thermal performance and reduce energy consumption.

Use of reflective and permeable materials for enhancing heat management. In Uzbekistan’s climate,

green roofs can provide significant insulation benefits, reducing indoor temperatures and mitigating heat gain.

Durability and Maintenance:

Selection of weather-resistant materials to ensure longevity.

Modular systems designed for easy replacement and low maintenance.

Table 2.

Material Options for Modular Green Roofs

Component	Material Options	Benefits
Frame	Aluminum, Recycled Plastic	Lightweight, Durable
Substrate	Eco-friendly Soil Mixtures	Supports Vegetation Growth
Insulation Layer	Reflective Foams	Thermal Efficiency
Vegetation	Native Plant Species	Low Maintenance

Technological Opportunities in Green Roof Construction

The technological advancements in construction techniques and tools play a significant role in the successful implementation of modular green roofs.

Mass production of modular components in controlled factory settings ensures precision and quality control.

Prefabrication reduces on-site construction time, minimizing disruptions. For instance, in a recent urban commercial project, prefabricated modular green roof components were assembled off-site and transported for installation, reducing on-site construction time by 40% and significantly minimizing noise and traffic disruptions in the surrounding neighborhood.

This approach not only accelerated the project timeline but also improved efficiency and reduced environmental impacts during construction.

Digital Design Tools:

Use of Building Information Modeling (BIM) for designing and simulating green roof performance.

Integration of 3D modeling software to optimize module configurations and structural compatibility.

Smart Sensors and IoT:

Implementation of sensors for monitoring moisture levels, temperature, and plant health.

IoT-based automation systems for irrigation, drainage, and maintenance.



Figure 2: Sensor systems integrated into a modular green roof setup

Sustainable Material Innovations:

Development of biodegradable or recycled materials for module components.

Use of eco-friendly substrates and native plant species to enhance biodiversity.

In Uzbekistan, local materials such as clay-based substrates and native drought-resistant plants like *Saxaul* and *Tamarix* are being tested for their suitability in modular green roof systems, ensuring both sustainability and cost-effectiveness.

Conclusion

Modular green roof systems represent an innovative and sustainable solution for urban environmental challenges. By focusing on constructive and technological advancements, these systems can be efficiently designed and implemented to achieve environmental, economic, and social benefits. The modular approach ensures scalability, ease of installation, and adaptability for various urban settings, making it a key component in modern sustainable architecture. Future developments in modular green roofs will likely involve enhanced automation, artificial intelligence for plant health management, and the use of advanced sustainable materials. For instance, AI can be utilized to analyze real-time data from sensors monitoring moisture, temperature, and nutrient levels, enabling predictive maintenance and resource optimization. In Uzbekistan, expanding government initiatives and research collaborations will play a crucial role in further promoting modular green roof systems as part of the country's sustainable development goals.

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MATHEMATICS

EFFECT OF COVID-19 ON ACADEMIC RESULTS OF UNIVERSITY STUDENTS: AN EMPIRICAL STUDY

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Abstract

Teachers and students encountered various challenges to fulfill the academic requirement in COVID-19. The purpose of this study was to evaluate the effect of COVID-19 on students' academic performance at Mawlana Bhashani Science and Technology University. We enlist 468 university students in our research study. Chi-square testing, cross-tabulation, and frequency distribution were used to examine the data. The findings indicate that 87.4% of respondents took an online course, 90.4% took an online exam, 74.4% believe that online learning is less effective than in-person learning, and only 4.7% are extremely satisfied with their academic experiences during the pandemic. The results also designate that there is a significant correlation between academic performance and taking an online exam, as well as between academic performance and taking an online course. There is also a significant correlation between academic performance and the degree of satisfaction with academic activities.

Keywords: Academic results, COVID-19, Effect, University Students, MBSTU.

Introduction

The COVID-19 epidemic has caused the most significant disruption to education systems in human history, affecting approximately 1.6 billion students across more than 200 countries. Closures of schools, institutions, and other learning places have affected more than 94% of the world's student population (Pokhrel & Chhetri, 2021). To reduce COVID-19 transmission, numerous countries adopted infection preventive and control methods by limiting contact between people (*Coronavirus Disease (COVID-19) – World Health Organization*, n.d.). Due to COVID-19, higher education institutions transitioned to online learning (Aguilera-Hermida, 2020). Online learning, sometimes known as remote learning, virtual learning, or distance learning, is a style of instruction in which students are not physically present in the classroom (Aguilera-Hermida, 2020). We can see that when covid-19 was identified in Bangladesh, the government issued a lockdown order. After March 17, 2020, Bangladesh's educational institutions have all been closed. To retain social distance, students from primary to tertiary levels are forced to sit at home rather than attend classes in educational institutions (Halim, 2021).

During covid-19, our institution continued academic activities online (such as lessons and tests), with the majority of our students attending online classes and taking exams. To continue with these online courses, both teachers and students face several difficulties.

Therefore, the purpose of the current study was to ascertain how COVID-19 affected the academic performance of MBSTU students. This study used a research methodology to examine the relationship between various factors (attending online classes, taking part in online exams, mental health concerns, etc.) and their effect on academic performance. It also presents the proportion of students who encountered problems with technology and communication, and how those problems affected their performance. The study's conclusion indicates that taking classes online has a detrimental effect on the students' academic performance.

Objectives of the study

- i. To investigate whether there is a relationship between COVID-19 and academic results.
- ii. To determine whether there is a correlation between online classes and academic outcomes.
- iii. To show the relationship between the degree of satisfaction of academic activities and the impact on academic results during COVID-19.

Materials and Methodology

The abrupt change to online learning during the COVID-19 pandemic is considered a social phenomenon (El Said, 2021a) that incorporates culture, technology, and human behavior, where different views must be considered (Abel Jr, 2020). Hence, the use of multiple research methods and the use of a multiplicity of techniques are essential (El Said, 2021b).

Data source

The MBSTU students are taken into consideration in this study, which is carried out utilizing the simple random sampling technique. We get data about 468 pupils. Students from each department, the residence halls, and other private housing closer to the university are chosen at random. Data was acquired in these study is both qualitative and quantitative by employing structured questionnaires. Background characteristics including sex, age, housing arrangement, personal income, marital status, and religion are included in the questionnaire. Additional factors include educational attainment, study duration, health problems encountered, technology problems, communication difficulties, participation in online exams, attendance in online classes, satisfaction with academic activities, and their recommendations are also included.

We have gathered a sample of data regarding students from various departments and years. We also gather data regarding their performance.

Method of Analysis

The relevant literature is evaluated from various published journals, official documents, books, reports, proceedings, etc. in order to meet the objectives. Both univariate and bivariate strategies have been used to achieve the study's goal. In order to investigate the relationship between the dependent and different independent variables, cross-tabulation analysis is conducted where univariate analysis is also presented in this stage.

Statistical Tool and Techniques

Univariate analysis

Univariate analysis is used to find the frequency distribution and to show different graphs of several variables in the study.

Bivariate Analysis

The frequency distribution is the initial stage for investigating the link between two variables. However, this frequency distribution does not provide quantification or testing of that relationship. For these reasons, it

is useful to investigate several indices that assess the extent of correlation, as well as statistical tests of the null hypothesis.

Chi-Square Test (χ^2)

A Chi-Square Test is used to explore the relationship between two categorical variables. Each of these variables can have two or more categories. It is often used in hypothesis testing, especially Pearson's Chi-square test.

Pearson's Chi-Square

$$\chi^2 = \sum_i \sum_j \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \sim \chi^2(r-1)(c-1)$$

Where, $(r-1)(c-1)$ degrees of freedom.

O_{ij} = Observed frequency.

E_{ij} = Expected frequency

P-value

The P-value is the minimum, exact level of significance. The P-value for a hypothesis test is the probability of obtaining a value of the test statistic as extreme as more than the one actually computed. The p-value for a statistic may be defined as the smallest value of which the null hypothesis can be rejected. If the p-value is greater than the level of significance, then we do not reject the null hypothesis.

Moreover, this analysis requires appropriate technological support because the study deals with a set of data. The analysis for this study was completed entirely on a personal computer using Microsoft Word and SPSS 20.

Results and Discussion

Cross tabulation for finding the association between participated online exam and impact on academic results.

Hypothesis-1:

H_0 : There is no association between participated online exam and academic result.

H_1 : There is an association between participated online exam and academic result.

Table-1

The relationship between taking an online exam and its effect on academic performance.

		Participated Online Exam		Total	Pearson Chi-Square	df	p-value
		Yes	No				
Impact on academic result	Positive	175	27	202	7.79	1	0.005
	Negative	243	15	258			
Total		418	42	460			

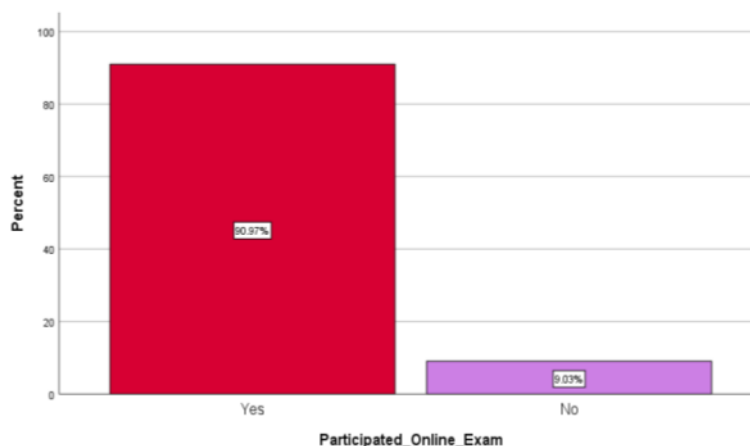


Figure-1: Respondent's involvement in an online test

Comment: Academic performance is significantly ($p < 0.05$) correlated with taking an online exam. Thus, the null hypothesis may be rejected. Participation in an online exam is associated to academic achievement.

Cross tabulation for finding the association between online learning and impact on academic results.

Hypothesis-2:

H_0 : There is no correlation between the effectiveness of online learning and academic results.

H_1 : There is a correlation between the effectiveness of online learning and academic results.

Table-2

The connection between the effectiveness of online learning and academic results.

		Online learning		Total	Pearson Chi-Square	df	p-value
		Yes	No				
Impact on academic result	Positive	71	130	201	21.07	1	0.00*
	Negative	43	215	258			
Total		114	345	459			

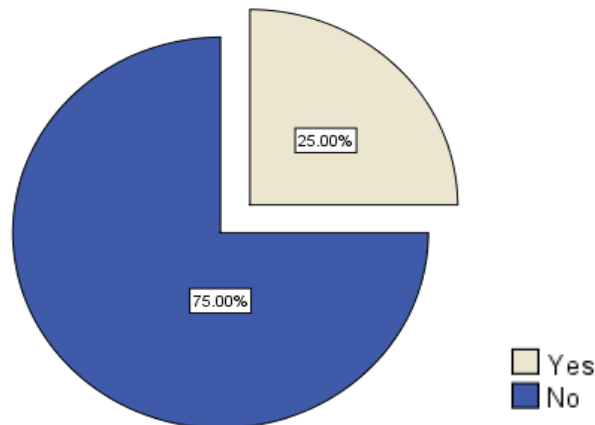


Figure-2: The effectiveness of online learning as perceived by the respondents.

Comment: This indicates that there is a significant ($p < 0.05$) correlation between the effectiveness of online learning and academic achievement. Thus, we can rule out the null hypothesis. Academic performance is correlated with online learning.

Cross tabulation for finding the association between mental health issue and impact on academic results..

Hypothesis-3:

H_0 : Academic performance and respondents' experiences with mental health issues are not related.

H_1 : Academic performance and respondents' experiences with mental health issues are related.

Table – 3

The connection between respondents' experiences with mental health issues and their effects on academic performance.

		Experienced any mental health issue		Total	Pearson Chi-Square	df	p-value
		Yes	No				
Impact on academic result	Positive	126	76	202	4.50	1	0.034
	Negative	185	73	258			
Total		311	149	460			

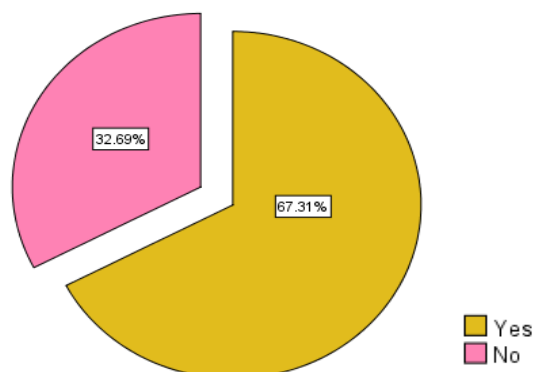


Figure- 3: Respondents' experiences with mental health issues

Comment: It is evident that there is a significant correlation ($p < 0.05$) between mental health issues. Thus, the null hypothesis may be rejected. Academic performance and respondents' experiences with mental health issues are related.

Cross tabulation for finding the association between compare online learning and impact on academic results.

Hypothesis-4:

H_0 : There is no correlation between the level of online learning comparison among respondents and its impact on academic results.

H_1 : There is a correlation between the level of online learning comparison among respondents and its impact on academic results.

Table-4

The association between the level of online learning comparison among respondents and impact on academic result.

		Compare online learning			Total	Pearson Chi-Square	df	p-value
		Better	Moderate/Similar	Less				
Impact on academic result	Positive	23	56	122	201	11.55	2	0.003
	Negative	19	44	194	257			
Total		42	100	316	458			

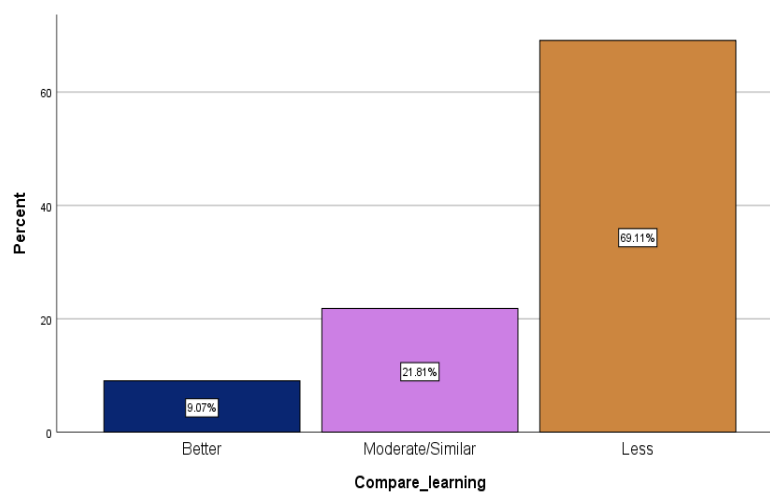


Figure- 4: The level of online learning comparison among respondents

Comment: The level of online learning comparison among respondents is highly associated ($p < 0.05$) with academic outcomes. So we may reject the null hypothesis. There is a link between comparison online learning and academic outcomes.

Cross tabulation for finding the association between academic activities and impact on academic results.

Hypothesis-5:

H_0 : There is no association between satisfied with academic activities and academic result.

H_1 : There is an association between the degree of satisfaction of academic activities and the impact on academic results.

Table-5

The association between the degree of satisfaction of academic activities and the impact on academic results.

		Satisfied with academic activities				Total	Pearson Chi-Square	df	p-value
		Strongly Satisfied	Satisfied	Moderate Satisfied	Not Satisfied				
Impact on academic result	Positive	10	44	75	68	197	9.93	3	0.0190
	Negative	12	36	85	123	256			
Total		22	80	160	191	453			

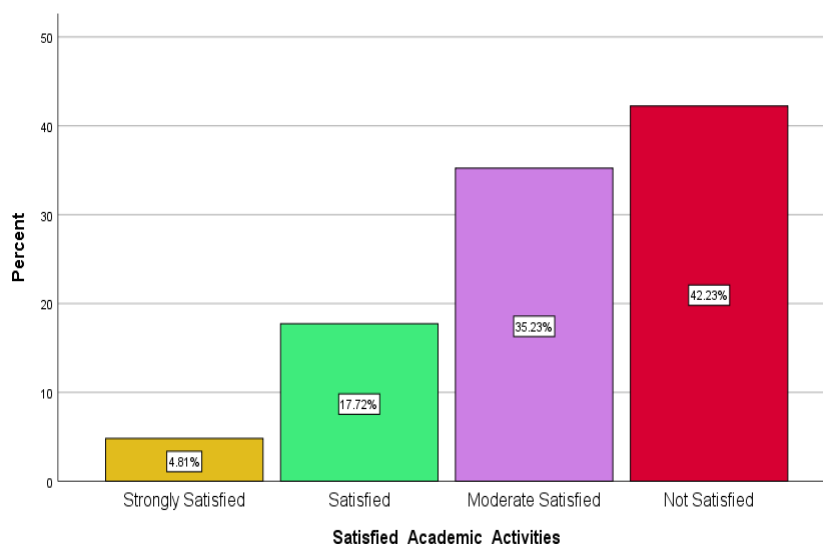


Figure-5: Respondent's degree of satisfaction with academic activities.

Comment: We observe a substantial ($p < 0.05$) correlation with academic activity satisfaction. Thus, the null hypothesis may be rejected. Academic achievements and satisfaction with academic activity are related.

Conclusion

Finding out does COVID-19 affected MBSTU students' academic performance was the aim of this study. Following the pandemic, we conducted study on a number of issues, some of which have been correlated to academic performance. According to the study's findings, there is a significant association between online courses and exams and academic results. Based on this correlation, it is possible to assume that COVID-19 had an effect on academic results. Therefore, this study represents a significant advancement in the identification of variables that affect academic results during pandemic.

Recommendation

- To mitigate the pandemic's impact, universities should implement short-term semesters.
- The authorities should offer mental health and counseling services to students.
- The institution should use online learning in addition to traditional classroom instruction, as they did during the pandemic.
- In order to increase students' level of satisfaction, authorities should concentrate on academic activities.

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MOLECULAR PHYSIOLOGY AND GENETICS

COMPARATIVE ASSESSMENT OF MATERIALS FOR ROOT CANAL FILLING

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Abstract

The most important issue in practical endodontics is the correct choice of materials for obturation of the root canal. The completion of endodontic treatment consists of complete and permanent closure of the root canal with a biocompatible material that is impenetrable to bacteria.

Keywords: Obturation of root canals, dye permeability.

However, there is still no answer to the question of what materials are considered optimal for root canal filling. The basic principles of root canal treatment were formulated more than 100 years ago. In 1913, Albrecht proposed a method for filling root canals, which was later called "resorcinol-formalin." Since the 70s, hardening pastes have been widely used for filling root canals. However, the fact that the paste can shrink in volume when it hardens at the tooth root (shrinkage of the material) and dissolve upon contact with tissue fluid is its disadvantage [1, 2]. In the process of continuous search for new methods and materials for filling root canals, gutta-percha was proposed, which became the most popular material for filling root canals. Currently, a large number of endosealants have been obtained for filling root canals, and the doctor's ability to make the right choice of the drug and filling method is one of the most important conditions for effective endodontic treatment. There are many different techniques for filling root canals using gutta-percha [3,4]. The most commonly used method in our country is the lateral condensation method and the single pin method. The purpose of the study was to determine the permeability of the dye into the root canal filled with the methods of one paste, lateral condensation, one pin using different groups of sealers. To determine apical leakage, the following groups of sealers were used: "Endomethason" (Septatont); "AH-Plus" (Densplay); "Sealapex" (Kerr); "Endion" (Voco); "Endosil" is a glass ionomer cement based on calcium phosphate ceramics produced in the Republic of Belarus. Apical penetration was determined by measuring the depth of penetration of dyes through the apical foramen into the filled root canal. The studies were carried out on the removed first central incisors of the upper jaw with a root length of 15 ± 0.5 mm. After mechanical medicinal treatment (2.5–3% sodium hypochloride and 17% EDTA solution were used as endolubricants) and subsequent drying with paper pins, the root canals were filled using the methods of one paste, lateral condensation and one pin using conical gutta-percha. The filled teeth were placed in a thermostat chamber and kept for 72 hours at a

temperature of 37 ± 1 °C and 95% humidity. After polymerization of the filling material, the roots of the teeth, except the apexes, were covered with varnish and molten wax and placed in a vertical position in a vessel with dye to the level of the coronal part for 168 hours. A 0.5% aqueous solution of fuchsin and a 2% aqueous solution of methylene blue were used as dyes. In laboratory conditions, longitudinal cuts of the teeth were carried out and sections of the samples were made on a Struers grinding machine (LaboForse, Denmark), which were examined using an optical microscope (Polivar at 40 and 80).

At least 5 samples were studied for each filling material. On sections of teeth, the canals of which were filled with the test pastes "Endomethason", "Sealapex", "AN-Plus" and cements "Unifas", "Endion", "Endosil" using the same paste method, dye penetration to different depths was observed in all samples. Dye permeability was detected in the structure of the filling material, at the border of dentin and sealer, as well as in the branch of the macrochannel. The smallest penetration depth of the dye was observed with the sealers "ANPlus" and "Endosil", the greatest - in the canals filled with pastes "Sealapex", "Endomethason" and "Unifas". The calculated level of reliability of the results is $P = 0.05$; $t = 4.3$. The second aspect of the study was to examine the apical percolation of root sealers in combination with gutta-percha points. At this stage, canal filling was carried out using the lateral condensation method and the single-pin method using conical gutta-percha. Data from the analysis of the manufactured samples showed a complete absence of dye in the canals of all groups of teeth. Penetration of the dye was detected to the level of the gutta-percha pin (1.5 - 2 mm from the anatomical apex of the tooth root), which confirmed its good ability to penetrate

Conclusions:

the most resistant (stable) to dye penetration when filling root canals using the one-paste method are endosealants "AH-Plus" and "Endosil", the least resistant are "Sealapex", "Endomethason", "Unifas"; - the use of a single pin method using conical gutta-percha allows you to reliably obturate the root canal and

use it as an alternative to filling root canals using the lateral condensation method.

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THE IMPROVEMENT OF MAIN SPEAKING SKILLS IN CONTEXTS OF COMPREHENSION OF ONE'S SURROUNDINGS, SELF-CONFIDENCE AND INDEPENDENCE, FEELINGS AND EMOTIONS**Mamedova A.***Candidate of philosophy, Teacher of the Foreign Languages Department
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In today's interconnected world, language has become the bridge that connects people across cultures, countries, and continents. Among the thousands of languages spoken worldwide, English has emerged as the most prominent global language. With over 1.5 billion people able to speak it at varying levels, English plays a critical role in business, education, travel, and even in personal growth. Effective communication is a vital skill in both personal and professional contexts. The surroundings play a pivotal role in the process of learning English, shaping the learner's exposure, practice, and motivation. An immersive environment that includes native speakers, English-language media, and real-life contexts fosters natural acquisition by enhancing listening, speaking, reading, and writing skills. Surroundings rich in English content provide opportunities for practical application, reinforcing vocabulary and grammar through interaction and repetition. Furthermore, cultural exposure deepens understanding of language nuances, idioms, and expressions, promoting fluency and confidence. The social aspect of an English-speaking environment also encourages communication and collaboration, essential for mastering the language. This paper explores the significant impact of one's surroundings on English learning and provides insights into leveraging environmental factors to accelerate language proficiency.

Keywords: speaking, learning, communication, self-confidence, emotions, body language.

Introduction

In our rapidly globalizing world, the ability to speak a foreign language is becoming increasingly vital. As borders between cultures continue to blur and interactions among different societies become more common, learning a foreign language is a valuable and empowering skill. The benefits of multilingualism extend beyond simple communication, influencing personal, professional, and societal aspects of life. One of the most apparent benefits of learning a foreign language is the ability to communicate with people from different cultures. In a world where international travel, migration, and cross-cultural relationships are prevalent, knowing a foreign language can help break down barriers and foster connections. It allows individuals to engage in meaningful conversations, share ideas, and understand others on a deeper level. Besides, effective communication is not just about exchanging words; it involves understanding cultural nuances, body language, and social norms. Learning a foreign language provides insight empathy and tolerance. It bridges the gap between people from different backgrounds and encourages mutual respect.

The significance of learning English cannot be overstated. As the most widely spoken language globally, English serves as a bridge connecting people from different cultures, countries, and professions. From education to business, and travel to personal growth, mastering English provides numerous advantages that can significantly impact an individual's opportunities and success. English has earned its status as the world's lingua franca, a common language that facilitates communication among people who do not share a native language. It is the official language of over 50 countries and is used extensively in international diplomacy, trade, and media. In multicultural environments and

global settings, English is often the preferred means of communication. Being proficient in English allows individuals to connect and communicate effectively with people from all corners of the globe. [2]

The process of learning English, like any language, can have significant cognitive benefits. Studies have shown that bilingual individuals tend to have better problem-solving skills, improved memory, and greater cognitive flexibility. Learning English challenges the brain to think differently and adapt to new linguistic patterns, which can boost overall mental sharpness. [9] On a personal level, mastering English can increase self-confidence and open up new avenues for personal expression. Whether it's writing a story, participating in an online discussion, or making new friends from different cultures, knowing English allows people to communicate their thoughts and ideas with a broader audience. This sense of accomplishment and the ability to connect with others can be incredibly fulfilling.

Effective communication is more than just the ability to express thoughts clearly; it involves understanding and adapting to the environment and the people one is interacting with. Developing speaking skills in real-world contexts, where comprehension of surroundings plays a crucial role, can enhance interpersonal relationships and ensure that messages are conveyed appropriately and efficiently. To communicate effectively, one must be attuned to the environment and social dynamics. This involves being aware of factors such as cultural norms, the formality of the setting, and the emotional atmosphere. For instance, a conversation in a professional meeting requires a different approach than a casual discussion with friends. Adapting speech to fit the context shows emotional intelligence and re-

spect for the people involved. Being observant and receptive to nonverbal cues, such as body language, facial expressions, and tone of voice, can greatly influence how one speaks. Understanding these cues allows individuals to adjust their message in real time, ensuring that it is received in the intended manner. This adaptability is a key component of strong speaking skills, as it allows for more effective and empathetic communication. [2]

Improving speaking skills is deeply connected to becoming a better listener. Active listening involves fully concentrating on what the other person is saying, understanding their message, and responding thoughtfully. This process enhances one's awareness of the surroundings and provides clues on how to engage in the conversation meaningfully. By listening attentively, individuals can pick up on subtle shifts in the topic, tone, or emotional state of their conversation partner and adjust their speaking style accordingly. For example, in a group discussion, active listening helps one gauge the overall mood and the perspectives being shared. This awareness can inform how one frames their contribution, making it more relevant and engaging. It also demonstrates respect and validation, qualities that strengthen relationships and make communication more impactful. [8]

Another aspect of improving speaking skills involves the ability to adapt one's speech based on the environment and the audience. This includes choosing the right vocabulary, tone, and level of formality. For instance, when speaking in a professional setting, it is important to use precise language and maintain a formal tone. In contrast, when speaking to close friends, a more relaxed and colloquial style is appropriate. Understanding the context also means being aware of cultural sensitivities and norms. When communicating with people from different cultural backgrounds, it is important to be mindful of words or phrases that may be interpreted differently. Being respectful and adaptable in these situations can make a significant difference in the effectiveness of communication and can help avoid misunderstandings. [10]

Empathy is a crucial element of strong communication skills. It involves understanding and sharing the feelings of others, which can only be achieved by being aware of the surroundings and the social dynamics at play. Developing empathy can help individuals become more considerate and thoughtful speakers. For example, if someone is speaking to a friend who appears distressed or upset, an empathetic speaker would acknowledge these emotions and adjust their tone and language to offer support. Similarly, in a workplace scenario, understanding the stress or pressure that colleagues may be under can guide one's approach to communication, making it more considerate and effective. [5]

Being an effective speaker goes hand-in-hand with self-confidence. The ability to express thoughts clearly and persuasively often hinges on how confident one feels in their own abilities. Many people struggle with nervousness, fear of judgement, or self-doubt when speaking, which can hinder their communication. However, by working on both self-confidence and speaking skills, it's possible to become a more impactful and

self-assured communicator. Self-confidence is a crucial factor in effective communication. When someone believes in their ability to express themselves, they are more likely to speak clearly, maintain eye contact, and engage their audience. Conversely, a lack of confidence can lead to hesitations, a shaky voice, and difficulty in articulating ideas. The key to improving speaking skills lies in understanding and addressing the root causes of self-doubt while simultaneously practicing communication techniques. Confidence is not something that happens overnight. It develops over time with consistent effort, practice, and a willingness to step outside of one's comfort zone. [4] As speaking skills improve, confidence naturally grows, creating a positive cycle: the more you practice speaking and receive positive feedback, the more confident you become, and the more effectively you communicate.

One of the most significant obstacles to confident speaking is fear. This fear often stems from worrying about being judged, making mistakes, or not being understood. To overcome this, it's essential to recognize that everyone makes errors and that perfection is not the goal. Accepting the possibility of mistakes as part of the learning process can alleviate some of the pressure. In order to decrease fear while speaking, practicing in a safe environment can be helpful. Speaking in front of friends, family, or supportive groups makes one feel comfortable and confident and it leads to gradual expansion to larger or more formal audiences. Besides, using relaxation techniques like breathing, visualization, and positive affirmations can help calm nerves before speaking. Visualizing a successful outcome can create a sense of confidence and preparedness. Preparation is a powerful confidence booster. [1] Knowing material well and anticipating potential questions can make one feel more secure in ability to speak effectively. Practicing speech or presentation multiple times can also help become more familiar with the content and more comfortable with how to deliver it. Additionally, body language also plays a significant role in how confident someone appears- and how confident someone feels. Adopting a strong, open posture can send signals to the brain that boost one's sense of self-assurance. Standing up straight, making eye contact, and using hand gestures to emphasize points can make one seem more authoritative and engaged. [9]

Effective speaking skills are fundamental to personal and professional success, but their importance goes beyond mere communication. They play a vital role in fostering independence by enabling individuals to express their ideas, advocate for themselves, and make meaningful connections without relying on others for support. Developing strong speaking skills can empower people to navigate various situations confidently and assert their autonomy. To this respect, the link between speaking skills and independence cannot be denied. Independence is the ability to think and act freely without excessive reliance on others. [6] Communication is central to independence, as it allows individuals to articulate their needs, opinions, and decisions. Proficient speaking skills enable people to express their needs clearly. Whether in personal relationships or professional environments, clear communication ensures

that one's needs and boundaries are understood and respected. It can also help to make decisions with confidence. Speaking confidently about one's choices reinforces the ability to stand by those decisions. Additionally, by possessing an effective speaking skill person can engage in problem-solving. Effective speakers can discuss and negotiate solutions to challenges independently, without requiring intermediaries. When people master speaking skills, they become better equipped to navigate life on their own terms, reinforcing their sense of autonomy. [10]

Strong speaking skills cultivate self-reliance by giving individuals the tools they need to handle everyday situations. For example, the ability to explain oneself clearly in a medical appointment, negotiate terms in a job interview, or ask for help when needed demonstrates independence. Besides, improving speaking skills reduces reliance on others to communicate on one's behalf. Many individuals shy away from speaking up due to fear or a lack of confidence, leading them to depend on friends, family, or colleagues to mediate for them. By developing these skills, individuals can take control of their interactions and represent themselves effectively and independently. There are some strategies to overcome dependence and obtaining independence. One of them is practicing self-advocacy. One should start by speaking up in small, everyday situations, such as ordering food at a restaurant or asking questions in a store. It is helpful to learn and practice everyday expressions and phrases in different situations. Another useful strategy is to learn assertiveness. Practicing expressing opinions and needs respectfully but firmly, ensures one's voice to be heard without aggression or passivity. One of the most important strategies is to gain knowledge. Being informed about the topic at hand boosts confidence, reducing the need to rely on others to explain or defend one's perspective. [7]

Gaining independence in speaking has the long-term benefits in individuals. As speaking skills improve, individuals gain a stronger sense of self-reliance and autonomy. They become better equipped to navigate complex situations: from conflict resolution to negotiating contracts, effective speakers handle challenges independently. It also builds strong relationships. Confidence in communication fosters authentic connections without needing others to mediate. Finally, mastering speaking skills opens doors to new opportunities, whether it's pursuing a career goal or traveling to foreign countries and engaging with new cultures. [7]

Effective communication involves more than just exchanging words- it's about expressing thoughts, emotions, and feelings authentically. Speaking skills rooted in emotional awareness are vital for building meaningful connections, resolving conflicts, and understanding oneself and others. Learning to articulate feeling clearly and empathetically not only improves speaking skills but also fosters emotional intelligence, a cornerstone of personal and professional success. Emotions play a central role in human interactions. [2] Whether it's joy, sadness, anger, or excitement, emotions shape the way messages are delivered and re-

ceived. Speaking skills that consider emotions allow individuals to convey authenticity and build empathy because sharing emotions helps listeners connect on a deeper level and expressing feelings clearly allows others to understand and validate experiences. Besides, it can resolve conflicts because communicating emotions constructively prevents misunderstandings and promotes resolution. When emotions are poorly expressed or suppressed, it can lead to confusion, frustration, or disconnection. Improving speaking skills in the context of emotions ensures that feelings are conveyed with clarity and respect.

Improving speaking skills in the context of understanding one's surroundings is about more than just being articulate. It involves being mindful of the environment, actively listening, and adapting speech to fit the context. By developing these skills, individuals can become more effective and empathetic communicators, capable of building stronger connections and conveying their messages with clarity and impact. As the world becomes increasingly interconnected, the ability to understand and adapt to different contexts will only become more important, making the development of these skills a valuable investment. [3] Improving speaking skills is a transformative process that strengthens independence by empowering individuals to express themselves, advocate for their needs, and navigate life's challenges without excessive reliance on others. By investing in the development of these skills, individuals can take charge of their lives, make informed decisions, and confidently pursue their goals. Independence is not just about standing alone but standing strong- and effective communication is the foundation of that strength. Speaking skills intertwined with emotional awareness are crucial for authentic and meaningful communication. By learning to express feelings clearly and empathetically, individuals can build stronger connections, navigate conflicts, and enhance their overall emotional intelligence. Improving these skills is not just about becoming a better speaker- it's about becoming a more understanding and self-aware individual who can thrive in personal and professional relationships.

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TEACHING READING TO ESL STUDENTS: DECODING SYMBOLS IN LITERATURE

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<https://orcid.org/0009-0008-3761-8521>DOI: [10.5281/zenodo.14636779](https://doi.org/10.5281/zenodo.14636779)**Abstract**

The article explores effective techniques for teaching reading to English as a Second Language (ESL) learners through the analysis of literary symbols. The article seeks to improve students' critical reading abilities and enhance their interaction with texts by examining common symbols in literature, such as colors, weather, Greek myths and Christian motifs. It presents useful techniques for recognizing, examining and discussing these symbols underlining the significance of being culturally aware when interpreting their significance. Using a qualitative method, the article presents a systematic approach for teachers, providing resources and illustrations designed for the specific difficulties encountered by ESL students. This method enhances comprehension skills and also develops critical thinking and interpretive skills needed for academic achievement. On balance, the article aims to provide teachers with useful methods to assist ESL students in understanding the challenges of literary symbolism, enhancing their reading skills and promoting a deeper love for literature.

Keywords: symbols; literature; reading comprehension; ESL students; literary devices.

Introduction

Teaching ESL students how to read comes with distinct challenges that go beyond just learning the language. While it is important to develop vocabulary and grammar skills, having a deep understanding of literary elements can greatly improve comprehension and critical thinking abilities. Symbolism is essential in literature, enhancing the reading experience by providing extra depth and layers of meaning. Nonetheless, understanding the intricacies of symbols, such as colors, weather patterns or cultural allusions can be especially challenging for ESL students. Comprehending these symbols necessitates not just language skill but also cultural sensitivity and interpretation abilities, which may not be completely mature in students still learning a new language. Symbols are common in literature and culture conveying intangible ideas or concepts using physical objects or images. For instance, *a red rose* represents *love* or *passion*, whereas a *storm* may signify *turmoil* or *conflict*. Comprehending these symbols necessitates not just linguistic fluency but also cultural understanding and interpretative abilities. Regrettably, a lot of ESL learners face difficulties with this particular aspect of reading, frequently staying at a superficial level of understanding and overlooking the deeper messages hidden in the text. This problem is made worse by the absence of organized direction in numerous current curriculums, which commonly expect a specific language skills level that ESL students may not have attained. As a result, students might only scratch the surface of the text, which can impede their progress in developing critical reading skills.

In order to teach ESL students how to understand symbols successfully, educators need to use strategies that make these abstract ideas easier to grasp and use. This includes breaking down the process of analyzing symbols into smaller steps and giving students the tools to link symbols with their meanings. For instance, exploring the importance of colors in various cultural settings can aid students in grasping the differences in color symbolism and its relevance to the text being studied. Likewise, investigating symbols connected to

weather or seasons can improve students' skill in identifying patterns and themes in literature.

Additionally, teaching symbols can also provide as a springboard for further in-depth literary analysis. Students develop essential skills for comprehending complex narratives and themes by examining symbols and identifying repeated motifs and patterns in texts. This approach motivates students to be involved more profoundly in the text enhancing their reading experience. Interacting symbols not only helps with understanding but also promotes critical thinking, as students are able to examine the connections between symbols and the ideas they stand for.

This article will also examine different symbols often seen in literature, including colors, weather patterns, Greek myths and Christian motifs. It will offer effective techniques for recognizing and examining these symbols designed especially for ESL students. The article's goal is to assist educators in enhancing their students' grasp of literature by providing clear explanations and meaningful examples. This strategy improves both understanding of written material and develops skills for analyzing and interpreting information, crucial for intellectual and personal development.

In essence, educating ESL students on reading using literary symbolism comes with both challenges and advantages. Educators can assist students in understanding symbolic representations by acknowledging their specific needs and using relevant instructional approaches.

Purpose: The goal of this article is to provide educators with strategies for teaching ESL students how to recognize and examine symbols in literature. The article intends to enhance students' reading abilities and their capacity to interact with intricate texts by emphasizing familiar symbols and their interpretations. It aims to offer useful guidance on integrating symbol analysis into reading education in order to promote a deeper comprehension of literature.

Novelty: This article's uniqueness is found in its customized method of instructing literary symbols, de-

signed specifically for ESL students. This article discusses the specific difficulties that ESL learners encounter, contrary to the assumption of advanced language skills in traditional literary analysis. It provides techniques for making symbol analysis understandable and significant, focusing on hands-on activities and relevant examples for students' language proficiency levels.

Problem: A common challenge is that students frequently have trouble transitioning from surface-level reading and personal reactions to a deeper, more analytical comprehension of texts. Although symbols play a crucial role in literary analysis, numerous students struggle with identifying and understanding them competently. Many current curricula lack clear direction and real-world examples, making the problem even more challenging. As a result, students could overlook the intricate implications that symbols carry, resulting in a surface-level interaction with the text and a restricted enhancement of critical reading abilities. This problem is tackled in the article with a systematic method for symbol analysis, including concrete examples and a focus on textual evidence.

Methodology: This article employs a qualitative approach to develop effective strategies for teaching symbol analysis. The process starts by thoroughly examining current literature on symbol analysis, recognizing typical symbols like colors, weather, myths, religion, numbers, diseases, settings, animals and distinctive objects.

Discussion: Symbolism is essential in conveying intricate themes and ideas in literary analysis by using seemingly simple images or objects. ESL students must be proficient in English and adept at accessing the cultural and contextual meanings within texts to grasp symbolism in literature. This challenge demonstrates the importance of specific teaching methods that connect language and cultural differences in order to enhance understanding of literature.

Symbolism is when symbols such as objects, colors, or elements are used in literature to represent larger concepts or ideas. The theoretical framework for comprehending symbolism is founded in semiotics, which is the examination of signs and symbols and their utilization or explanation [4]. Symbols operate within a culturally and contextually defined system of meanings. Symbols in a text are not just about what they physically look like, but also about how they are interpreted in the story's structure. Roland Barthes suggests that symbols are a component of a larger semiotic framework in which meanings are formed by cultural codes and conventions [2]. This indicates that comprehending a symbol entails more than just acknowledging its existence; it also involves unraveling the multiple meanings it represents. This process often involves connecting the symbol to its broader thematic and contextual implications within the text.

Colors, for instance, are a common symbolic device in literature. They are able to express a variety of emotions and themes, from the *intensity* linked to *red* to the *calmness* indicated by *blue*. Nevertheless, the meaning of colors is not consistent among different cultures and can vary greatly. Even though, *white* often symbolizes *purity* and *peace* in Western contexts, it

may represent *mourning* and *death* in some Eastern cultures [6]. Therefore, ESL students must be guided to explore the cultural connotations of colors in both their native and the target culture to grasp their significance in literary works.

Similarly, *weather* and *seasons* are employed as symbols to reflect characters' emotions or narrative developments. *Rain* might symbolize *renewal* or *cleansing*, while *storms* can represent *conflict* or *upheaval*. These interpretations are often influenced by cultural narratives and traditions. In Western literature, *rain* symbolizes *emotional release* or *rebirth*, while in other cultures it may have different meanings [4]. Teachers can assist English as a Second Language learners by giving specific examples related to the context and prompting them to consider the connection between weather patterns and seasonal changes with the characters and themes in the literature.

Greek mythology and *Christian symbolism* are important in literature, frequently acting as intertextual references that enhance the story. Greek myths, which contain a diverse range of gods, heroes and archetypes, often serve as the foundation for literary characters and plots. Understanding these references requires familiarity with the myths themselves and their symbolic meanings [7]. This might involve supplementary instruction on major myths and their themes, as well as how these myths are reinterpreted in modern literature.

Christian symbols, such as the *cross* or the *lamb*, also carry profound meanings that can influence narrative interpretations. These symbols often carry theological and moral implications that might not be immediately apparent to ESL learners unfamiliar with Christian traditions. For example, a character's *journey* might parallel Christ's resurrection, reflecting themes of *redemption* and *sacrifice* [5]. Educators should provide explanations of these symbols and their religious significance, helping students to connect these elements to the broader themes of the text.

The analysis of *numbers* as symbols adds another layer of complexity to literary interpretation. Numbers such as *three*, *seven* or *forty* frequently hold symbolic significance, influenced by religious, historical or cultural connections [3]. For example, the *Holy Trinity* in Christianity is often linked to the number *three*, while *forty* can represent a period of testing or change, as seen in the biblical flood or the forty days of *Lent*. ESL students need to understand these associations to fully appreciate how numerical symbols contribute to thematic development.

Understanding *illness* and distinguishing *characteristics* as symbols requires a nuanced approach. Physical traits or health conditions often serve as metaphors for psychological or moral states. A character with a *scar* might symbolize a *past trauma* or an *unresolved issue*, while a chronic illness could reflect a state of liminality or transition [8]. ESL learners can gain insight from conversations on the roles of these symbols in the text and their connections to character growth and the themes of the story.

Symbolic meanings are also given to *settings* and *animals* in literature, which help to enhance the storyline. *Gardens* might symbolize *peace* and *growth*,

while *forests* often represent *mystery* or *danger*. *Animals*, too, carry symbolic weight, with *foxes* representing *cunning* and *turtles* symbolizing *wisdom* or *longevity* [1]. ESL students should be encouraged to explore how these settings and animals are used symbolically to enhance their understanding of the text's deeper meanings.

In order to teach these symbolic concepts well, educators need to utilize a variety of teaching methods. This involves giving contextual explanations, utilizing culturally appropriate examples, and involving students in conversations about the symbolic significance of different elements in literature. Educators can assist ESL students in enhancing their overall reading skills by combining these methods to foster a deeper comprehension of literary symbols.

Educating ESL students on how to comprehend and analyze literary symbols necessitates a subtle and encouraging method. Educators can improve students' understanding and analytical abilities by choosing appropriate symbols, giving cultural and contextual explanations, and utilizing interactive and multimedia resources. Formative and summative assessments, as well as self-assessment and peer review, help students in effectively recognizing and analyzing symbols in literature. Ongoing support through differentiated instruction and continuous feedback further aids in addressing diverse needs and fostering deeper understanding.

This approach not just teaches ESL learners how to understand literary symbols, but also promotes critical thinking and cultural awareness within them. By combining theoretical knowledge with hands-on teaching methods, teachers can establish an engaging learning atmosphere that fosters student development and enhances their literary encounters.

Conclusion

Teaching reading to ESL students by focusing on the interpretation of literary symbols offers a powerful means to enhance their comprehension and engagement with texts. Symbols like colors, weather patterns, mythological references, and religious motifs hold intricate meanings that have the potential to enhance students'

comprehension of literature. Nevertheless, the difficulty is in overcoming the cultural and linguistic barriers that could prevent ESL students from fully understanding these symbolic meanings. To tackle this issue, educators need to use specific strategies that help students analyze symbols in a way that is easy to understand and applicable. This includes giving contextual explanations, using culturally relevant examples, and involving students in interactive discussions. By dividing the procedure of deciphering symbols into smaller tasks and utilizing different teaching aids, educators are able to simplify complex ideas and promote analytical thinking. In the end, the objective is to provide ESL students with the abilities to identify and interpret symbols, enhancing their reading encounters and fostering a greater understanding of literature. This method enhances reading skills and motivates students to engage with the cultural and thematic aspects of the texts they come across. By continually providing help, adapting teaching methods, and offering regular input, teachers can establish a vibrant and all-encompassing learning space that nurtures the educational and individual development of ESL learners.

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THE PROBLEM OF NATIONAL IDENTITY SEARCHES IN AZERBAIJANI LITERATURE**Jafarov T.***Doctor of Philology, Professor**Baku Slavic University*ORCID: <https://orcid.org/0000-0002-4429-654X>DOI: [10.5281/zenodo.14636789](https://doi.org/10.5281/zenodo.14636789)**Abstract**

In the article, the historical novel genre, examples of historical novels in Azerbaijani literature are studied in the context of national identity, national self-awareness and national existence. As the main object of research, historical works written in the years of independence, novels by individual authors, including Eyvaz Zeynalov's "Nadir Shah" novel, which reflects the history of the creation, formation and fall of the Nadir Shah Afshar Empire, are analyzed.

The author of the article examines the events unfolding in the novel from the point of view of Turkic civilizations and the Turkic cultural and historical type. It is emphasized that Nadir Shah created his state at the cost of enormous efforts, but due to backwardness, superstition, lack of education and inexperience in government, the collapse of his empire became inevitable. This led to the subsequent historical tragedies of Azerbaijan, the division and annexation of its historical lands to the territories of individual states.

It is obvious that the Turkic cultural-historical type is not included in the first and subsequent classifications based on the laws and regularities of movement defined by the Russian scientist Nikolay Danilevsky in his work "Russia and Europe", who had the first role in defining cultural-historical types. Historical facts and various types of evidence are listed to prove this. Although the indicated error was eliminated by the authors of the Eurasian concept of Russian history in the 20s and 30s of the 20th century, it is noted that there is a need for scientific-theoretical confirmation of the existence of the Turkic cultural-historical type and Turkic civilization as an ideological landmark in the historical conditions of the formation of the Union of Turkic States.

Keywords: historical novel, Nadir Shah Afshar Empire, Eyvaz Zeynalov, Turkic civilizations and Turkic cultural-historical type.

The interest in historical topics in Azerbaijan, particularly the emergence of historical novels during the years of independence, has specific underlying reasons. The root of the approach to historical themes in our literature lies in the persistent assertion that, despite visible efforts, our "academic history has not been correctly written, textbooks have distorted our true history, there is no coherent and unified scientific-historical perspective on the national-ethnic roots of the Azerbaijani people, and the emphasis on presenting our history, ethnography, archaeology, language, folklore, and literature in the broader Turkic and global historical-cultural context and areas remains critically important" – a call that remains highly relevant today.

Given that Eurasianist studies and the problem of the Turkish cultural-historical type in world cultures and civilizations are now part of our research interests, we consider it essential in our literature, especially during the post-Soviet period of independence, to promote and present to ourselves and others: national self-awareness, national identity, our national statehood history, the determination of independent Azerbaijan's place and role in the broader Turkic historical-cultural arena, and our existence as a political and economic force in the region, the Turkish States Union, and the world – emphasizing our status as possessors of a great history and culture, free thought, self-confidence, and wholeness.

In this context, we would like to focus specifically on Eyvaz Zeynalov's novel "Nadir Shah", (Zeynalov, 2024, 568 p.) as it evokes diverse intellectual associations.

The persistent interest in the image of Nadir Shah, dubbed "The last Conqueror of the East", is particularly evident in our literary works. Naturally, Nariman Narimanov's drama "Nadir Shah" stands out first in this context. After Huseynbala Miralamov's "The Last Conqueror" and Yunus Oguz's "Nadir Shah" novels were published in the post-Soviet period, Professor Lawrence Lockhart's monograph "Nadir Shah" from Cambridge University, and in parallel, British orientalist Michael Axworthy's "The Sword of Persia: Nadir Shah. From Tribal Warrior to Conquering Tyrant" (published in Azerbaijani in 2018) emerged. The previously translated monograph "Nadir Shah" by Iranian historian Mohammad Hossein Qoddusi was a valuable source for our writers. The publication of E. Zeynalov's extensive "Nadir Shah" novel in 2024, followed by the translation of Mirza Mehdi Khan Astarabadi's "History of Nadir: the Conqueror of the World" by researcher-scholar and renowned translator Ibrahim Guliyev, demonstrates the continued relevance of the topic. It is worth noting that Yunus Oguz's novel has already been published in Turkish and English, while Huseynbala Miralamov's novel is available in English. According to the author, E. Zeynalov's novel is also being prepared for publication in Turkish and German.

Zeynalov is the latest author to approach the historical novel genre and the history of the creation, expansion, and decline of the empire of the Azerbaijani Turk Nadir Shah. Naturally, he has extensively utilized the sources listed in his bibliography. Simultaneously, through the power of his artistic imagination and extensive, productive writing experience, he has managed to

present his original plot and interpretation. Specifically mentioning Lockhart's book, we would emphasize that its version translated by our renowned writer Nariman Abdulrahmanli is not only a comprehensive scientific-historical-chronological source but also a publication presented in a highly artistic, vivid, and readable language. The message conveyed in the first chapter of Lockhart's work confirms his intention as a researcher and the invaluable nature of this precisely translated work for our historiography. The "Final Notes" of the English scholar, who conducted extensive research, indicate that examining and presenting materials from archives in Tehran, Moscow, St. Petersburg, Istanbul, Vienna, Paris, and other cities regarding the contradictory period of the Safavid and Nadir Shah Afshar empires remains a primary task of our most recent historiography. The significance of Lockhart's research, observations, and conclusions lies in exposing the fundamental reasons for the decline of the magnificent Safavid and Afshar empires created by Azerbaijani Turks – a perspective we urgently need to revisit. It appears that the author does not remain impartial towards Nadir Shah's heroism and approaches it with admiration: *"Rising from shepherding to kingship should be considered a significant achievement, but Nadir's even greater heroism was that he not only liberated the Safavid Empire, which had been torn apart by powerful enemies, but also elevated the country from its lowest level to the most influential state in Asia"* (Zeynalov, 2024, p.5).

In the depiction by Mirza Mehdi Khan Astarabadi, who serves as Nadir Shah's chronicler, a powerful conqueror's image is vividly portrayed: *"This divine force created Nadir, the world conqueror, as a magnificent protector of the homeland like [Great] Alexander, a renowned [Warlord] victorious on the battlefield, or a manifestation of divine power laboring [to restore] a fallen name. He is a courageous conqueror who adorns the royal seal, shines like a star in world dominion, is worthy of the royal throne that embellishes the world, and possesses the power to triumph over enemies... The earth has drawn its shield over its head in fear of his arrow"* (Zeynalov, 2024, p.15).

This novel, covering events of the 18th century – a new era, presents a challenging and thought-provoking narrative for Azerbaijani Turks who consider the Safavid and Nadir Shah Afshar empires a significant stage of their historical legacy. The topic of Nadir Shah is historically closer to our time, making materials from local and foreign archives and books written by foreigners accessible to researchers and readers.

The novel's notable characteristics include the preservation of historical-chronological sequence, emphasis on key historical facts throughout the narrative, clear and convincing descriptions, the ability to artistically clothe historical facts, vivid portrayal of human characters and the epoch. It explores Nadir Shah Afshar Empire's relations with Russian and Ottoman states, Nadir Shah's confrontations with mountaineers and Dagestani peoples, complex religious issues for the Islamic world, and provides a comprehensive explanation of the reforms of Nadir Shah, particularly regarding inter-sectarian contradictions – a primary source of

discord between the two major Muslim empires of the East.

The work does not shy away from an abundance of battle scenes consistent with the genre, a successful depiction of the military and warrior spirit created by Nadir Shah as a commander, and an attempt to create an image of a reformist ruler ensuring the country's military and economic might. Simultaneously, the novel highlights the penetration into the inner world and thoughts of humans caught in the whirlpool of death, torture, and other inhumane factors.

The author successfully creates a comprehensive understanding of Nadir, who was raised in a simple family, strengthened by the warrior spirit in accordance with the demands of his environment and time, and who rose from an army commander to the shah's advisor and ultimately to the shah's position. Following the tradition of medieval literature, the commander and ruler Nadir Shah is portrayed as a fearless, indefatigable, resolute tactical and strategic leader:

"Nadir was not intimidated by the enemy's numerical superiority. In battle, he favored swift cavalry attacks. His cavalymen were skilled in firing while making rapid attacks and hitting targets accurately. Their horses were extremely fast. His cavalry was famous throughout Asia. They had an impressive appearance. They wore four-cornered leather caps, and were armed with rifles, axes, swords, and shields. They would not attack unless they heard Nadir's order, and when they did attack, they were unstoppable. He had personally trained them on the battlefields" (Zeynalov, 2024, pp. 264-265).

The depiction under the chapter titled "Translation of Holy Scriptures" in the second part of the novel elucidates that Nadir Shah's approach to religious reforms and his attitude toward religion were not guided by blind faith. During the debates, Nadir Shah declares his intent: *"My first goal is to eliminate the sectarian differences that divide the Turks"* (Zeynalov, 2024, p. 443).

This brief analysis and our engagement with the text enables us to evaluate the era and events described within the context of the New Era stage of world history. The 18th century was a period of bourgeois revolutions, classicism, and Enlightenment in Europe. The final decades of the century are characterized by the flourishing of sentimentalism and romanticism in Europe and Russia. In other words, philosophical and literary thought focused on the image of the simple human, the inner world of individuals, and the struggles of freedom-loving fighters. By this time, the protagonist of the emerging Masonic movement in Europe was the hardworking, creative human.

In the near future, 18th-century Russia, which would dominate the Caucasus, surrounding territories, historical Azerbaijani lands, Crimea, and Black and Baltic Sea ports, was experiencing technological revival and pursuing the path of enlightenment, sometimes following and sometimes even overtaking Europe. As the novel reveals, a completely different socio-political and cultural-spiritual environment existed in the Nadir Shah Empire and the Ottoman Empire at that time. Indeed, apart from rare attempts such as Nadir

Shah's desires to create a naval fleet, conduct improvement works, and collect taxes, it was difficult to speak of any technical progress, spread of enlightened ideas, or establishment of a progressive education system in the country.

So, although Nadir Shah was called a conqueror, the era of conquerors had already passed in history. Subsequent and even contemporary history demonstrated that achieving economic and cultural progress and political influence through war, force, oppression, and cruelty is challenging. This was repeatedly proven by the political fate of Napoleon, another conqueror from a simple background who is often compared with Nadir Shah. Even Nadir Shah's attempts to subjugate Caucasian peoples – the mountaineers – would be sufficient to precipitate the collapse of his powerful but short-lived empire. In the 19th-20th centuries, Russia has repeated the same mistake: according to estimates, it lost more than 30 million officers and soldiers in the conquest of the Caucasus.

Mammadh Said Ordubadi's "Sword and Pen", a novel with profound ideas and national-historical coloration, provided direction for the future of the historical novel genre and thematic explorations in our literature. Among the artistic works we loved most since childhood are Ismayil Shikhli's "Tameless Kura River", Farman Karimzadeh's "The Khudafarin Bridge", Alisa Nijat's "Qizilbashs", Aziza Jafarzadeh's "Baku 1501" and others. It is not coincidental that these works have been republished multiple times during the years of independence. During the independence years, especially in the last two decades, there emerged a necessity both to comprehend the genuine truths related to our national history and to communicate them to ourselves and others. Because it has become evident that the perceptions formed during the Soviet era about general Turkic and Azerbaijani history were incorrect, with events being distorted and presented in line with ideological agendas over time. Fortunately, we were in a position to rely on the magnificent historical essays of Abbasgulu Agha Bakikhanov, such as "Gulistani-Iram", which reflected our true history before the Russian invasion in 1805, 1813, and 1828. Unfortunately, despite this valuable historical source being deemed as important for Russian historiography as Nikolai Karamzin's twelve-volume "History of the Russian State" and being recommended for review and publication by the Russian Academy of Sciences and the Ministry of Education, it was only printed at the author's own expense due to the lack of financial resources. Furthermore, in the late 19th and early 20th centuries, among the intellectuals who contributed to the development of Turkism and national self-awareness in the Russian and Turkish socio-political, scientific, and philosophical environments, were prominent figures such as Ahmad Bey Aghayev and Ali Bey Huseynzade. The Azerbaijan Democratic Republic, established in the East, became the first democratic republic in the region, realizing the formation of our people's long-standing statehood within the framework of national self-awareness, under the banners of Turkism, Islamism, and modernity (Europeanization), in response to the demands of the time. By the verdict of history, Azerbaijan, a people with a rich history, culture, and ancient statehood experience, located at the

crossroads of Europe and Asia, where the Silk Road and trade routes intersect, endured a long and painful yet magnificent and bitter journey of statehood. Despite these challenges, the Azerbaijani people were able to establish a civil state that responded to the modern challenges of the era, achieving significant accomplishments in a short period of almost two years. In our opinion, in the current socio-political context, the thesis of Ahmed Agaoglu, "As for us, we could not even teach our language to strangers, let alone to the nomads; we have no national craft except backward agriculture, and the scope of our intellect and mind is limited... We cannot avoid the necessity of adopting the victorious (European – T.J.) culture. This truth, however bitter, must be acknowledged and acted upon accordingly" (Agaoglu, 2006, p. 35), proved to be of great value.

By liberating Baku, which had become the center of the economic interests of world imperialism, Tsarist and later Soviet Russia, we not only fought a fierce war with the Armenians who had been settled on our fertile lands as a result of the Russo-Iranian and Russo-Ottoman Wars, but also managed to restore our historical memory and deepen our understanding of national identity. Despite the Soviet occupation, this national awakening and consciousness continued to yield results in the 1920s and 1930s. The First Turkological Congress, held in Baku in 1926, raised the claims of Azerbaijan's legacy to the general Turkic history of statehood and culture, as well as its vast historical and cultural area. Azerbaijan's political and literary diaspora fulfilled its mission in this regard until the end. The ideological and thematic profundity of our magnificent medieval epic "Kitabi-Dada Gorgud" ("The Book of Dada Gorgud"), the statehood traditions of the Oghuz Turks meticulously portrayed within its narrative, their nuanced experiences in confronting both internal and external adversaries, as well as the scholarly comparisons drawn by Russian and European Orientalists with seminal epics such as the "Tale of Igor's Host", the "Song of Roland", and the "Nibelungenlied", have provoked profound scholarly interest and intellectual discourse. The epic was translated into foreign languages (by figures such as Friedrich von Dittes, Vasili Vladimirovich Bartold, etc.). The Oghuz-Turkic epic, with its ideological and thematic depth, literary-artistic richness, challenges, originality, and poetics, embraced all of these aforementioned works.

Since the era of Mirza Fatali Akhundov, the idea of Europeanization and the recognition of the dark chapters in our history led to the transition to the Latin script. The works of figures like Huseyn Javid, Almas Ildirim, Mahammad Hadi, Ahmad Javad, Mikayil Mushfig, and others, particularly H. Javid's historical dramas ("The Prophet", "Siyavush", "Tyrant Timur", "Khayyam") urged the people to understand their historical past and never forget their "blood memory". Thirdly, during the period of mass repression and deportation of peoples, which intensified in the mid-1930s and continued sharply until Stalin's death, the ideological clichés formed during this time, and the distorted presentation of our great historical past in encyclopedic publications, school textbooks, and academic works until the collapse of the Soviet government and the communist regime, failed to erase the concepts of

“national self-awareness” and “historical memory”. Late academic Bekir Nabiye, in his foreword to H. Miralamov’s *“The Last Conqueror”*, compares the entries on Nadir Shah and Napoleon Bonaparte in the *Azerbaijan Soviet Encyclopedia* and expresses astonishment at the distorted and diminutive portrayal of the Azerbaijani ruler and commander in comparison to the French general.

In the 1960s, efforts to expand the functionality of the Azerbaijani language and restore national customs and traditions (led by figures such as Mirza Ibrahimov, Shikhali Gurbanov, and others), as well as the formation of the “sixties” generation (including Isa Huseynov, Chingiz Huseynov, Anar, Akram Aylisli, and others) who brought national spirit and self-awareness into literature, marked a significant cultural shift. In subsequent years, under the National Leader Heydar Aliyev, the Azerbaijani language was officially recognized as the state language in the Republic’s Constitution, further solidifying the calls for national self-awareness. This movement gained even more momentum in the poetry of the 1970s and 1980s (with poets like Bakhtiyar Vahabzadeh, Mammad Araz, and others), and, particularly in the late 1980s, amid unfounded territorial claims over Karabakh, there was a revival of the people’s historical memory and fighting spirit. The press and journalism, including Sabir Rustamkhanli’s *“The Book of Life”*, the *“Azerbaijan”* newspaper restored under his initiative, and other works, contributed to this national awakening and freedom movement. These efforts ultimately led to the realization of the idea of restoring our independence and statehood. Despite all the prohibitions and the fervor of Soviet propaganda, generations that had witnessed more recent historical events – especially representatives of our literature – were able to keep historical issues in the public discourse through their work aimed at restoring national and “blood” memory. Key examples of this include Bakhtiyar Vahabzadeh’s *“Gulistan”* poem, Yusif Samadoglu’s *“The Day of the Killing”*, Sabir Rustamkhanli’s poem called *“Blood Memory”* and many other works that played a crucial role in the national struggle.

The calamities inflicted upon our nation between 1989 and 1994, including the forced displacement of nearly one million compatriots from their ancestral lands with the support of neighboring states, subjected them to decades of exile. This exile sought to impose not only physical dislocation but also the erasure of land, national dignity, patriotic consciousness, and most importantly, historical memory. These challenges posed a profound responsibility for our literature, press, and social and humanities disciplines: to comprehend and assess the prevailing historical conditions, foster national identity and Azerbaijani studies, and cultivate a sense of Azerbaijani patriotism.

In the challenging post-First Karabakh War period, questions surrounding the causes of our defeat and losses also served as a catalyst for intellectual inquiry and artistic exploration. It is no coincidence that historical novels with postmodernist tendencies and artistic-aesthetic perspectives emerged during this time. Works such as Sabir Rustamkhanli’s *“Göy Tanrı”* (*“Tengri”*), Kamal Abdulla’s *“Yarımçıq Əlyazma”* (*The Incomplete Manuscript*), and Anar’s *“Ağ Qoç, Qara Qoç”*

(*“The White Ram, The Black Ram”*), among others, captivated readers through their combination of mythopoetic elements, folklore motifs, and their grounding in historical events. These novels provided a lens through which the events depicted were interpreted in light of the authors’ contemporary challenges and societal demands.

The historical novels of these authors, therefore, did not merely reflect the epochs they described; rather, they resonated with the spirit and exigencies of the authors’ own time.

In the 2020 Patriotic War, referred to as the Second Karabakh War, Azerbaijan succeeded in reclaiming its territories and asserting its rightful claims through its strength while garnering substantial international support.

In our view, Azerbaijani literature became one of the standard-bearers of this historic struggle. In this context, it is worth highlighting three historical novels that, despite differing in themes and narrative styles, intersect in their treatment of significant historical events. Sabir Rustamkhanli’s *“Ölüm zirvəsi”* (*“The Peak of Death”*) vividly portrays the heroic resistance of Javad Khan, the ruler of the Ganja Khanate, along with his family and defenders of the city-fortress, who fought to their last breath against the overwhelming forces of Russian General Sisyanov, deprived of any external support. Elchin’s *“Baş”* (*“The Head”*) focuses on the story of the same Russian general, narrating the symbolic tale of his beheaded remains at the gates of another city-fortress, Baku. In contrast, Elchin Huseynbeyli’s *“Yenə iki od arasında”* (*“Once again between two fires”*), inspired by Yusif Vazir Chamanzaminli’s *“İki od arasında”* (*“Between two fires”*), explores similar themes with distinct narrative and stylistic approaches. Additionally, Elchin Huseynbeyli’s *“Karabakh Tales”* captures the true essence of our nation’s search for peace during the occupation of our territories.

These works collectively reflect the resilience, sacrifice, and historical consciousness of our people, contributing to the preservation and promotion of national identity through literature.

While scrutinizing established theories regarding world cultural and civilizational histories, we pause to emphasize the marginalization of the Turkic cultural-historical archetype. We critically examine the perspectives of prominent scholars who have historically diminished Turkic contributions. Russian scholar Nikolay Danilevsky’s assertion in his 1869 work *“Russia and Europe”* that these tribes remained at the “ethnographic material level”, having either not participated in historical processes or only risen to the level of destructive historical elements, demands scholarly reappraisal. Similarly, we wonder the dismissive approaches of German philosopher Oswald Spengler, who largely passed over Turkic cultural histories in silence in his work *“The Decline of Europe”* (Spengler O., <https://anti-tilogicalism.com/wp-content/uploads/2017/07/decline-of-the-west.pdf>) and British historian Arnold Toynbee, who categorized Turkic civilizations as “frozen” and characterized Turks as mere destroyers of civilizations (Toynbee A. *Study of History*

chive.org/de-tails/in.ernet.dli.2015.460039/page/n1/mode/2up) or labeled them with ambiguous terms like “Ottoman” or “nomadic”.

L.Lockhart's perspectives on the decline and fall of Nader's dynasty and the preceding Safavid dynasty compel us to approach the matter from an alternative analytical prism. The primary cause of Nadir Shah's downfall is attributed to a characteristic moral collapse typical of monarchs (as exemplified in E.Zeynalov's novel “Nader Shah”: the merciless flogging of Nadir's beloved brother Ibrahim before his young son's eyes, thereby fostering future hatred and creating conditions for vengeance in the potential future commander Aligulu Khan; the inexplicable blinding of his primary heir, the crown prince and great commander Rzagulu, thus losing his principal successor; the unceasing brutality including constructing Timur-style pyramids of heads in the 18th century, violence against women, and persistent acts of cruelty – all of which constituted the path to moral deterioration and ultimate collapse).

The English scholar's reflections on the Safavids prompt us to revisit the narratives of Azerbaijani authors. *“Heirs to the throne, sequestered in their harems and isolated from the world, consequently deprived of comprehensive education... could not learn the art of warfare or governance while confined within harem walls. Moreover, they frequently fell under the influence of self-interested eunuchs. Thus, upon the time of succession, it would become apparent that the heir was entirely unprepared to fulfill royal responsibilities, thereby being compelled to rely entirely on eunuchs and nobles. One of the fundamental causes of the Safavid dynasty's decline was their indifferent attitude towards the military, resulting in a gradual reduction of troops and diminishing combat effectiveness”* (Lokkart, 2018, p. 6). Similar negative descriptions and perspectives regarding the Safavids are found in the diaries of Western European envoys, travelers, and merchants, including Jean Chardin, Jean-Baptiste Tavernier, Engelbert Kaempfer, Adam Olearius, Jan Streys, Pietro Della Valle, and others (Süleymanov, 2021).

A peculiar parallel arises in E.Zeynalov's novel “Nadir Shah”, set against the backdrop of the Sunni-Shi'a conflict that threatened Islamic unity. Nadir Shah's appeals to the Ottoman Sultan-Caliph and the wars waged for this purpose seem futile in the face of his assassination. Following his death, his entire lineage, even pregnant women in his harem, were massacred. Meanwhile, within the Ottoman and Persian realms, fraternal rivalries saw siblings blinded or beheaded, with domes of skulls symbolizing power struggles. All this unfolded in the East during an era in Europe that saw the emergence of Enlightenment thinkers like Voltaire, Rousseau, Diderot, Kant, La Fontaine, and Goethe, who championed human freedom and dignity.

Nadir Shah, the ruler of the Afsharid Empire, punished his eldest son and heir, Rzagulu, with medieval severity reminiscent of the Inquisition's harshest practices, though this decision came after extensive deliberations with his council of viziers. One might ponder: could this state, which emerged from the ruins of the Safavid Empire and positioned itself as an empire of

Azerbaijani Turks, not have been sustained despite the formidable pressures exerted by Russian, Ottoman, and European powers? Nadir Shah, a man of humble origins lacking formal education and political pedigree, nonetheless managed to reclaim Safavid territories from the Ottomans, expel Russia from the Caucasus, and initiate ambitious maritime strategies, including establishing a nascent navy on the Caspian and attempting to capture Astrakhan. Remarkably, he accomplished these extraordinary feats during the period of heightened imperial expansion characterized by Peter the Great and his successors in Russia.

Nadir Shah's religious reforms and reflections on Islam's societal role, though imperfect, invite comparison to the Protestant Reformation in Christianity. However, his lack of an intellectual and literary milieu, with philosophers, poets, and influential religious figures absent from his court, had significant consequences. The character of the mollabashi in Zeynalov's novel caricatures a land dominated by ignorance, illiteracy, and oppression. Contrast this with Western scholars such as Adam Olearius, George Makdisi, Jean-Baptiste Tavernier, and Engelbert Kaempfer, who highlighted education and cultural progress as key factors during the Safavid Empire's zenith (Ahmad A.; <https://dergipark.org.tr/en/download/article-file/2320677>). As Asgar Ahmed's extensive references to foreign and local authors suggest, the Safavid Empire's success owed much to its education system, which encompassed all social strata, including orphans. Alongside court schools providing religious, secular, and military training for princes and nobles, even women and girls in the harem received comprehensive education, a detail noted by foreign envoys and travelers. However, the abolition of the lalelik (mentorship) institution during Shah Abbas's reign, delegating education to eunuchs, left its mark. Similar trends in the Ottoman Empire, such as the reliance on janissaries, eunuchs, and foreign women with no ethnic allegiance, stifled passionarity in the long-lived Turkish empire.

The example of Nadir Shah's Afsharid model demonstrates that human development, shaped by individual upbringing and environment, holds as much historical significance as technological advancements. After all, it is humans who program technology and artificial intelligence, directing them toward the well-being of their people, country, and humanity at large.

The assassination of Nadir Shah and the sudden, ruthless, and disgraceful collapse of the empire he built had a profoundly tragic impact on Azerbaijan's subsequent history. The Qajars, ethnically Azerbaijani Turks, failed to consolidate the fragmented territories of the empire into a cohesive political and military force capable of resisting Russia. Unfortunately, the Russo-Persian wars of the 19th century, followed by the Second World War, thwarted the unification of our historic lands, even when the opportunity for full integration arose. The efforts of our infamous neighbors ensured that these territories remained divided, preventing their union within a single state.

We conclude our discourse with L.N. Gumilev's words from “Ancient Rus and the Great Steppe” (Гумилев, 2000, p. 704): *“Within each of us resides a genetic memory that remains imperceptible in daily life*

yet periodically emerges from the subconscious". Our purpose is not to look backward, but forward—towards reinforcing the Azerbaijani individual's commitment and service to the Homeland and land, and expanding our nation's and state's positive image across broader cultural-historical domains, drawing upon our accumulated scholarly and artistic heritage, state-building experience, and conceptualizations of religious and national identity. In this context, we consider it essential to conduct comprehensive analyses of numerous historical-themed works and extensive novels written during the years of independence, examining them within the frameworks of historical existence, national identity, and the epoch's national ideological quests. Furthermore, we advocate for their purposeful presentation across diverse readership demographics, educational curricula, national-ideological, strategic research, and promotional platforms.

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DOI: [10.5281/zenodo.14636796](https://doi.org/10.5281/zenodo.14636796)**Abstract**

This article delves into the intricate representation of patriotism in contemporary Azerbaijani poetry, examining its thematic and symbolic dimensions. It analyzes how poets encapsulate Azerbaijan's national spirit, cultural identity, and historical struggles through powerful imagery, emotional depth, and symbolic expressions. By situating these works within broader sociopolitical and cultural contexts, the article underscores poetry's transformative role in shaping national consciousness and fostering unity, particularly in the aftermath of significant historical events such as the Karabakh conflict.

Keywords: poetry, Azerbaijan, Karabakh, patriotism, literature.

Introduction

Patriotism is an enduring theme in Azerbaijani literature, reflecting the country's rich history of resilience and its enduring quest for sovereignty and identity. Azerbaijani poetry, long regarded as a cultural cornerstone, continues to provide a platform for expressing the nation's values, struggles, and aspirations. This paper seeks to expand the understanding of how contemporary Azerbaijani poets navigate the complexities of patriotism, employing diverse literary techniques to connect with their audience on a profound emotional and intellectual level.

The study addresses several key questions: How does contemporary Azerbaijani poetry conceptualize patriotism? What literary tools and imagery do poets use to evoke national pride and unity? How do historical events and cultural identity shape these poetic representations?

Historical Context: Poetry and Patriotism in Azerbaijani Tradition**1. The Role of Poetry in Azerbaijani National Identity**

In Azerbaijan, poetry is not merely a form of artistic expression but a vital means of preserving cultural heritage and voicing collective aspirations. From medieval poets like Nizami Ganjavi and Khagani Shirvani to 20th-century figures such as Mikayil Mushfig and Rasul Rza, patriotism has been intricately woven into the literary fabric of Azerbaijan.

During the Soviet era, poetry played a dual role: celebrating Azerbaijani identity while navigating restrictions on nationalist expressions. Following the country's independence in 1991, the thematic landscape of poetry expanded significantly, allowing poets to openly explore themes of patriotism, cultural identity, and historical memory.

2. Post-Conflict and Post-Soviet Transitions

The Karabakh conflict and its aftermath significantly influenced contemporary Azerbaijani poetry, creating a space for poets to reflect on loss, resilience, and the hope for peace. This context has shaped a unique poetic tradition where patriotism is both a celebration of national pride and a call to honor sacrifices made for the homeland.

Themes and Motifs in Contemporary Azerbaijani Poetry**1. Homeland as Identity**

The homeland is portrayed not merely as a physical territory but as a spiritual and emotional essence that defines Azerbaijani identity. Poets use vivid natural imagery—mountains symbolizing steadfastness, rivers embodying vitality, and the Caspian Sea representing the boundless aspirations of the nation—to create a deep connection between the land and its people.

2. Martyrdom and Sacrifice

The theme of martyrdom is central to contemporary patriotic poetry, especially in the context of the Karabakh conflict. Poets immortalize the sacrifices of soldiers, presenting them as eternal guardians of the nation's freedom. This motif serves as a moral and emotional anchor, reminding readers of their shared responsibility to honor the martyrs' legacy.

3. Cultural Resilience

Language, music, and folklore are recurring motifs in the poetic exploration of patriotism. By emphasizing the resilience of Azerbaijani culture in the face of external influences and threats, poets affirm the nation's ability to preserve its identity while embracing progress and modernity.

Symbolism and Imagery in Azerbaijani Patriotic Poetry**1. Nature and Landscape**

Nature is a dominant symbolic element, often used to reflect the emotional and historical ties between the people and their land. Mountains represent unyielding strength, rivers signify continuity, and the sky evokes freedom and hope. This natural imagery reinforces the sanctity of the homeland while fostering a sense of unity among its inhabitants.

2. Historical and Cultural Allusions

Contemporary poets frequently draw on historical figures, cultural symbols, and ancient legends to deepen the patriotic narrative. These allusions create a bridge between past and present, reminding readers of their shared heritage and collective destiny.

3. Emotional Depth

Through rich and evocative language, Azerbaijani poets tap into the collective emotions of pride, grief, and hope. The emotional resonance of their works ensures that themes of patriotism transcend intellectual discourse, engaging readers on a deeply personal level.

Case Studies: Analysis of Key Poets and Works**1. Ramiz Rovshan: The Poet of Memory and Hope**

Ramiz Rovshan's poetry often reflects on the collective struggles and aspirations of Azerbaijanis. His works blend natural imagery with reflections on sacrifice, resilience, and the enduring spirit of the homeland. Poems like "My Land's Wounds" and "Martyr's Path" are poignant examples of his ability to merge personal grief with national pride.

2. Nariman Hasanzade: A Voice of Unity

Nariman Hasanzade emphasizes themes of unity and cultural identity in his works. His poetry often celebrates the beauty of the Azerbaijani language, folklore, and traditions while advocating for solidarity and progress. His poem "Azerbaijan, My Soul" encapsulates the emotional and spiritual connection between the poet and the homeland.

3. New Voices in Azerbaijani Poetry

Emerging poets contribute fresh perspectives to the theme of patriotism, addressing contemporary challenges such as globalization, environmental issues, and generational change. Their works demonstrate the evolving nature of patriotic expression while maintaining a deep respect for traditional motifs.

The Sociopolitical Function of Poetry**1. Shaping Collective Memory**

By commemorating historical events and figures, Azerbaijani poetry plays a crucial role in shaping collective memory. It ensures that future generations remain connected to their cultural heritage and the sacrifices of their predecessors.

2. Inspiring National Unity

Poetry serves as a unifying force, fostering a shared sense of purpose and pride. In times of crisis, poets emerge as voices of resilience, encouraging their readers to remain steadfast in their commitment to the homeland.

3. A Medium for Reflection and Progress

Contemporary Azerbaijani poetry not only celebrates patriotism but also invites critical reflection on societal challenges. Through this dual role, it contributes to the ongoing dialogue about Azerbaijan's future while remaining rooted in its cultural traditions.

Conclusion

Contemporary Azerbaijani poetry offers a rich and multifaceted exploration of patriotism, drawing on historical, cultural, and emotional dimensions to create a powerful narrative of national identity. Through their use of vivid imagery, symbolic language, and emotional depth, poets articulate a vision of Azerbaijan that is both timeless and forward-looking.

In a rapidly changing world, poetry continues to serve as a vital medium for preserving the nation's cultural heritage, inspiring unity, and fostering a sense of pride and purpose among its people. As Azerbaijan navigates the complexities of modernity, the poetic image of patriotism remains a cornerstone of its national identity and cultural expression.

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