ALFRAGANUS

XALQARO ILMIY JURNAL

INTERNATIONAL SCIENTIFIC JOURNAL

2026-yil • 2-jild • 17-son

BARQAROR RIVOJLANISH MAQSADLARI

SUSTAINABLE DEVELOPMENT GOALS

Tahririyat Kengashi

MUNDARIJA

Syatriana E,Turdieva H.
CRITICAL DIGITAL LITERACY AS A TRANSFORMATIVE FRAMEWORK FOR INDONESIAN HIGHER EDUCATION IN THE DIGITAL AGE 3

Turdieva D, Yusupova N.
TEACHING METHODS IN MEDICAL EDUCATION 8

Ilham S, Turdiev S, Samigov B.
DISCOVER UZBEKISTAN: A JOURNEY INTO THE HEART OF THE MAGIC EAST 13

Mulekova L.
ENHANCING KANJI INSTRUCTION: OBSTACLES, METHODS, AND INNOVATIVE APPROACHES IN TEACHING JAPANESE CHARACTERS 17

Rakhmatillaeva M.
ASSOCIATION BETWEEN IMMUNE DYSFUNCTION AND SEPSIS SEVERITY IN CHILDREN WITH PRIMARY IMMUNODEFICIENCY: A RETROSPECTIVE ANALYSIS 24

Odimegwu T.
LATERITE IN CONSTRUCTION: A REVIEW OF APPLICATIONS, PROPERTIES, AND SUSTAINABILITY 32

Raimova N.
IJTIMOIY CHEGARALANGAN LEKSIKANING JAMIYATDAGI ROLI VA MUHIMLIGI 35

	Raximdjanova D.	
	INSON ERKINLIGI MASALASINING PIKO DELLA MIRONDOLA QARASHLARIDAGI AKSI	**71**
	Хамракулова Ш.	
	ЯЗЫКОВАЯ ЛИЧНОСТЬ КАК ОБЪЕКТ КОМПЛЕКСНОГО АНАЛИЗА В СИСТЕМЕ ГУМАНИТАРНЫХ НАУК	**76**
	Haqberdiyev B.	
	ART&ENGINEERING” FANINI INTERYER DIZAYNDA TUTGAN O’RNI	**83**

Eny Syatriana
Universitas Muhamadiyah Makassar, South Sulawesi, Indonesia
enysatriana@unismuh.ac.id

Hulkar Turdieva
Alfaraganus University, Uzbekistan
hulkar.kamilovna@gmail.com

Critical Digital Literacy as a Transformative Framework for Indonesian Higher Education in the Digital Age

Abstract

The rapid advancement of digital technology has transformed literacy practices in higher education, requiring a shift from basic digital skills toward Critical Digital Literacy (CDL). This study aims to examine the role of CDL in Indonesian higher education as a framework for integrating academic competence, cultural awareness, and ethical responsibility. Using a systematic literature review (SLR) approach, this study analyzes 50 peer-reviewed journal articles published between 2014 and 2025 that focus on digital literacy, critical pedagogy, and higher education contexts. The findings reveal six key domains of CDL integration: critical digital pedagogy, cultural competence, academic literacies, specialized digital literacies, evaluation approaches, and institutional challenges. The study highlights that while CDL offers significant potential to enhance students' critical thinking and digital citizenship, its implementation in Indonesia faces challenges related to infrastructure gaps, lecturer readiness, and policy support. The study concludes that systematic and sustainable institutional strategies are essential to successfully embed CDL in Indonesian higher education.

Keywords; critical digital literacy; higher education; digital ethics; academic literacies; Indonesia

Introduction

Digital transformation has profoundly influenced how knowledge is produced, accessed, and disseminated in higher education. Literacy, traditionally defined as the ability to read and write printed texts, has evolved into a multidimensional construct encompassing digital, information, media, and critical literacies, Bawden, D. (2008). In the Indonesian higher education context, this transformation is accelerated by the widespread use of digital platforms, learning management systems, and open-access resources.

However, the rapid expansion of digital technologies has also introduced new challenges, including information overload, misinformation, ethical concerns, and unequal access to digital resources. Many students possess functional digital skills but lack the critical capacity to evaluate information, engage ethically, and reflect on the socio-cultural implications of digital practices. Belshaw, D. (2014). Therefore, Critical Digital Literacy (CDL) emerges as a crucial framework that integrates critical thinking, ethical awareness, and cultural sensitivity. This article explores how CDL can be systematically integrated into Indonesian higher education and identifies key domains, challenges, and strategic directions for its implementation. Studies in higher education contexts highlight the role of educators as facilitators of literacy practices rather than sole transmitters of knowledge. Buckingham, D. (2015) Effective literacy integration requires pedagogical approaches such as problem-based learning, project-based learning, and inquiry-based learning, which position students as active knowledge producers. Additionally, the literature underscores the importance of digital ethics, including academic integrity, data privacy, and responsible participation in online communities. Inclusive access to technology is also a recurring theme, as disparities in infrastructure and digital competence can exacerbate educational inequality.

Using a conceptual and literature-based approach, this paper synthesizes key theoretical perspectives and recent empirical studies related to digital literacy, critical pedagogy, and educational transformation. The discussion highlights strategic dimensions of literacy development, including curriculum integration, educator capacity building, digital infrastructure, and institutional policy support. Freire, P. (2005). The findings suggest that integrating critical digital literacy into higher education not only enhances students' academic and cultural competencies but also prepares them to participate responsibly in a knowledge-based and digitally mediated society. Therefore, higher education institutions must adopt holistic and long-term literacy strategies to address both the opportunities and challenges of the digital era.

Method

This study employed a systematic literature review to examine research on critical digital literacy in higher education. A total of 50 peer-reviewed journal articles published between 2014 and 2025 were selected from reputable academic databases. The selection criteria included relevance to digital literacy, critical pedagogy, higher education, and institutional implementation. Despite the growing availability of digital technologies, many higher education institutions continue to face challenges in implementing meaningful literacy practices. Hobbs, R. (2010). Issues such as

information overload, misinformation, unequal access to digital resources, and limited pedagogical preparedness among educators hinder the development of effective literacy cultures. Consequently, there is an urgent need for institutions to design systematic and sustainable literacy programs that foreground critical thinking, ethical awareness, and inclusivity. Jenkins, H., Ito, M., & boyd, d. (2016). This paper addresses this need by exploring the conceptual foundations and strategic development of critical digital literacy in higher education

The review process involved three stages: (1) identification of relevant studies through keyword searches related to critical digital literacy and higher education; (2) screening and eligibility assessment based on abstracts and full-text reviews; and (3) thematic analysis to identify recurring patterns, concepts, and domains. The analyzed studies were then synthesized to generate key themes relevant to the Indonesian higher education context.

Results

The systematic analysis identified six major domains essential for the integration of Critical Digital Literacy in higher education. Koltay, T. (2011). First, critical digital pedagogy emphasizes teaching approaches that encourage critical analysis of digital content and active knowledge construction. Second, cultural competence highlights the importance of understanding diversity, representation, and local knowledge within global digital environments.Third, academic literacies focus on integrating digital literacy with academic reading, writing, and research skills. Fourth, specialized digital literacies refer to discipline-specific digital competencies required in different fields of study. Fifth, evaluation approaches address the need for valid and comprehensive assessment tools to measure critical and ethical dimensions of digital literacy. Finally, institutional challenges include limited lecturer training, unequal digital infrastructure, and insufficient policy support.

Discussion

The findings indicate that Critical Digital Literacy provides a comprehensive framework for addressing both the opportunities and challenges of digital transformation in Indonesian higher education. CDL moves beyond technical proficiency by fostering critical reflection, ethical responsibility, and cultural awareness among students.

However, successful implementation requires strong institutional commitment. Universities must invest in lecturer professional development, redesign curricula to embed CDL learning outcomes, and ensure inclusive access to digital infrastructure. Without systematic policies and long-term strategies, CDL initiatives risk becoming fragmented and unsustainable. The development of critical digital literacy in

higher education demands a comprehensive and institutional approach. First, literacy outcomes must be explicitly embedded within curricula and aligned with learning outcomes across disciplines. This integration ensures that literacy development is continuous and contextualized rather than fragmented or optional.

Second, strengthening educators' digital and pedagogical competencies is essential. Professional development programs should focus not only on technical skills but also on critical pedagogy and ethical awareness. Educators who model reflective and responsible digital practices can significantly influence students' literacy development.

Third, institutions must invest in inclusive digital ecosystems that support equitable access to learning technologies. Learning management systems, digital libraries, and open educational resources should be accessible, user-friendly, and responsive to diverse learner needs. Such infrastructure supports sustained engagement with literacy practices.

Finally, continuous monitoring and evaluation are necessary to ensure the sustainability of literacy programs. Assessment strategies should measure not only functional digital skills but also critical thinking, ethical reasoning, and reflective learning. Through systematic evaluation, institutions can refine their literacy initiatives and cultivate a resilient literacy culture.

Conclusion

Critical Digital Literacy is a vital competency for Indonesian higher education in the digital era. This study demonstrates that CDL can bridge academic, cultural, and ethical competencies when implemented systematically and sustainably. Higher education institutions are encouraged to adopt holistic strategies that integrate CDL into curricula, pedagogy, and institutional policies to prepare graduates for responsible participation in a digitally mediated society. van Dijk, J. (2020). The transformation of literacy culture in the digital era presents both significant opportunities and complex challenges for higher education. By adopting systematic and sustainable strategies grounded in critical digital literacy, institutions can foster learners who are analytically skilled, ethically responsible, and socially aware. Integrating critical literacy, digital ethics, and inclusive access to technology is essential for preparing graduates to navigate and contribute meaningfully to a digitally mediated society. Therefore, critical digital literacy should be positioned as a core component of higher education in the twenty-first century.

In the context of Indonesian higher education, Critical Digital Literacy (CDL) plays a strategic role in responding to rapid digitalization, cultural diversity, and the demands of twenty-

first-century competencies. CDL in Indonesia extends beyond the mastery of digital tools; it emphasizes critical awareness, ethical responsibility, and socio-cultural sensitivity in navigating digital environments.

References

1. Bawden, D. (2008). Origins and concepts of digital literacy. In C. Lankshear & M. Knobel (Eds.), *Digital literacies: Concepts, policies and practices* (pp. 17–32). Peter Lang.
2. Belshaw, D. (2014). *The essential elements of digital literacies*. Self-published.
3. Buckingham, D. (2015). Defining digital literacy—What do young people need to know about digital media? *Nordic Journal of Digital Literacy*, 10(Jubilee Issue), 21–34.
4. Freire, P. (2005). *Pedagogy of the oppressed*. Continuum.
5. Hobbs, R. (2010). *Digital and media literacy: A plan of action*. Aspen Institute.
6. Jenkins, H., Ito, M., & boyd, d. (2016). *Participatory culture in a networked era*. Polity Press.
7. Koltay, T. (2011). The media and the literacies: Media literacy, information literacy, digital literacy. *Media, Culture & Society*, 33(2), 211–221.
8. Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065–1078.
9. Selwyn, N. (2016). *Education and technology: Key issues and debates*. Bloomsbury.
10. UNESCO. (2018). *Global framework of reference on digital literacy skills*. UNESCO Publishing.
11. van Dijk, J. (2020). *The digital divide*. Polity Press.
12. Zuboff, S. (2019). *The age of surveillance capitalism*. PublicAffairs.

Turdieva D.E.
PhD, Associate Professor
Tashkent State Medical University, Uzbekistan

Yusupova N.
Clinical interpreter
Klinikum großhadern
Marchioninistraße 15,
81377 Munich, Germany

TEACHING METHODS IN MEDICAL EDUCAT

Abstract:

This study investigates whether interactive teaching approaches are more effective than passive self-directed learning among first-year medical students acquiring terminology and concepts related to influenza vaccination. Using an ESL instructional resource titled “Flu Vaccines” and a prepared learning module, 60 students were divided into an experimental group (n=30) engaged in interactive instruction and a control group (n=30) assigned independent homework-based study. Both groups completed a standardized assessment the following day. The interactive group achieved significantly higher results (85.2% vs. 72.4%, $p<0.05$), demonstrating improved retention and understanding of influenza vaccination, its risks, and preventive measures.

Key words: Interactive learning; Medical education; Influenza vaccination; Medical terminology; Active pedagogy; Preventive medicine; Learning outcomes

Influenza (flu) continues to be a significant public health challenge, causing millions of illnesses, hospital admissions, and deaths annually. Effective patient education and outbreak control require that medical students understand core aspects of the disease, including the medical term “influenza,” vaccination, associated risks, and prevention strategies. Traditional lectures and distance-learning formats, however, have shown limited effectiveness in sustaining learner engagement and supporting long-term retention of flu-related terminology and concepts (Smith et al., 2020). In contrast, interactive discussions and practice-based activities enhance learning outcomes by encouraging active participation and fostering critical thinking (Johnson & Johnson, 2018).

This study employs instructional material from the ESL resource Flu Shots (Red River Press Inc., 2019), which provides comprehensive content on influenza vaccination. The material incorporates pre-reading activities, vocabulary preparation (e.g., identifying “influenza” as the medical term for “flu”), informational texts on risks and benefits, comprehension tasks, vocabulary reinforcement, discussions, and

listening exercises. The selection of this resource is based on the premise that active engagement with key terms such as “vaccine,” “immune system,” “mutate,” and “side effect” will yield better examination outcomes than passive reading alone.

The research aims to contribute empirical evidence on effective strategies in medical education through the application of a structured team-based learning (TBL) approach.

Methods. Participants. Sixty first-year medical students, aged 20-25, 55% of whom were females, from a university medical course were selected on a voluntary attendance basis. Selection criteria included the fact that no formal course work had been undertaken in virology or immunology. Participants were randomly allocated into two categories: experimental and control, with 30 persons each. Informed consent had been gained and ethical committee approval sought.

The participants received immediate feedback for each question asked, allowing for the clearing of misunderstandings at that moment. The competitive aspects of the computer game increased the learners’ motivation, focus, and quick recall of the newly acquired vocabulary terms.

Materials. The original text was taken from “Flu Shots,” (Red River Press Inc., 2019), a 6-page PDF file that addresses flu education. Key parts of that text:

1. Pre-Reading (Page 1): Warm-up questions (e.g. "Do you get a flu shot every year?" "What are risks associated with flu shots?") and Vocabulary Matching (e.g. "influenza" to "c) The medical term for ‘flu’"; "vaccine" to "j) A substance given to a person to prevent a disease"; "immune system" to "l) The body’s natural defense against disease").
2. Reading (Page 2): Excerpts regarding risks associated with the flu, like allergies related to eggs/chicken, side effects, mutation of the virus, how it can be prevented (hand-washing, staying away from school/college/work), and people who must receive the vaccine regardless, like kids and the elderly.
3. Vocabulary Review (Page 3): Completion tasks (e.g., "People who are allergic to animals have difficulty keeping pets") and multiple-choice questions (e.g., "The virus mutated, so a new vaccine was created" – answer b) changed).
4. Discussion and Class Opinion (Page 4): Open-ended questions and a graph for classmates to answer about their opinions of flu vaccines, such as "Do you trust your doctor to make important decisions about your health?"
5. Listening (Page 5): Gap-fill exercises similar to reading
6. Answer Key (Page 6): The answer key contains the

For medical students, the material was made more important by pointing out the clinical significance of the topic in terms of symptoms of the flu and immunization-related ethical questions.

The experimental group was able to take part in an interactive module lasting 90 minutes. The following activities were conducted

1. Warm-Up and Vocabulary Preview-Warm-up questions, in pairs, with vocabulary terms matched collaboratively, with definitions often challenged (for instance, how "mutate" impacts vaccines).

2.RH&CC – Reading Comprehension & Guided Reading & Comprehension The class was divided into small groups. The groups read the texts aloud, responded to guided questions regarding clarity of understanding related to the texts (for example, "Why doesn't the flu shot always prevent the flu?" "Because the flu virus alters or changes"), and acted out doctor and patient conversations

3. Reading Review and Discussion: The class engaged with group work involving both sentence completion and multiple-choice tasks and went on to focus on more general questions and discussions (such as "Is the world too concerned about the spread of diseases?" and "Are you concerned about pandemics such as bird flu?"). The class survey in terms of class opinion took the form of a mingle task where the whole class filled the tables with the findings.

4. Listening Integration: Recording playback was done from the resource, and the students were expected to complete any gaps (e.g. "Influenza is the long word for 'flu.'. Doctors insist that people in certain groups get vaccinated").

The facilitators promoted peer instruction and application, for example, associating "preventative measures" with public health practices.The control group was provided with the PDF file and asked to read it for 90 minutes without interaction.The next day, each group was administered a 30-point test of their knowledge, consisting of 10 word-meaning matches, 10 multiple-choice questions about concepts (such as risk, symptoms), and 10 short-answer queries about application (such as "Who needs the flu vaccine the most? – Young children and the elderly").

Data Analysis. Independent t-test analysis of exam scores was conducted. $\alpha = 0.05$. Descriptive statistics included means and standard deviations.

Results. Interactive students did significantly better than control students. Their mean score was 85.2% (SD=7.3), while that of control students was 72.4% (SD=9.1), $t(58)=5.92$, $p<.001$. Moreover, analysis of learning outcomes across various aspects, such as vocabulary (88% vs. 70%), comprehension (84% vs. 75%), and application of learning (83% vs 71%) Figure №1.

Discussion. The superior outcomes observed in the interactive group support the theoretical position that active learning yields stronger educational results (Bonwell & Eison, 1991). Activities such as pair discussions and vocabulary-matching tasks effectively promoted engagement with terms including “allergic,” “side effect,” and “outweigh.” For instance, paired discussions addressing the idea of “letting nature take its course” in contrast to vaccination facilitated critical reasoning beyond what is typically achieved through passive reading.

The comparatively lower achievement in the control group suggests that independent study, while practical, lacks opportunities for social interaction and collaborative processing, as reflected in responses to the class survey task. This finding also mirrors real clinical contexts, where communication plays a central role. Nevertheless, the study is limited by its small sample size and short-term assessment, as long-term retention was not evaluated.These findings carry important implications for medical education, indicating that instruction on infectious diseases can be strengthened through the integration of interactive elements, including those found in resources such as “Flu Shots.”

Conclusion. The current research shows the effectiveness of interactive educational approaches and the use of modified materials on the topic of influenza in enhancing the knowledge of medical students' terminologies and concepts compared to self-study. It is strongly recommended that educators focus on interactive learning approaches also using digital tools.

References

1. Bonwell, C. C., & Eison, J. A. (1991). Active Learning: Creating Excitement in the Classroom. ASHE-ERIC Higher Education Report No.
2. Johnson, D. W., & Johnson, R. T. (2018). Cooperative learning in medical education. *Journal of Medical Education*, 42(3),
3. Red River Press Inc. (2019). Flu Shots. ESL Library. Retrieved from https://esllibrary
4. Smith, A., et al. (2020). Retention in medical training. Medical Education Journal, 15(2)

5. Oestreich JH, Guy JW. Game-based learning in pharmacy education. Pharmacy. (2022) 10:11. doi: 10.3390/pharmacy10010011
6. Xu Y, Lau Y, Cheng LJ, Lau ST. Learning experiences of game-based educational intervention in nursing students: a systematic mixed-studies review. Nurse Educ Today. (2021) 107:105139. doi: 10.1016/j.nedt.2021.105139

Ilham Syah,
M.A. Product Manager
"Jaring Journey" LLC, Indonesia
Turdiev Sanjar
M.A. Indonesian language specialist,
tour manager "Ziyarah Travel" LLC, Uzbekistan
Samigov Boburjon
M.Pd. Senior lecturer of TSUOS, Uzbekistan
zts.group.uz@gmail.com

Discover Uzbekistan: A Journey into the Heart of the Magic East

Abstract

This article presents Uzbekistan as a multidimensional tourism destination where history, spirituality, and living culture converge, focusing on the role of Ziyarah Travel as a mediator of authentic intercultural experience. Drawing on descriptive, cultural, and linguapragmatic perspectives, the study explores how tourism discourse constructs Uzbekistan as the "Magic East" through references to Silk Road heritage [4], Islamic scholarship, and everyday hospitality practices. Special attention is given to the agency's audience-oriented communication strategies, particularly its engagement with Indonesian travelers through shared religious vocabulary, culturally resonant greetings, and value-based framing of travel as spiritual and intellectual enrichment. By examining promotional narratives alongside cultural-historical context, the article demonstrates how targeted tourism communication functions not merely as marketing but as intercultural dialogue. The findings highlight that pilgrimage-oriented routes, heritage architecture, and hospitality rituals together shape a meaningful travel experience that transcends sightseeing and fosters cultural empathy.

Keywords

Uzbekistan tourism; linguapragmatics; intercultural communication; religious tourism; Silk Road heritage; tourism discourse; cultural identity; hospitality narratives; targeted communication; Indonesia–Uzbekistan relations; pilgrimage tourism

In the vast tapestry of world travel destinations, Uzbekistan stands out as a place where history, culture, spirituality, and hospitality intertwine with breathtaking landscapes and centuries-old cities. For travelers seeking meaningful experiences beyond the typical tourist trail, Ziyarah Travel [3] invites you to embark on a journey into the "Magic East" — where ancient Silk Road cities, rich Islamic heritage, and vibrant local life await.

Why Uzbekistan? A Crossroads of History and Culture

Located at the crossroads of civilizations, Uzbekistan has been a cradle of history, scholarship, and religious life for over two millennia. Cities like Samarkand, Bukhara, and Khiva are living museums — places where monumental mausoleums, glittering madrasahs, and bustling market domes echo with the footsteps of traders, scholars, and pilgrims who once traversed the Silk Road.

Samarkand's Registan Square, with its soaring turquoise domes and mosaic façades, captures the imagination at first sight; it is a place where the sublime blend of Persian, Turkic, and Islamic artistry reaches its pinnacle. Meanwhile, Bukhara's ancient citadel walls and architectural complexes preserve the ambience of life across medieval Central Asia, while Khiva's walled old city (Ichan-Kala) evokes visions of a timeless desert kingdom.

But Uzbekistan's riches extend far beyond architecture. You'll encounter a dynamic cultural identity shaped by traditions, languages, religions, and people who have kept hospitality at the core of everyday life. Visitors often remark that Uzbek hospitality — from a sweet cup of black tea shared in a roadside chaikhana (tea house) to the hearty welcome at dinner with plov (the national dish) — feels as rich and unforgettable as the cities themselves.

Ziyarah Travel, founded in 2018 and based in Tashkent, is more than just a travel agency — it's a storyteller, a cultural interpreter, and a partner for travelers who want intellectually and spiritually rewarding journeys. The firm's mission centers on connecting travelers with Uzbekistan's heritage in profunda ways, especially for visitors from Indonesia and other predominantly Muslim countries — emphasizing shared religious history and human bonds.

One of the most compelling elements of Uzbekistan's tourism landscape is the ziyarah (pilgrimage) dimension — journeys that blend spiritual reflection with cultural discovery.
In recent years, Uzbekistan has actively promoted "ziyarah tourism," inviting visitors to pilgrimage sites and historical monuments tied to Islamic scholars and spiritual leaders.

During the Tourism Week, held annually across cities like Samarkand, Bukhara, Khiva, and Tashkent, travelers explore pilgrimage heritage, national costume exhibitions, halal food festivals, and historical sites such as the Khazrati Imam complex in Tashkent — the symbolic center of Islamic wisdom.

For example, visitors may stand in awe before the sacred Qur'an of Caliph Uthman Ibn Affan at the Hast Imam Mosque in Tashkent — a manuscript revered by millions worldwide — or walk through the tombs and masjids of Imam al-Bukhari and Imam al-Tirmidhi, towering figures in Islamic scholarship whose intellectual contributions shaped Muslim thought across continents (as highlighted in pilgrimage itineraries).

Experiences like these transform travel into ziyarah — a conscious journey of remembrance, learning, and spiritual enrichment. For visitors from Indonesia or Southeast Asia, this intertwining of culture and faith resonates deeply, offering a sense of connection across geography and time.Culture on the Ground: Food, Dance, and Everyday Life No visit to Uzbekistan would be complete without immersing in the warmth of local culture — and Ziyarah Travel helps bring these experiences to life. Consider the ritual of sharing plov, Uzbekistan's beloved national dish, made with rice, carrots, garlic, and tender meat. At weddings, family gatherings, and city celebrations, plov symbolizes hospitality, community, and joy — a dish literally cooked with heart.

Traditional Uzbek dance, often performed to lively music with rhythmic hand and foot movements, tells stories of joy, labor, love, and heritage — each step a celebration of community spirit. Likewise, the bustling bazaars — like Tashkent's Chorsu Bazaar — are vibrant linguistic and cultural crossroads where Uzbek, Russian, and other languages intermingle, producing a multilingual tapestry ripe for exploration by curious travelers.

Beyond Cities: Nature, Adventure and Hidden Treasures

For those who seek variety beyond heritage sites, Uzbekistan offers breathtaking natural landscapes. Take Zaamin National Park (often called the "Switzerland of Uzbekistan"), where lush valleys, gurgling rivers, and mountain trails present opportunities for hiking, birdwatching, and outdoor leisure amidst pristine nature.

Other adventure paths lead to remote regions, nomadic homestays, and serene countryside experiences that contrast beautifully with the historic urban centers.

It is encouraging that scholars from Indonesia and Uzbekistan are conducting academic research not only in tourism but also in the fields of philology. The works of B. Samigov [1] and S. Turdiev [2] serve as clear examples of this cooperation. Indeed, language and literature are of great importance for tourism and represent powerful forces that contribute to its development.

Uzbekistan is not just a destination — it's a multilayered narrative of history, spirituality, culture, language, and human connection. Whether you're exploring the azure domes of the Silk Road cities, sharing tea with local hosts, walking in the footsteps of scholars, or connecting with fellow travelers from around the world, your journey through this land will shape stories worth retelling. Your journey becomes more than sightseeing; it becomes a path of learning, connection, and transformation — a true odyssey into the soul of Central Asia.

Literature:

1. Samigov B.A. 2024. "English loanwords in Indonesian language and its pragmatic features". Uzbekistan: Language and Culture, 3 (2): 147-153.

2. Turdiev, S. (2024). Educational Poets of Uzbekistan and Indonesia: Usman Nasir and Chairil Anwar. *Bulletin of Science and Practice, 10*(9), 413-417. (in Russian). https://doi.org/10.33619/2414-2948/106/46
3. https://ziyarah-travel.uz/
4. https://whc.unesco.org/
5. https://www.unwto.org Framework for cultural tourism and pilgrimage tourism trends.

Mulekova Linara Ramilevna
Uzbekistan State World Languages University

Enhancing Kanji Instruction: Obstacles, Methods, and Innovative Approaches in Teaching Japanese Characters

Abstract: his article examines innovative methods for teaching kanji, the logographic characters of the Japanese writing system. Because of their structural complexity and historical roots in Chinese script, kanji pose considerable challenges for both native and non-native learners. Conventional instructional approaches often depend on rote memorization, which may hinder long-term retention and practical use.

The study further investigates contemporary pedagogical strategies that support more effective kanji acquisition through insights from cognitive science, technology integration, and context-based learning. Among the approaches discussed are mnemonic systems, gamified learning environments, digital educational tools, and contextualized instruction designed to strengthen learner engagement and understanding. The analysis also considers how radicals and proper stroke order contribute to improved character recognition.

Keywords: Chinese script, Japanese writing system, kanji dictionary, hiragana, contextual learning katakana, student engagement, radicals, stroke order, broader contextual framework, logographic characters, on'yomi, kun'yomi, proper nouns (nanori), Spaced repetition systems (SRS), morphophonemic variations, semantic-clustering approach, mnemonic techniques.

Introduction

Kanji represents a fundamental component of the Japanese writing system, comprising Chinese characters that have been adapted for use in the Japanese language. A significant proportion of Japanese vocabulary is written using kanji; however, their pronunciation corresponds to that of **hiragana** and **katakana**. Given the complexity of kanji, mastering their correct usage is essential for achieving literacy in Japanese. A deeper understanding of kanji can be achieved by studying a few frequently used characters and words from this passage. The final and most well-known aspect of Japanese writing is **kanji**. Kanji are Chinese characters that have been borrowed and adapted for the Japanese language. A significant portion of Japanese words is written using kanji; however, their pronunciation corresponds to that of hiragana and katakana.

From the outset of learning, it is essential to pay attention to the correct stroke order and direction to avoid developing detrimental habits. Many learners may not perceive the significance of stroke order, assuming that as

long as the final result appears correct, the process does not matter. However, they overlook the fact that thousands of characters exist, and handwritten kanji are not always as meticulously structured as their printed counterparts. Adhering to the correct stroke order facilitates the recognition of characters, even when writing rapidly or by hand.

One of the most crucial aspects of learning kanji is adhering to the correct stroke order and direction from the beginning. Developing proper writing habits is particularly important, as many learners initially fail to recognize the significance of stroke order, assuming that the final written form is the only relevant factor. However, the structural integrity of kanji extends beyond their printed appearance. Since thousands of kanji exist, and handwritten characters are often less precise than their printed forms, maintaining the correct stroke order facilitates character recognition, even in rapid or informal writing.

Kanji are composed of fundamental elements known as **radicals**, which frequently serve as building blocks for more complex characters. Acquiring proficiency in the stroke order of radicals allows learners to predict the correct stroke order of unfamiliar kanji with greater ease. The general convention dictates that strokes should be drawn from the upper left to the lower right, with horizontal strokes proceeding from left to right and vertical strokes from top to bottom. In cases of uncertainty, consulting a **kanji dictionary** is recommended. Contemporary Japanese writing incorporates approximately 2,000 commonly used kanji, and empirical evidence suggests that rote memorization of individual characters in isolation is less effective than acquiring them through contextualized exposure.

A more effective approach to kanji acquisition involves studying characters in conjunction with new vocabulary and within broader linguistic contexts. This method enhances memory retention by reinforcing the association between kanji and their semantic and syntactic functions. Since kanji serve as representations of actual words rather than isolated symbols, learners should prioritize the study of vocabulary rather than focusing solely on character recognition.

A comprehensive understanding of kanji can be cultivated through the systematic study of high-frequency characters and their practical applications in written discourse. By integrating kanji learning with meaningful linguistic input, learners can develop a more robust and functional proficiency in the Japanese writing system.

The main findings and results

The **history of kanji teaching** reflects an evolution from classical methods, such as the rote memorization of stroke order and dictionary-based study, to more interactive and research-driven approaches. In recent decades, spaced repetition software, gamification, and digital resources have transformed kanji education,

making it more accessible to a global audience. However, many contemporary challenges remain, particularly in classroom environments where the volume of kanji required for proficiency can be daunting for learners.

An effective strategy for mastering kanji is to study them in conjunction with new words and within a **broader contextual framework**. This approach reinforces memory by associating each character with contextual information. Since kanji represent actual words, learners should focus on vocabulary acquisition rather than merely memorizing individual characters .The simplest characters, known as **radicals**, frequently function as components of more complex kanji. Once learners become familiar with the stroke order of radicals and internalize this principle, they will find it relatively easy to deduce the correct stroke order for most kanji.

1. *The Complexity of Kanji Acquisition: Reading strategies*

Kanji readings are not only diverse but also highly context-dependent, making their mastery a considerable challenge for learners of Japanese. Unlike alphabetic writing systems, where letters correspond to relatively stable phonetic values, kanji characters can exhibit multiple pronunciations depending on their lexical and grammatical usage. This variability necessitates strategic approaches to learning kanji readings, as rote memorization alone may prove inefficient.

Kanji characters typically convey a clear and fundamental meaning. One well-known resource for learning kanji, “Heisig's Remembering the Kanji” emphasizes the acquisition of kanji meanings as a primary step in the learning process. While completing this book may create the impression of mastering a large number of kanji, understanding their meanings constitutes only a fraction of the broader challenge of Japanese literacy. In order to read, write, speak, and comprehend Japanese effectively, learners must also acquire knowledge of kanji readings and their usage in vocabulary.

Kanji readings present a significant challenge, and determining which readings to prioritize for study adds further complexity. The conventional approach to learning kanji readings involves memorizing all possible pronunciations, or at a minimum, one **on’yomi** (Sino-Japanese reading) and one **kun’yomi** (native Japanese reading) per character. However, many kanji possess multiple on’yomi and kun’yomi readings, making the learning process even more demanding. Additionally, kanji readings in **proper nouns (nanori)** introduce another layer of complexity, further underscoring the intricacies of kanji acquisition.

1. *Memorizing kanji characters with radicals mnemonic method*

A highly effective method for memorizing kanji readings is the *radicals mnemonic method*, which builds

upon previously established meaning mnemonics. This approach involves constructing a narrative that seamlessly continues from the meaning mnemonic, ensuring that the recall of a kanji's meaning naturally triggers the recall of its reading as well. Given that humans exhibit a strong ability to remember stories, this technique has proven to be remarkably effective.

- For instance, the reading of the kanji 町 (town) is ちょう (chō). A mnemonic story to reinforce this association could be: "A town that appeared overnight is governed by Mrs. Chou, a fearsome leader, making it an undesirable place to live or visit." This narrative links the meaning of town with the reading chō through a memorable and vivid association.
- Similarly, for 電 (electricity), which is pronounced でん (den), a mnemonic story might state: "After being struck by electricity, you feel your face and realize that a large dent has formed." This visualization establishes a connection between the concept of electricity and its phonetic representation.
- For 明 (bright), pronounced めい (mei), the mnemonic could relate to seasonal changes: "The brightness characteristic of this time of year only becomes prominent in May, as prior months are typically dark and rainy." This link reinforces the association between the concept of brightness and the reading mei.
- The kanji 礼 (thanks), read as れい (rei), can be associated with an imaginative scenario: "Expressing gratitude to a spirit results in the sudden appearance of a ray gun." The use of wordplay between rei and ray strengthens the recall of both meaning and pronunciation.
- For 禅 (zen), pronounced ぜん (zen), a direct mnemonic may simply state, "Zen is zen," leveraging the inherent familiarity of the word and its reading.
- The kanji 灯 (lamp), read as とう (tō), can be linked to its reading through historical context: "The first street lamps were invented in Toukyo (Tokyo), which is why the city remains illuminated with modern lamps throughout the night."
- For 和 (peace, Japanese style), pronounced わ (wa), a more humorous mnemonic may be employed: "In a world at peace, everyone adopts a new Japanese dining style by placing chopsticks in their mouths and mimicking a walrus."
- In the case of 時 (time), read as じ (ji), an imaginative mnemonic could be: "Spending time in a temple evokes thoughts of Jesus, who possesses time-traveling abilities. He winks, travels

back to the dinosaur era to wrestle a T-rex, and later visits World War II to confront historical figures."

- The kanji 盲 (blind), pronounced もう (mō), may be associated with a cautionary mnemonic: "Having lost one's sight, attempting to drive would inevitably result in mowing down pedestrians. Even mowing a lawn would become an unsafe endeavor."

Finally, 娠 (pregnant), pronounced しん (shin), can be linked to its reading through physical limitations: "During pregnancy, individuals frequently bump their shins on objects due to an enlarged abdomen, preventing them from seeing their lower limbs."

These mnemonic techniques facilitate the retention of kanji readings by embedding them within engaging, contextually meaningful narratives, thereby enhancing the efficiency of kanji acquisition.

2. *The Role of Context in Kanji Reading Mastery*

While mnemonic techniques are effective for initial retention, true mastery of kanji readings requires extensive exposure to authentic language contexts. Research in second language acquisition emphasizes that frequent and meaningful encounters with kanji in sentences, dialogues, and texts significantly improve reading fluency. Spaced repetition systems (SRS), such as **Anki** or **WaniKani**, employ scientifically supported intervals for reviewing kanji, ensuring that learners reinforce their memory over time.

Additionally, kanji readings often exhibit **morphophonemic variations**, where pronunciation changes depending on compounds or grammatical structures. For example, the kanji 生 (*life, birth*), which has readings such as せい (*sei*), しょう (*shō*), なま (*nama*), うまれる (*umareru*), and いきる (*ikiru*), appears in diverse contexts, each necessitating a different pronunciation. Rather than memorizing all readings in isolation, learners benefit more from acquiring high-frequency vocabulary that incorporates these readings naturally, such as 学生 (*gakusei*, student) or 誕生 (*tanjō*, birth).

3. *Challenges and Future Directions in Kanji Pedagogy*

Despite advances in kanji learning methodologies, challenges remain in optimizing strategies for reading acquisition. The **individual differences hypothesis** in language learning suggests that learners vary in their cognitive preferences, meaning that some may benefit more from mnemonic techniques, while others may prefer immersive exposure through extensive reading. Further research is needed to determine the most effective balance between explicit mnemonic instruction and naturalistic kanji exposure in literacy development.

Moreover, **kanji curriculum design** in formal educational settings often prioritizes frequency-based learning,

where commonly used characters are introduced earlier. However, some studies argue that a **semantic-clustering approach**, grouping kanji by thematic relevance rather than frequency alone, may enhance retention and comprehension.

Conclusion

The process of kanji acquisition presents a unique challenge for learners due to its complex system of meanings, multiple readings, and varied contextual applications. Over time, different **kanji learning strategies** have emerged, ranging from traditional rote memorization to modern mnemonic techniques and spaced repetition systems. While memorization remains a foundational aspect of kanji learning, research suggests that combining mnemonic storytelling with contextual exposure enhances long-term retention and recall. Additionally, vocabulary-based learning, where kanji readings are acquired through commonly used words, has proven to be more effective than attempting to memorize all possible readings in isolation.

Despite advancements in learning strategies, **kanji teaching still faces significant challenges** in both formal and informal education settings. One of the primary difficulties lies in balancing efficiency and retention—how to teach kanji in a way that ensures deep learning without overwhelming students. Additionally, individual differences in learning preferences mean that no single method can be universally applied, necessitating adaptable teaching strategies. Furthermore, kanji pedagogy often struggles with integrating modern technology and cognitive research findings into traditional curricula, which may still rely heavily on repetitive drills rather than contextual learning.

Looking ahead, the future of kanji education will likely involve a more personalized and adaptive approach, utilizing artificial intelligence, data-driven learning pathways, and immersive digital experiences to optimize retention. By continuing to explore new methodologies and addressing pedagogical challenges, educators and researchers can refine kanji instruction to enhance literacy development for learners at all levels.

By integrating these innovative strategies into kanji instruction, educators can foster more effective, engaging, and sustainable learning experiences. This paper serves as a comprehensive guide for educators seeking to enhance their teaching methodologies and support learners in mastering kanji with greater efficiency.

References

1. *Toyoda, E. (1998). "Teaching Kanji by focusing on learners' development of graphemic awareness." Australian Review of Applied Linguistics. Supplement Series, 15(1), 155–168.*
2. *JBE-PLATFORM.COM*

3. *Rose, H. (2013). "L2 learners' attitudes toward, and use of, mnemonic strategies when learning Japanese kanji." The Modern Language Journal, 97(4), 981–992. Introduction. Unwrapping Japan. Society and Culture in Anthropological Perspective.* Moeran B. Manchester, 1990.
4. *www.tofugu.com*
5. *Miyaoka, Y. (2015). Kanji and Kana: A Handbook of the Japanese Writing System (4th ed.). Tuttle Publishing.Gender, Language and Culture. A Study of Japanese Television Interview Discourse.*
6. *Lai, W. W. (2010). "A Study of the Use of Kanji in Japanese Language Learning." Language Learning Journal, 38(1), 57-72.*

Rakhmatillaeva Mamura Shokir qizi
Tashkent State Medical University
mamura.sabina@gmail.com

Association Between Immune Dysfunction and Sepsis Severity in Children with Primary Immunodeficiency: A Retrospective Analysis

Abstract

Sepsis continues to be one of the major morbidities and mortalities among paediatric patients, especially in children with a primary immunodeficiency (PID). These patients are characterised by high susceptibility to severe infections, atypical clinical manifestations, and high probability of rapid progression of disease due to congenital defects of the immune system. The current research intends to examine clinical and immunological characteristics of sepsis in children with PID in terms of retrospective data analysis of cases treated in the Tashkent City Children's Clinic. A retrospective study was performed through the medical records of children diagnosed with PID and sepsis within a fixed study period. Clinical data and laboratories, immunological parameters, causative pathogens, treatment methods and outcomes were assessed. The features of immune dysfunction, such as the defects in humoral and cellular immunity, and their correlation with the progression and severity of sepsis, were singled out. The review showed that children with PID tend to exhibit severe and frequent septic events, late diagnosis, and length of stay.The prevalent ones were the persistent leukopenia or lymphopenia, low levels of immunoglobulins, and the lack of an inflammatory response. Opponent pathogens and Gram-negative bacteria were often verified as causative agents. Despite the intensive antimicrobial and supportive treatment, the threat of complications and the adverse outcomes were still very great in comparison with immunocompetent children. These results demonstrate the need to undertake early identification of PID in the septic child, timely immunological evaluation, and adopt a personalised treatment plan. Awareness of diagnosis and optimal multidisciplinary care can help improve the prognosis and decrease mortality in the susceptible population of such patients.

Keywords: Sepsis; Primary immunodeficiency; Children; Clinical features; Immunological disorders; Retrospective analysis

Introduction

Sepsis is a life-threatening condition due to the dysregulated host response to the infection and is one of the significant health issues in the context of paediatric practice worldwide. Although antimicrobial therapy and intensive care have been made more advanced, sepsis remains among the main causes of death among children all over the world and in the most vulnerable groups, particularly [1]. Early diagnosis and prompt management are essential, but in children, the clinical

manifestation of the disease is not always specific, and it can thus be difficult to identify and treat as early as possible.

Children with primary immunodeficiencies (PID) are particularly at high risk of acquiring severe and recurrent infections, including sepsis. Primary immunodeficiencies represent a heterogeneous collection of inherited conditions that involve a malfunction of one or more of the elements of the immune system (humoral immunity, cellular immunity, phagocytic activity, or complement pathways) [2]. These malfunctions reduce the effectiveness of the body in providing sufficient immune response to the pathogens, which increases the vulnerability to opportunistic and invasive infections.

PID children have a different clinical course of sepsis as compared to immunocompetent patients. The infections tend to manifest themselves at a young age in this population, quickly develop, and have unusual symptoms, delayed inflammatory reactions, and adverse prognoses [3]. In addition, routine lab indicators of infection and inflammation can not be as reliable because of the underlying defects in the immune system, which makes it even more difficult to diagnose in the early stages. Consequently, children with PID often get diagnosed with sepsis at a very late stage when the dysfunction of their organs has already occurred.

The immunological deviations are significant in the pathophysiology and grades of sepsis among PID patients. Spontaneous decreases in immunoglobulin levels, lymphopenia, defective generation of cytokines, and deficiency of the innate immune responses play a role in the insufficiency of clearance of the pathogen and systemic inflammation [4]. Moreover, the prognosis is further deteriorated by the exposure to broad-spectrum antibiotics repeatedly, leading to the development of antimicrobial resistance, fungi or opportunistic infections.

Although there is clinical significance to this issue, there is a paucity of data regarding clinical and immunological features of sepsis in PID children, especially in developing nations. Answers to the issues may be offered by retrospective investigations in specialised paediatric Centres, which can help determine the patterns of the disease, the difficulties of diagnosis and results of treatment in a mind-boggling group of patients [5]. An improved comprehension of these factors is necessary to enhance the processes of early detection, tailored treatments, and improved morbidity and mortality rates of children with primary immunodeficiencies with sepsis.

Methodology

This observational retrospective research was carried out in one of the Tashkent City Children's Clinics, a tertiary-level paediatric medical centre, specialised in the treatment of children with complex infectious and immunological diseases. The subjects that were studied were medical records of paediatric patients diagnosed with

sepsis, but with known primary immunodeficiencies (PID) during a specific period of observation. Paediatric sepsis criteria were used to identify sepsis based on the internationally accepted criteria of sepsis, considering the clinical features and laboratory indicators specific to the age and signs of organ dysfunction [6].

Selection of patients has been done on inclusion and exclusion criteria. Children aged between 0 to 18 years were included, and they had a confirmed diagnosis of PID and immunological tests and had developed sepsis in the hospital. Patients whose immunodeficiencies were secondary, whose medical records were not complete, or those with sepsis due to non-surgical complications were not analysed. All eligible patients were entered in the demographic data, including age, sex, and age at first clinical manifestation.

The hospital records were used to extract clinical data, which were presented in terms of the presenting symptoms, source of infection, the severity of sepsis, hospital stay, requirement of intensive care, and the clinical outcomes. The parameters studied in the lab included complete blood counts, inflammatory indices, including C-reactive protein and procalcitonin, biochemical indices of organ dysfunction, and microbiological culture findings. Immunological diagnosis centred on serum immunoglobulin levels, lymphocyte subsets, as well as available functional immune tests, which enables one to characterise the underlying immune defects [7].

Microbiological records were checked in order to determine the causative organisms and their antimicrobial susceptibility patterns. Blood cultures and available cultures of other sterile sites had been analysed. Special interest was put on the prevalence of opportunistic organisms and multidrug-resistant pathogens, which are often related to the immunocompromised paediatric population [8]. The antimicrobial therapy, immunoglobulin replacement, and supportive methods of treatment were also considered in terms of their dependency on the progression and outcomes of the disease.

Standardised extraction forms were utilised to collect information and achieve consistency, as well as reduce bias. The statistical analysis was done in the form of descriptive statistics, where the categorical variables were summarised in terms of frequencies and percentages, and the continuous variables were summarised by using medians and ranges. Suitable comparative analyses were used to determine associations between immunological abnormalities and clinical severity. The retrospective nature of the study led to the absence of missing data; however, the careful review of the records omitted the imputation procedure.

The local institutional review board provided ethical approval for the study, and the confidentiality of the patients during the research process was strongly ensured. The chosen study

design is also consistent with the current guidelines on retrospective clinical research in the field of paediatric immunology and sepsis and offers credible information about the actual clinical practice and its outcomes in the high-risk population of patients [9].

Results

The retrospective study involved the children with primary immunodeficiencies confirmed during hospitalisation at the Tashkent City Children's Clinic and who developed sepsis. The majority of the cases were children who were less than five years old, which would mean that the disease would have manifested early, and children would be vulnerable to the disease. Sepsis represented the first severe clinical event in a significant proportion of patients that resulted in the identification and diagnosis of underlying immunodeficiency, which corresponds to prior trends in paediatric immunology [10]. This was a result of the contribution of X-linked immunodeficiency disorders, as a slight majority of male patients were observed.

Clinically, most patients came in having been severely sepsis, which often deteriorated to septic shock and dysfunction of multiple organs. Some of the most frequent reasons to be admitted to the paediatric intensive care unit were respiratory failure, cardiovascular instability, and altered consciousness. In most cases, standard indicators of systemic inflammation were not so intense, which led to late clinical suspicion and diagnosis. The duration of the hospital stay was significantly increased, especially in patients with combined immunodeficiencies and severe immune abnormalities.

The lab analysis indicated that there were serious abnormalities in haematological and immunological parameters. Regular lymphopenia and leukopenia were typical, including those with T-cell or combined defects of the immune system. The common finding in children with humoral immunodeficiencies was the reduced levels of serum immunoglobulins, predominantly IgG and IgA. C-reactive protein and procalcitonin, which are inflammatory biomarkers, showed a heterogeneous pattern; in some patients, these biomarkers were not associated with the clinical severity of sepsis, which restricts their diagnostic and prognostic capabilities [11].

Microbiological results indicated that Gram-negative pathogens are predominant, with Klebsiella pneumoniae, Pseudomonas aeruginosa and Acinetobacter species being most commonly isolated in the blood cultures. Gram-positive organisms such as Staphylococcus aureus were also detected, and opportunistic infections were found more in patients with severe combined immunodeficiency. The prevalence of multidrug-resistant microorganisms was recorded as high, and this made it difficult to manage using antimicrobials and led to an adverse outcome [12].

Although aggressive treatment was used, such approaches as a broad-

spectrum antimicrobial treatment, replacement by immunoglobulin and intensive supportive care were implemented, the complication rates were still very high. ARDS, renal failure and secondary infections were common. Children with primary immunodeficiencies and sepsis were considerably more likely to die than the general paediatric population, and patients with severe immune defects had the lowest outcome. The findings suggest that the degree of immunological malfunction has a strong relationship with the severity of sepsis, and therefore, the immune condition is of utmost importance in defining the disease progression and the prognosis [13,14].

Discussion

The results of this retrospective study indicate how complicated and severe sepsis can be in children with primary immunodeficiencies. The findings corroborate the assumption that sepsis is common at an early age in this group of patients, and it might be the initial life-threatening manifestation of an underlying immune disorder. The note complies with the world statistics, suggesting that the late diagnosis of primary immunodeficiencies is one of the causes of serious infectious morbidity and unfavourable results [15].

Among the main observations during the study, the abnormal clinical and laboratory manifestations of sepsis in children with immunodeficiency can be identified. In contrast to immunocompetent patients, classical inflammatory responses were often attenuated or delayed, and this created problems with diagnosis. A number of studies have highlighted the fact that the conventional biomarkers, including C-reactive protein and procalcitonin, can be relatively insensitive in patients with severe immune dysfunction, which is congruent with the mixed laboratory results in this study [16]. This highlights the importance of increased clinical observation and prompt immunological assessment in children who present with acute or chronic infections.

The presence of Gram-negative and opportunistic pathogens in the majority of cases seen in this study demonstrates the compromised capacity of children having primary immunodeficiencies to prevent invasive and nosocomial infections. The multidrug-resistant organisms were also associated with high rates, further complicating antimicrobial management, which has continued to be demonstrated in immunocompromised paediatric patients all over the world [17]. Such microbiological properties not only extend hospitalisation, but also lead to the possibility of failure of treatment and secondary complications.

Mortality and complication rates were still great despite the application of intensive care support, broad-spectrum antimicrobials, and immunoglobulin replacement therapy. The observation emphasises the low efficacy of standard sepsis treatment approaches when implemented without regard to the background defect in immunity. Recent sources accentuate that

personalised treatment strategies, such as early immunomodulatory therapy and individualised antimicrobials, can also enhance the outcomes of children with inborn errors of immunity with sepsis [18].

The close correlation between the extent of immunological deficiency and the adverse outcomes in this article is a strong support of the importance of the immune status as a prognostic variable. Primary immunodeficiencies can be diagnosed early by means of focused screening, genetic investigation, and immunology, which may make it possible to prevent situations, including prophylaxis of antimicrobials and timely immunoglobulin substitution, and this approach could decrease the occurrence and severity of septic episodes [19]. On the whole, the conclusions of the current research underpin the necessity of the multidisciplinary approach and awareness of primary immunodeficiencies in paediatric sepsis to enhance the survival and long-term outcomes.

Conclusion

Sepsis among children who have primary immunodeficiencies is a serious and life-threatening clinical syndrome that is characterised by high morbidity and mortality. The results of the research indicate that the underlying defect in the immune system is a major determinant of the clinical manifestation, laboratory features, microbiological profile, and prognosis of sepsis among paediatric patients. Premature disease, unusual clinical presentation, and impaired inflammation response are often associated with late diagnosis and improper treatment. The findings highlight the fact that children with primary immunodeficiencies are especially exposed to high-risk infections by opportunistic and multidrug-resistant pathogens. Regular diagnostic markers and general measures of sepsis management might prove to be inadequate in the population without taking into account the underlying immunological condition. The close correlation between the degree of immune defect and adverse prognosis speaks of the paramount role of prompt diagnosis and thorough immunological evaluation of children with severe or repeated infections. The early detection of primary immunodeficiencies, along with personalised treatment, including specific antimicrobial therapy, replacement and immunisation with immunoglobulins, and multidisciplinary care, can enhance the clinical outcomes and minimise complications. Increasing diagnostic awareness in clinicians as well as the incorporation of immunological assessment in the pediatric sepsis guidelines are necessary steps in the optimisation of care. Comprehensively, individualised and immunobiased management of sepsis is essential in enhancing the survival and the post-discharge prognosis of children with primary immunodeficiencies.

References

[1] Weiss S.L., Fitzgerald J.C., Pappachan J., et al. Global epidemiology of pediatric sepsis: a systematic review. The Lancet Child & Adolescent Health.
[2] Notarangelo L.D., Bacchetta R., Casanova J.L., Su H.C. Human inborn errors of immunity: an expanding universe. Journal of Allergy and Clinical Immunology.
[3] Brierley J., Peters M.J. Sepsis in children: recognition, management and outcomes. Pediatric Critical Care Medicine.
[4] Boomer J.S., To K., Chang K.C., et al. Immunosuppression in patients who die of sepsis. Nature Reviews Immunology.
[5] Oved J.H., Orange J.S., Notarangelo L.D. Sepsis as a presenting feature of inborn errors of immunity. Frontiers in Immunology.
[6] Pierrakos C., Vincent J.L. Sepsis biomarkers: a review. Critical Care.
[7] Antachopoulos C., Walsh T.J., Roilides E. Invasive fungal infections in immunocompromised children. Clinical Microbiology and Infection.
[8] Weiss S.L., Peters M.J., Alhazzani W., et al. Surviving Sepsis Campaign international guidelines for the management of septic shock and sepsis-associated organ dysfunction in children. The Lancet Child & Adolescent Health.
[9] Picard C., Bobby Gaspar H., Al-Herz W., et al. International Union of Immunological Societies: classification of primary immunodeficiency disorders. Journal of Clinical Immunology.
[10] Bousfiha A., Jeddane L., Picard C., et al. The 2022 update of IUIS phenotypical classification for primary immunodeficiencies. Journal of Clinical Immunology.
[11] Rimmele T., Payen D., Cantaluppi V., et al. Immune cell dysfunctions in sepsis. Intensive Care Medicine.
[12] Tacconelli E., Carrara E., Savoldi A., et al. Discovery, research, and development of new antibiotics: the WHO priority list. The Lancet Infectious Diseases.
[13] van der Poll T., Shankar-Hari M., Wiersinga W.J. The immunology of sepsis. Nature Reviews Immunology.
[14] Notarangelo L.D. Primary immunodeficiencies: from genetic diagnosis to clinical management. New England Journal of Medicine.
[15] S. Nepesov, S. Firtina, F. D. Aygun, N. Burtenece, H. Cokugras, and Y. Camcioglu, “Diagnosis of primary immunodeficiency diseases in pediatric patients hospitalized for recurrent, severe, or unusual infections,” *Allergologia et Immunopathologia*, vol. 50, no. 4, pp. 50–56, 2022.
[16] X. Zeng et al., “Approach to Diagnosing Primary Immunodeficiencies,” *EMJ Allergy & Immunology*, vol. 10, no. 1, pp. 109–114, 2025.
[17] A. Duhaniuc, “Multidrug-Resistant Bacteria in Immunocompromised Patients,” *Perspectives in Infectious Diseases*, 2024.
[18] G. Bottari et al., *Immunomodulation in Pediatric Sepsis: A Narrative Review*, *Journal of Clinical Medicine*, vol. 14, no. 9, 2025.

[19] R. Schober et al., *Outcomes of Immunocompromised Children Hospitalized with Severe Sepsis*, *Clinical Microbiology and Infection*, 2023.

Odimegwu Temple Chimuanya
Department of General Professional Sciences,
Alfraganus University, Tashkent, Uzbekistan
odimtemplec@yahoo.com,odimegwutemple@afu.uz

LATERITE IN CONSTRUCTION: A REVIEW OF APPLICATIONS, PROPERTIES, AND SUSTAINABILITY

Abstract

Laterite, a soil and rock type rich in iron and aluminium oxides, has been widely used in construction across tropical regions due to its abundance, workability, and durability. This review consolidates historical, engineering, and modern perspectives on laterite as a building material. Traditional applications include monumental architecture, vernacular housing, and colonial structures, while contemporary uses extend to blocks and bricks, road bases, stabilised earth blocks, and decorative facades. The review examines laterite's physical and chemical properties, moderate strength, high plasticity, porosity, and oxide-rich composition, which underpin its performance in construction. Stabilisation techniques with lime, cement, and bitumen are discussed as essential for enhancing durability and water resistance. Laterite's sustainability potential is emphasised, as it is locally available, low-carbon, and thermally efficient, aligning with global goals for eco-friendly housing and infrastructure. Challenges such as variability in composition, susceptibility to weathering, and strength limitations are also addressed. Overall, this review highlights laterite's enduring relevance as a construction material, bridging traditional practices with modern sustainable solutions.

Keywords*: stabilisation, compressed earth soil, water absorption, compressive strength, sustainability*

1. Introduction

In the life of every human race, even from ancient times, shelter has been ranked one of the most basic three needs (in addition to food and clothing) of man to be able to function effectively in a given society. In effect, the provision of good housing, accommodation or shelter for the members of a given community is an essential duty of government (or individuals or groups so charged) for the well-being of the people in every part of the world. However, durable shelter is an essential need of man economically and socially, though realistically, many developing countries are having problems providing enough affordable and durable housing for their citizenry (Kerali, 2001). The unpredictably increasing cost of building materials has been a disturbing topic for almost every private establishment and government at all levels in developing countries. But then

specialists have observed that the high cost of construction and building materials is not the only factor that influences the cost of building houses, since the cost of transporting materials from urban areas to the remote rural areas and the lack of access to the building material factories in the urban areas immensely increase building costs (Caiola & Davenport, 1985). These issues could only be addressed by the use of available materials in a given area or region to reduce or eliminate transportation costs.

Notably, an increase in population in Malaysia and some Asian countries has impaired access to good and affordable housing for those living in rural areas.

In effect, this increase in population and attendant increase in demand for good and affordable shelter have been a great challenge to the citizens. "However, in less developed Asian and African countries where urbanisation is still low, they are expected to be 54 per cent urban by 2025" (Fadairo & Ogunmakinde, 2011).

But then, it has been observed in different research that housing is an issue for the low income group in Malaysia and this challenge increases by day due to increased urbanization caused by immigration from the rural region to the urban centres, and most of these people are the "Bumiputera" who are from a low income group (villages) and cannot afford houses due to high costs and this has become a problem to the urban regions that can only be fixed by government contribution to reduce the housing challenges (Ahmad & Hasmah, 2012). Noor Sharipah & Sultan Sidi (2011) reported on the issue of housing in Malaysia and further explained that "an increase in housing demand will result in high costs which will affect the low-income group. It has been established by experts that the problem house buyers are facing generally in Malaysia is the high price of houses due to the high cost of the materials used to build them, which makes the houses unaffordable to low-income earners.

In effect, notwithstanding the highlighting of improved housing by the government and private house developers. Housing is still a contentious issue which has changed from ordinary accessibility to obvious affordability (Salfarina, Normalina, & Azrina, 2010). According to the "Third Malaysian Plan (TMP)", which stated that "provision of house is a key component of a program to eradicate poverty", there is thus a convincing need to address this challenge through the proper implementation of affordable housing programmes due to its link to income level.

Some developing countries like Nigeria still face serious housing problems in the urban centres. Sandcrete blocks are commonly used as a material for walling for most buildings, and the high demand for these blocks has made this essential material scarce, relatively expensive, and thus difficult for most citizens to have their own comfortable home (Isiwu, 2012). From past

researchers, suggestions have been made to the government and other private housing developers to encourage the use of local construction materials to guarantee durable, available and affordable materials for the building and construction industry (Tamakloe, 2012). A Housing Policy was also developed in Malaysia by the British in 1957, and with the influence of the colonial masters, such a policy aimed at providing public shelter for the poor citizens and quarters for civil servants. In the 60's, the concern was on the increase of housing ownership, most especially affordable housing for the poor, and this policy continued well into the 70's until the year 2000, when the policy review also highlighted that there were not sufficient low-cost houses in the housing market for the low-income group (Abdul & Lee, 1997). In some other countries, like Ghana, Humphrey Danso (2013) stated that "according to the Ghana News Agency (GNA) publication of March 29, 2011 that Ghana has issues of housing which have been a major problem that the government tried to tackle but over 1.6 million houses are expected, which will solve the need of housing in Ghana and this problem will likely double within ten years, although the government and a combined private sector have managed to deliver 25,000 housing units to the market each year. But from the analysis housing problem must be increased from 25,000 to 160,000 every year to meet the demand for housing in the country".

Based on the problem of insufficient housing and high cost of building materials, a local, less expensive and durable building material will be necessary for building for those living in rural and urban regions who are low-income earners. In addressing this issue, attention has been given to low-cost alternative building materials (Agbede I.O & J, 2008). Such a material is earth soil (laterite), which will eliminate the cost of building material, and its product is still durable. In India, there might be up to 80 million people living in earth buildings (often called mud houses) and even more in Asia and Africa (Norton, 1997). As more countries develop and populations are increasing, many people move from undeveloped to developed (town) areas in search of "greener pastures", and so the demand for houses in the latter region increases more rapidly than the supply, and therefore the attendant increase in price due to lower supply of housing will ensue. The use of earth as a building and construction material became extremely less popular due to the increased use of the present conventional building materials in the urban region and even in rural areas, and this reason made earth construction fade away in the construction industry in most developed and underdeveloped countries. However, it is well known that some of those conventional building materials are expensive and sometimes scarce, but earth soil is everywhere and available in our environment in abundance.

Furthermore, in Sri Lanka, it is suggested that building with compressed stabilised earth block would provide an alternative to the conventional building materials (Jayasinghe & Mallawaarachchi, 2009). Recently, there have been hints that earth as a cheap building material is now being taken more seriously in the United Kingdom, and there is also a technical guide for design and construction with earth building materials that is for earth buildings, for both new buildings and the repair of old houses. Irrespective of the hitch of having no earth building code of practice and standard (Morton, 2008), some countries have codes for the production of blocks and sandcrete, notably including Malaysia, India, Uzbekistan and Nigeria (Nigeria Industrial Standard). It is also applicable to all earth blocks (laterite blocks), CSEB.

Earth blocks (EB) have been the material which will rank as a prehistoric material used for buildings, and their strength, low cost of production, local nature and durability will increase their appeal for higher usage in the present time. One can recall that back then in Ancient Egypt, when earth was used in the traditional and ancient houses, the pyramids built then are still standing tall to the admiration of the modern world.

When traced back to history, when civilisation was not yet there in most countries of the world, people were already making local housing, which is known as the traditional earth building (TEB) or hut, for themselves with the local earth dug out and "processed" within the environment. They never spent money on transportation of materials for building or any additional materials. The use of this local material for buildings will make the general population appreciate nature and will also attract tourists into the country, and at the same time generate revenue, since traditional houses are practically the representation of the heritage of any country or people and reflect the country's traditional norms and values, and more especially culture (Rumana, 2007).

Among all the other alternative and available building materials for the construction of low-cost housing, CSEB is said to be the best and the cheapest. In some rural and urban areas of some of the developing countries, traditional buildings, which are made of laterite soil, still exist to date, though some still crack due to the intense heat of the sun and the rain (weathering). Some of the buildings constructed with earth do not stand the rainy season due to insufficient or low binding potentials, though laterite has been proven to have more binding features, but still requires a stabilising material to improve its binding strength. According to Ghoumari (1989), researchers and builders have been working hard and seriously too on improving the life span of building materials, most especially the material which will really cut down the cost of building for economic purposes. It is the view of this writer that the use of locally made materials should be supported in both developed and

developing countries, so that it will be widely known and applied by the people.

Again there is need to improve its strength and make it more durable rugged to stand different high climatic conditions ranging from heavy rain, freezing (winter season) to the hot season because most traditional walls built without any additional stabilizing agent do not endure those higher seasonal conditions and require being maintained regularly when cracked by patching the affected walls (Batcbelder, Caiola, R.E., & Davenport, S.W., 1985). Traditional houses made of mud soil require intensive labour due to constant maintenance when cracked (Harper, 2011). Also, Laterite soil is known to show some negative characteristics of excessive shrinkage, cracks and swelling under different moisture circumstances. These limitations of shrinkage, cracking and swelling characteristics of laterite depend on the rate of water it absorbs and retained which will cause deformations or defects that cannot be predicted because different soils have different moisture contents and plastic limit according to location. The movement is usually in an uneven pattern and to such an extent as to cause damage to a building or structure (Nelson & Miller, 1992).

Earth buildings are not only common in third-world countries, as it may seem, but are also found in developed countries like the United Kingdom and some parts of the Americas (Houben & Huillaud, 1994).

However, the identification of materials that will be used for construction is of great importance to be sure it satisfies every quality of an earth soil for construction. Through the use of natural and locally available materials, the production of CSEB is a sustainable building system that can make good and reasonably priced houses available, empower the people in the community by paid employment, save funds for the local economy instead of spending it exclusively on imported materials, and move forward into a better, natural environment. From the foregoing, we have shown some of the discovered benefits and importance of CSEB it is then our honest advice that it be used for low-cost housing programmes and projects by governments and corporate and individual developers and shift emphasis away from over dependence on imported materials that are expensive and at times scarce in view of the yawning gap between housing needs, availability and affordability.

2.1 The Use of Laterite

The use of laterite for building has been in existence for a long time, and some people in the rural areas still see this material as the only affordable material around them, though the maintenance is high, its availability and low cost have made it the only material for building in some areas. There are up to six regions in the world where Laterite architectural work exists, namely Africa, India, Southeast Asia, Australia,

Central and South America, etc., as highlighted in Figure 2.1.

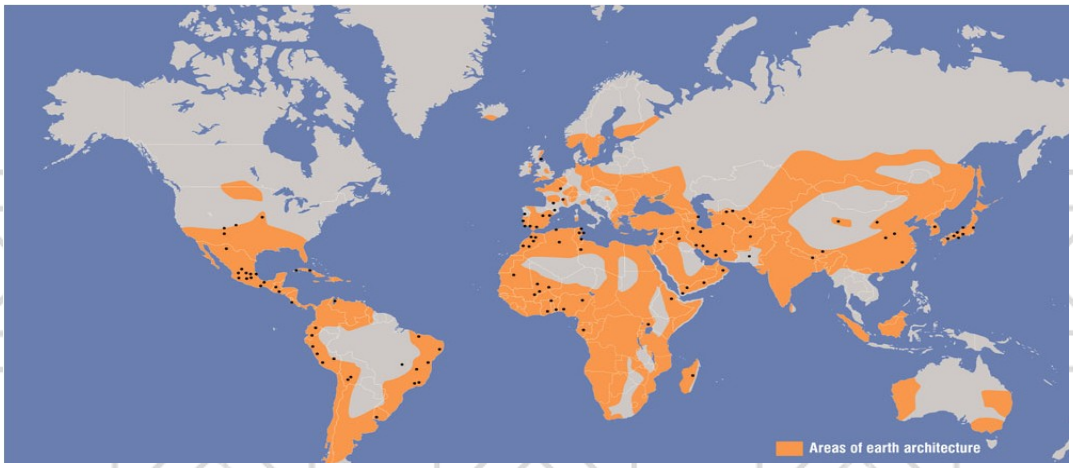


Figure 2.1: Map Showing Region Distribution of Laterite Architecture (CIRIA, 1995)

Given the search for cheap, affordable building materials, Laterite is generally used in construction. It is the most readily available material which can be found anywhere in our environment and is believed by many to be an ancient material that is dependable for building houses. Fitzmaurice (1958) stated that “housing is important in everyone’s life and up to 25-50 of the world population in the rural areas still lives in shack houses”. Furthermore, several attempts have also been made to develop walling units that will serve as an alternative to the modern and more expensive fire bricks and concrete blocks. The use of laterite (a cheap and durable material) was supported and introduced by the United Nations (United Nations & Fitzmaurice, 1958) in some parts of the world, such as Nigeria. Some people in the remote rural areas still live in huts, mud and thatch houses and such houses, though they served their purpose as traditional housing, but they have been rated as very poor shelter, and their walls crack with time due to weather conditions.

The traditional hut, often found in various rural regions, particularly in Nigeria, has notable advantages and disadvantages concerning maintenance and durability. One significant drawback is the high rate and cost of maintenance associated with these structures. As time progresses, the walls of these huts can develop cracks due to environmental factors. When this occurs, builders typically use a mix of laterite and water to plaster over the damaged areas. However, during periods of heavy rainfall, this plaster can wash away, leading to further deterioration and highlighting the hut's limited durability.

Despite these challenges, traditional huts are regarded as environmentally friendly constructions. The

materials utilised in their construction are entirely natural, sourced directly from the surrounding environment. This characteristic not only reduces the environmental footprint but also means that complex construction techniques are unnecessary, making the building process accessible even for those with limited resources and skills.

In some remote rural areas of Nigeria, for example, the abundance of natural resources means that people can construct these huts without significant financial investment. The materials needed, such as laterite, are readily available, allowing for cost-effective building solutions that cater to the community's needs.

In recent times, laterite has gained recognition as a superior building material compared to alternatives. Historical evidence supports its advantages, as the processes of stabilising and compacting laterite enhance its overall quality, strength, and performance. When processed into blocks, laterite can now serve as a more modern building material, thanks to these improvements. This evolution in its use signifies a shift towards more sustainable building practices while maintaining the cultural significance of traditional architecture. The ongoing development and adaptation of laterite blocks showcase their potential in contemporary construction, addressing both durability and environmental considerations.

Figure 2.2: A Traditional Hut in Africa Built with Laterite Soil and Thatch Roof. (Google, June 2012)

2.2 Laterite

Laterite soil is of more special interest regarding building and construction among the other soil types that exist in the tropical and sub-tropical regions. It is a high weathering soil that is made of a high proportion of iron and aluminium oxides and other minerals. Laterite soil is found at tropic and sub-tropical regions below the surface of wide grassland or regions that have high rainfall Schellmann, 2010). Laterite soil is usually produced by an in-situ (Lateritic) weathering process of a

basement rock; this process occurs under tropical climate conditions. Balam (2007) described the characteristics of laterite soil in its physical appearance when exposed to air, and that it can be more resistant to moisture content depending on how dark it appears (see Table 2.1). Thagesen (1996) defined laterite as “the high weathered soil that occurs by the concentration of hydrated oxides of iron and aluminium”

Table 2.1: Characteristics of Laterite and its Difference from Other Soils (Balam, 2007)

Characteristics	Discription
Soft occurrence	Laterite soil appears soft in nature and hardens when it is exposed to air, which makes it possible to cut the laterite into blocks or bricks, and allow it to harden by air, then use it for walling (just as the name coined from a Latin word “later” meaning bricks)
Colour	Laterite have more resistance to moisture content; its heaviness and hardness depend on how dark it appears.
Pozolanic reaction	When laterite is mixed with Lime as a stabilising agent, laterite will be found to have a pozzolanic reaction, which is caused by high clay content, and it will produce a durable building material

In some Asian countries, laterite has been known as a building material for over 1,000 years. But then, if the use of laterite were traced back in some regions where the soil cohesion and concentration of carbonates are high, the soil will be cut out directly in shapes to be used as blocks, stones and bricks. (Makasa, 2004). This process is commonly found in the tropic region, where laterite gives a durable building material. Laterite in some regions are found in a soft soil, which hardens after it is exposed to air due to a chemical reaction of the soil with air (carbonation reaction) and such an occurrence is called “induration” (Makasa, 2004). The soil with such property is found on the west coast of India.

Figure 2.3: Locally Sourced Laterite Soil Cut Out in Block Shape and Taken for Firing.

In India, the process of utilising moist and soft laterite soil involves cutting it into manageable sizes, typically in the form of blocks or bricks. Once shaped, these blocks are laid out to dry under the sun's intense heat, allowing them to undergo a transformation into a hard and durable building material. This method capitalises on the intrinsic properties of laterite soil, which becomes significantly firm and robust after the drying process.

These types of soil possess several distinct characteristics that make them suitable for construction. When dry, laterite soils are notably very hard and impermeable, which means they do not allow water to pass through easily. This quality not only contributes to their strength but also makes them a practical choice for building foundations and walls. Furthermore, the hardening of laterite soils is largely irreversible, providing long-lasting structural integrity once set.

Fookes (1970) provided valuable insights into the composition and nomenclature of laterite soils. He noted that the term "laterite" itself derives from the hardening of the soil particles, which often results in a cemented crust rich in iron (see Table 2.2). The iron-rich layer, referred to as "ferric," offers enhanced durability due to its high iron content. In contrast, another variant known as "alcrete" is identified by its aluminium-rich cemented crust.

Table 2.2: Chemical Composition of Laterite (Far et al, 2013)

Compound	Value (%)	Explanation
SiO_2	33.55	Silica content, though reduced compared to the parent rock, is due to leaching.
Al_2O_3	22.31	High aluminium oxide, precursor to bauxite formation.

Fe_2O_3	19.40	Iron oxide gives laterite its red colouration and hardness.
MgO	2.07	Minor magnesium oxide, often leached in tropical weathering.
P_2O_5	0.11	Trace phosphate is usually insignificant.
K_2O	16.71	Potassium oxide is relatively high, contributing to soil fertility.
SO_3	1.98	Sulfates are present in small amounts.
CO_2	3.65	Carbonates are retained in minor quantities, despite leaching.

These types of laterite soils, observed primarily in their hardened states, are prevalent in various regions and have been widely used for construction due to their favourable physical and chemical properties.

Some laterite soils appear already hardened, and such soils are cut out in the shape of bricks or blocks to make building blocks after excavation. Buildings like “Castle of Seron de Nagima” and “Yanguas Castle”, Rollo tower in Agreda constructed with stone masonry and mortar masonry. “Castle of Raya”, “Temple at Angkor Wat” in Cambodia are also examples of the buildings achieved through this process with laterite and stones, and to date they still exist and are places of tourist attraction (see figure 2.4).

Figure 2.4: Temple at Angkor Wat in Cambodia

In the 19th century, this soil attracted the attention of scientists when a surgeon, Francis Buchanan-Hamilton, named the soil “Laterite” in 1807, in southern India. Nazeer (2006) reported that in India, laterite is one of the most valuable building materials, which is quarried in very large quantities and used as blocks and bricks for building. Another typical example of its notable use was in the construction of a primary school in Gando, Burkina Faso in Africa (Real, 2010), a building project that was built with communal effort and supervised by Architect Diebedo Francis Kere and Group of friends’ The walls of the school were built with CSEB which was stabilized with little quantity of cement (see figure 2.5).

Figure 2.5: (a) Primary School Building in Gando, Burkina Faso (Real, 2010)

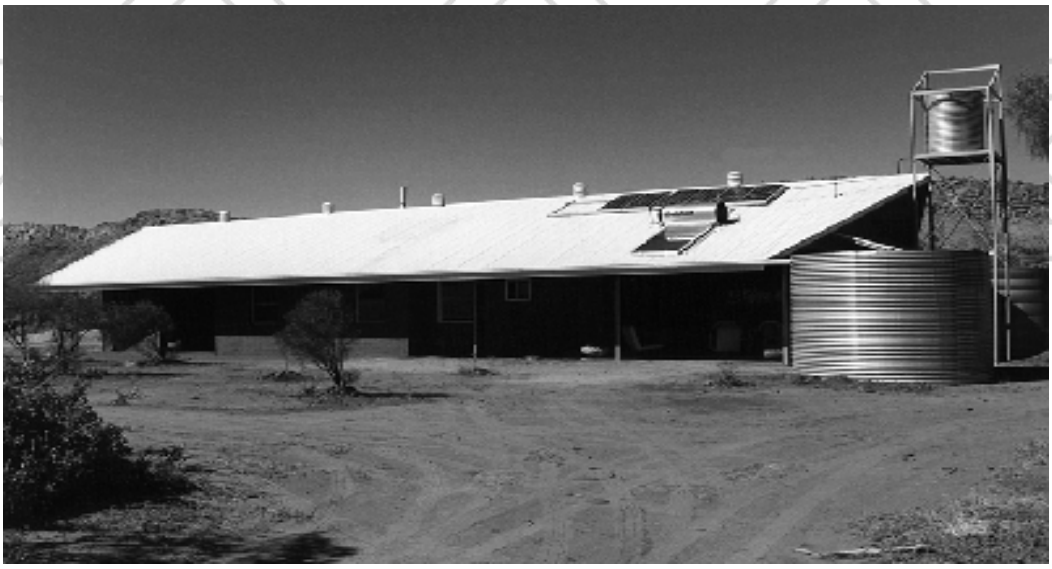


Figure 2.5: (b) The Arrillhjere Demonstration House in Alice Springs, Australia (Real, 2010)

The walls of the above (figure 2.5: b) building were made of hand-made mud bricks from Laterite soil (red soil) dug from the site and stabilised with bitumen, which acts as water resistance to the walls of the building. The advantage of laterite soil rather than sand (fine Aggregate or river sharp sand) in making blocks is the economic advantage, which is the low cost of production, because a small quantity of stabilising agent is required to make blocks that have adequate strength (Isiwu, 2012). According to Madedor (1992), the Nigerian Building and Road Research Institute (NBRRI) successfully used laterite to make blocks for building bungalows in some rural areas
areas in Nigeria so as to meet the demand for shelter for the low-income group.

2.2.1 The Occurrence of Laterite

The hot and wet climate conditions of tropical and sub-tropical regions are the main origin of Laterite with a three-stage in-situ decomposition and weathering process in laterite soil production (Ganssen, 1965). Glaser, B (2005) classified Laterite as soil that has a reddish to yellowish colour, and its colour also depends on the water region during origin, and the mineralogical composition of the parent rock. Based on different classifications of laterite soil regarding the colour “Red Earth” or “Tropical Red clay”, it has also been classified as soil that results from weathering of tropical basement rock, for instance, Granites frequently classified in engineering practices as a different classification of laterite soil.Unfortunately, the term reddish tropical soil still refers to laterite clay and laterite by some engineers. So some of these soils are not what they are assumed to be, but fortunately, for engineering works, it does not matter if the classification is right or wrong; what matters is that the engineering properties of the soil are to be classified and derived from testing that is reliable (Haselsteiner, Hans-George, Osan, & Bjorn, 2005).

2.2.2 Laterite Soil Composition

In view of the characteristics of laterite soil, there are factors that affect soil suitability for the production of blocks, and these factors are soil composition, soil moisture content, and soil plasticity. A proper soil would be composed of clay (15-20%), contain silt approximately 25-40 per cent by volume and approximately 40-70 per cent by volume of sharp sand” (Onaolapo, 2010). The soil plasticity depends primarily on the function of the clay content of the soil, with a plasticity index up to 20-30, which is adequate to apply when producing blocks (Onaolapo, 2010). When a proper soil mix design and the optimum moisture content are

established, blocks can now be produced.

Some soils differ from each other depending on the area of collection and the nature of that particular soil, some of which have characteristics that can likely shrink, losing strength when they have high moisture content, and this might affect the performance of the resultant block. Nevertheless, proper compaction of the soil and a stabilising agent like cement or lime can still be used to improve and enhance the performance of the block in practical terms. It should be pointed out here that different laterite soils may appear in such a form that might be unsuitable for block production, for example, soil that was taken from a borrow pit might contain lumps which will require crushing so that a homogenous mix will be obtained (Ajao, Lawal, Onaolapo, & Eniayekan, 2012). The soil will be sieved with 6mm sieves so that the lumps or big stones will be removed. It can also contain a high percentage of clay and would make the blocks crack when curing, thus practically reducing the quality of the block to be achieved without the measures indicated. Such a soil should be mixed properly and with an appropriate amount of fine sand to have an excellent soil mix before block or brick production (Onaolapo, 2010).

2.3 Compressed Earth

The word earth in this report means Laterite soil. Compressed Earth is the process whereby soil is mechanically improved by pressing the earth soil particles together in very close contact, by expelling air from the soil mass. Compressing the soil increases the strength properties of the soil, reducing permeability and settlement, and increasing soil stability. The effects of compressing a soil in the form of a block differ from each other, and they are affected in different ways. One of the effects is the effort used to compress the block - higher effort used to compress the block results in higher energy and greater density (Osinubi, Ijimdiya, & Nmadu, 2008). Another effect is the elapsed time between mixing and compression, which harms the strength of the soil that is being stabilised by lime; that is to say that a sample that was compressed within 1 hour immediately after mixing will have more strength than the sample compressed after 1day of mixing (Osinubi, 1998; Mitchell and Hooper, 1961). Therefore, the delay after mixing soil with the stabilising agent affects the strength and development of the mix.

However, earth compacted with wooden tamps was the first form of compressing an EB in some parts of the country. The machine that was used for CEB was developed around the 18th century in France by Francious Cointeraux, an advocate of “new pise” (rammed block). In the 70’s and 80’s, a manual compressed machine was manufactured, which made the production of compressed earth blocks more energy-saving and economical to produce (Guillaud, Joffroy, & Odul, 1995). Compressing block (CB) is a recent

form of earth block manufacturing which came into use all over the world about 30 years ago. It was not used only in third world countries but also in other developed countries, for example USA, Canada, France and Australia (Guillaud, Joffroy, & Odul, 1995). Historically, while the earliest machines were first used in the 18th century to compress earth into building blocks, in 1952 the modern ones came into existence by "Engineer Raul Ramirez of the CINVA in Bogota (capital of Columbia), then after the CINVA Ram press machine was adopted and used all over the world", more especially in the developing countries of Asia, Africa and South America (Rigassi, 1995; Gurllard, 1995; Hearthcote K.A, 2002). The compressed earth block is invariably an important modern building material, especially for building of low cost housing projects for those in the middle- or low-income group (see figure 2.6).

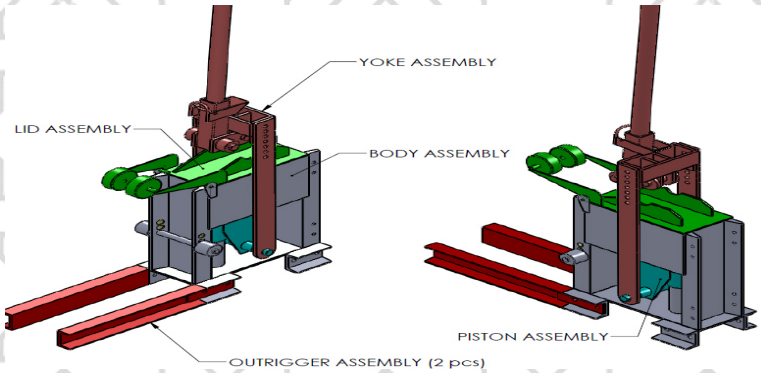


Figure 2.6: The CINVA- Ram Pressed Machines

2.4 Soil Stabilisation

According to some dictionary meaning of stabilisation is the application of a chemical treatment of a mass of soil to increase or uphold its stability and improve its engineering properties is known as soil stabilisation. Soil stabilisation takes place when cement, lime and fly ash are added to the soil in a mix; the pozzolanic reaction between the stabiliser and the soil develops a bond between the molecules in the soil and makes the soil durable for engineering purposes. In effect, soil stabilisation is the process of mixing a binder content with a soil (Laterite) to produce a material whose strength will be greater than that of the original material (Bell, 1993).

Table 2.3: Characteristics of Soil Stabilisation and its Effect on Soil (Bell, 1993).

Effect	Characteristics/ Description
Reduction in plasticity index.	The soil suddenly switches from plastic (sticky) to being crumbly (rigid and grainy). Then, later, it is easier to excavate and compact.

Improving the compaction properties of the soil.	In this process, the maximum dry density drops, while the optimum water content increases, therefore making the soil move into a humidity range that can make compaction easy. This effect is obviously an advantage when used on soil with a high-water content.
Improving the bearing capacity.	In almost every case, two hours after treatment, the California Bearing Ratio of a treated soil is between 4 and 10 times higher than that of the untreated soil.

Soil stabilisation has been defined in various ways. Soil stabilisation is also the treatment to improve the engineering performance of natural earth soil (Garber & Hoel, 2000). Thagesen (1996) stated that soil stabilisation is a process by which soil is improved and made more workable for the production of a good block. Generally, soil stabilisation is a process to create certain desired properties in a soil so as to make it suitable, useful and stable for an engineering purpose. Stabilisation of laterite soil takes place when a stabilising agent is mixed with the soil to change its properties to a more durable and long-lasting strength for making quality blocks. This process has made some soils, which were hitherto labelled unsuitable for some engineering purposes, turn out to be useful and have been applied in many areas of engineering work. McNally (1998) stated that the improved engineering properties of a given soil resulting from stabilisation are described as: an increase in soil strength, workability and durability, and reduced water absorption. Every stabilising agent has its particular soil material, which, when it is applied in that particular soil, will yield the expected properties. Table 2.4 shows some stabilising agents and their suitable soil for stabilisation.

Table 2.4: Different Stabilisers for Different Kinds of Soil. ((Esther, Joseph, & Malarizhi, 2010)

Types of Soil Conditions	Stabilizer
For nearly all types of Soil	Portland Cement
Medium, moderately fine and fine-grained soils	Hydrated Lime
Oarse-grained soil with little if any fine grains	Fly Ash
Cold Climate application	Calcium Chloride
For increasing the resistance of water & Frost	Bitumen

Stabilising soil is very important so that durability and sustainability will be achieved with the local and available earth soil. However, there are three classifications of stabilisation techniques as shown in Table 2.5, namely Mechanical, Physical and Chemical stabilisation (Houben & Huillaud, 1994).

Table 2.5: Stabilisation Techniques (Houben & Huillaud, 1994).

Stabilization Type	Characteristics
Mechanical Stabilization	This involves compressing the soil particles together to change their density, compressibility, Permeability and Porosity (Hicks, 2002)
Physical Stabilization	Changing the texture properties of the soil. It can be done by controlling the mixture of different grain fractions, drying or freezing, or heat treatment.
Chemical Stabilization	Changing the original properties of the soil by adding other chemical stabilising material(s). This happens either by creating a medium, which binds or coats the grains or by a physical-chemical reaction between the grains and the additive materials (Gooding and Thomas, 1995)

Physical stabilization comprises modification of properties of soil by bringing together the missing size fractions, the soil texture in this manner can be altered by calculation and mixing of different sizes of soil together, after which most of the void that existed earlier are closed because of the close-packing of the grains, and this process limits the movement of the grains in the soil (Metcalf and Ingles, 1972). According to Rigassi (1995), as in the case of applying mechanical stabilisation, physical stabilisation does not have a permanent effect on the soil. When the soil is in contact with water the soil grains are easily washed away, so to get a better result, it is then more advisable to use the other two methods.

Mechanical stabilisation is accomplished by a physical process of altering the physical nature of the soil by compacting or vibrating the soil and changing its density and reducing porosity. The process of compaction is what forces the soil particles closer in a way that the air is eliminated from the soil void. Again, this is achieved when there are no gaps graded and not uniform, thus helping the grain with different sizes to close the void that is created by other soil particles. The application of the method of stabilisation alone is not effective because it can be easily changed to its initial state when the soil is in contact with water. The water will cause the soil grain to move within, and in this method, the need for

binder is highly imperative to override the reversible effect when in contact with water (Norton J, 1986).

Chemical stabilisation, according to Keller Bronchure, 32-01E (2011), occurs when a stabilising agent (cement, fly ash, lime, bitumen or a combination of these stabilisers) is mixed with a soil, to give the soil higher strength, lower permeability, and lower compressibility than the natural state of the soil or the native soil cannot provide.

When the stabiliser, which is the binder, reacts with and modifies the soil properties by means of cementation or linkage, both of which are the outcome of chemical reaction with the water and binder (Guillaud & Houben, 1994). The cementation creates a strong medium that can limit movement in a soil and fill the voids in the soil with an insoluble by-product of the hydration reaction, while some soil particles are held firmly by the binder and coated (Ingles, 1962). The major binder for such a chemical reaction is the Ordinary Portland Cement (OPC). In most literature on CSEB, it is reported that the effect of chemical stabilisation is permanent, and it will take years to partially reverse. Because of that fact, chemical stabilisation is regarded as the most superior way of improving or stabilising the soil.

The selection of soil for usage depends on the properties of the soil that is to be modified. The main properties of the soil that are required by engineers are strength, stability, volume, compressibility, durability and permeability. EuroSoilStab, (2002) and Sherwood (1993) explained that for a stabilisation to be successful, a laboratory test must be conducted so that the environmental and engineering properties will be determined. According to literature sources, in most cases, some laboratory tests conducted may give a higher result of strength than the one in the material at the site, but it will assist in assessing how effective a stabilising material will be in the field. The result generated from the laboratory will improve the knowledge of the amount and choice of binders. The combination of both the physical, mechanical and chemical stabilisation methods is highly recommended for the production of strong and durable CSEB (Gooding, 1994).

2.4.1 Stabilised Earth

Earth that is stabilized with cement, lime or bitumen before compressing gives the soil the ability to reduce the rate of water absoption and it has a greater change in the characteristics of the earth from unstable state of strength and volume with changing its moisture content to a suitable construction material and, on the other hand, the suitability of CSEB depends on the soil composition. The type of material that will be used for the stabilisation also depends on the composition of the soil. Laterite soil with a higher percentage of sand is best stabilised by cement, while lime works more with clay soil, but slowly with the clay to form a

more stable pozzolanic material. Some authorities have stated that 5 per cent to 8 per cent of cement is recommended for the suitable performance of compressed earth wall (Venkatarama & Jagadish, 1987). Most soils might also possess different compositions that might warrant a higher percentage of additional stabilising agent, up to 12 percent before it will appear durable for block production. The CSEB is the more modern way of producing earth blocks. The reason for compressing the earth is to improve the quality and performance of the earth block.

2.4.1.1 Compressed Stabilised Earth Block

Compressed stabilised earth block (CSEB) is a manufactured construction material which is made up of earth (laterite) mixed appropriately with a stabilising agent, be it cement or lime, into a compressed block. It has been revealed that the use of compressed stabilised earth block has been of rising interest in the provision of low-cost houses, and stabilised earth building materials shall be of immense value as society progresses with respect to ecological design imperatives in building.

CSEB can be defined or explained in so many ways. It can be said to be the improvement of the earth's mechanical behaviour and the improvement of the soil durability, workability and compaction characteristics using a stabilising agent. This means that a proper use of mix with a high amount of stabiliser content (lime or cement) produces a very good building material with an outstanding chemical behaviour, while well planned application of mixture with low content of those stabilizers will be used to achive an economical and efficient solution to earth building and construction (Solanski, Zaman, & Hhoury, 2009). However, the environmental condition and the degree to which laterite is being compacted for the production of CSEB will also determine the nature and the strength of the block that will be produced (Gidigasu, 1976).

Building with earth is the cheapest material and is practically more economical due to its local availability and abundance in the environment, and some analyses have been carried out to prove that earth as a building material is cheaper. It was proven by Satprem (2010), who compared the wall made with CSEB and the wall made of fired bricks in India.

Table 2.6: Cost Comparison of Walls Made of CSEB and Walls Made of Fired Clay Bricks (Satprem, 2010)

CSEB wall 24cm thick	Country fired clay Brick wall 22cm thick
3,067 Rs Per M^3	4,243 Rs Per M^3
736 Rs Per M^2	934 Rs Per M^2

From Table 2.6 above, it can be proved that CSEB is more economical than the country-fired brick, and it is also more environmentally friendly than the country-fired brick because no fire is required, but only curing. This reason makes it superior to the fired bricks because pollution during firing is eliminated (Satprem, 2010). In the review of recent research work on CSEB, it was observed to be of great importance because of its features as a commercial building and construction material, since only one material will achieve numerous important benefits, which include structural reliability and durability when it is used for construction and in building. Compressed stabilised earth block (CSEB) technology is said to be superior to other walling materials like concrete blocks and wood construction due to its health benefits, affordability, and energy efficiency.

Laboratory tests have also been conducted on compressed earth blocks, concrete blocks and Adobe for thermal tests by the “Biology Department of Southwest Texas Junior College, Del Rio, Texas”. These tests were conducted to know the thermal change on the three block materials (Biology Department of Southwest Texas, 2004) as shown in Table 2.7.

Table 2.7: The Thermal Change on Three Blocks Materials (Biology Department of Southwest Texas, 2004)

Concrete building	111 ºF (44 ºC) 4 degrees Fahrenheit above ambient
Adobe building	95ºF (35 ºC)
CEB building	91 ºF (33 ºC)

The above results show that the internal temperature of the compressed earth block and adobe was lower than that of the concrete block, and this has given the compressed earth block an advantage over the others. Also, it proves that the laterite block is cooler by up to 4 degrees than adobe. Another analysis done on compressed earth block walls by Abd Halid (2013) proved that the use of compressed earth block as a walling material reduced the indoor temperature during the day and even remains in a comfortable condition during the hot day. It is clear from the foregoing that compressed earth block provides a much better indoor thermal performance and improves indoor environmental conditions than other materials (Halid, Siti, & Ismail, 2013), with the test and analysis done based on the result of “thermal simulation” with ECOTECT program.

Recently, researches have been carried out on rammed earth construction in North America for the purpose of generating more shelter for the

population with low income in view of the building challenges facing the people of the region and also recognising the benefit of stabilising earth for a more effective and durable building. It also created wider awareness that the stabilised earth or rammed earth has the capability of lasting longer than some building materials (Windstom & Arno, 2013). These prove that the construction process of a stabilised earth wall creates a relatively high compressive strength that is suitable for a broad range of cooling and heating climates and has proved successful in moderate to hot climates, as the thermal mass effectively moderates the daily temperature changes (Windstom & Arno, 2013). The immediate findings also agree with the test that was conducted by the Biology Department of Southwest Texas (2004) on a thermal test that earth block or earth houses are cooler than the walls built with conventional materials and the adobe blocks. Stabilised earth is also generating increased interest in the building of public, residential and institutional buildings all over the world (Windstom & Arno, 2013). Windstom & Arno (2013) said that "Laterite (earth) locally sourced when used for building has a very low embodied energy and will provide shelter for generations if the earth is properly selected and stabilized as can be seen in Table 2.8.

Table 2.8: Embodied Energy and Pollution Between CSEB, Wired Cut Bricks and Country Fired Bricks (Satprem, 2010)

Little embodied energy per m^3 material	Less pollution per m^3 of material
CSEB – 1,257 MJ per m^3	CSEB – 113 kg of CO^2/m^2
Wired cut bricks – 3,294 MJ per m^3	Wired cut bricks – 296 kg of CO^2/m^2
Country fired Brickes – 5,447 MJ per m^3	Country fired Bricks – 410 kg of CO^2/m^2

The compressed stabilised earth block is environmentally friendly because no firing is required, and there will be no air pollution, but only curing is required. But blocks or bricks that have been fired (fired bricks) are not environmentally friendly due to the pollution of air that comes from burning the laterite bricks (Satprem, 2010). Laterite is an outstanding material for walling when compared to fired bricks that are used for building.

2.4.1.2 Stabilising earth soil with cement

Cement is an important material in the field of building and construction and it could be divided into different types namely: Portland cement (ordinary Portland cement) Stag cement, Pozzolonic cement and High Alumina cement Furthermore, each of the cement types differs from one another in respect of their rate of strength, rate of heat evolution, resistance to sulphate attack, and Dry shrinkage. However, in all the

different types of cement, the one most widely used in building is the Portland cement (ordinary Portland cement), while the other types of cement are used in cases where concrete materials with special properties are needed.

Figure 2.7: Cement

Ordinary Portland cement is the major binding agent used in every building because of its binding capability when it comes in contact with water, and it has the ability to speed up its features of hardening and setting. Ordinary Portland cement is a hydraulic cement (an inorganic material or mixture of inorganic materials that sets and develops by chemical reaction with water by a formation of hydrates, and is capable of doing so under water). Composed primarily of hydraulic calcium silicates, the effects on the physical properties of cement mortars are strength and soundness, hydration, setting and hardening, fires and chemical composition.

Ordinary Portland cement (OPC) which is the cement that is famously used in the construction industries for building and construction, it plays a very important role in improving the performance of CEB because without its addition, CEB will be nothing different from the other earth blocks like mud blocks, sundried blocks which break apart or crumble when it absorbs and retains water or subjected to impact load (ILO/UNIDO, 1984).

Apers (1983), Stulz and Mukerji (1988), explained that the major function of the OPC is to bind the soil particles together in a strong, dense, dimensionally durable and stable form. They also asserted that there are still some other binders that are commonly used, which include Lime Gypsum, Pozzolans, Resins and Bitumen. The selection and use of OPC in this thesis is as specified in ASTM C 150 -94. In this research, the two reasons I selected OPC are, first, its superior, unique and faster binding capacity, and second its availability in all parts of the world. OPC is unique in comparison with other

binders because of its binding ability to gain its maximum strength in about 28 days, unlike most other binders. According to Gooding (1994), “stabilising block varies in OPC quantity and amount, and that can drastically affect its properties and behaviour”.

Unfortunately, the use of OPC, as applied at times, makes the CEB less durable. The misuse and incorrect use of most binders is now becoming the order of the day (Fullerton 1979, Spence& Cook, 1983) and this issue of misuse or incorrect application of OPC to the soil can still be observed when there are low amounts of water to ensure a complete hydration of the cement, and so due to this reason an adequate amount of OPC and water content are to be applied in mixing to get a good and durable CSEB.

2.4.1.3 Stabilising earth soil with lime

Lime has been used for a long time for the treatment of soils in order to improve their workability and load-bearing characteristics. Many research works have revealed that lime reacts with medium fine soil or fine-grained soil to have an increased workability, decreased plasticity and increased strength (Little, 1995). This gained strength is practically based on the chemical reaction due to the involvement of an immediate change in the soil's visual properties caused by cation interchange. The calcium of the lime exchanges with the cation of the soil that was absorbed, which will cause the water layer around the soil particles to reduce in size and the process allows the soil particles to come in close contact with each other, causing agglomeration of the soil particles. Eades and Grim (1960) indicated that only soils that are readily mixable, workable and compactable can achieve the agglomeration phase of lime stabilisation, and also that all fine-grained soils go through the cation exchange and agglomeration reaction with lime when in contact with water

.

Figure 2.8: Hydrated Lime

Another chemical reaction in lime stabilisation is the pozzolanic reaction within the lime and soil mixture, which results in gaining strength, according to Eades and Grim (1960). Carbonation is another process that can cause a long-term increase in strength for soil that is stabilised with lime. When lime is mixed with soil, it reacts with carbon dioxide to produce an insoluble calcium carbonate. Arman and Munfakh (1970) added that the process is an advantage since, after the mixing, the sluggish process of carbonation and formation of cementation products may cause a long-time increase in strength. It was reported by Magafu (2010) that stabilising soil with lime has been proven by a permanent increase in the strength of the soil, reducing soil swelling and provides an excellent result in freeze-thaw resistance.

Lime is widely used to stabilise earth blocks for good block production. Quicklime is used to dry wet soil at construction sites, to reduce downtime and providing improved working surface. Lime is commonly used to modify and stabilise the soil for block production or soil beneath for road construction, as its application to soil will increase the stability, load-bearing capacity and permeability. However, lime is among the oldest stabilizing agents and the oldest material that is used to improve the engineering properties of earth soil, and it is also economical to use, even for the sub-base and the base materials (Garber & Hoel, 2000). These researchers also reported that the addition of lime in fine-grained earth has a great beneficial effect on the engineering properties, which includes reduction in swelling of CSEB, plasticity, improving workability, increasing stiffness, increasing strength, enhancing durability and binding the soil particles. In most construction work, it is used to dry and temporarily modify the earth. A good and proper treatment of soil supported with testing, proper construction techniques and design produces a permanent structural stability of earth. According to Garber and Hoel (2000)

"The percentage or quantity of lime used to stabilise a soil depends mainly on the type of soil that is to be stabilized and the determination of the quantity of lime is based on the analysis of the effect that different lime percentages have on the reduction of plasticity and increase in its strength on that particular soil".

This means that proper analysis should be made on the earth soil to know the properties of that particular soil to know the right quantity of stabiliser and the proper stabiliser that will be suitable for the soil. Ankit, Faizan, Devashish, and Rehanjot (2013) concluded in research on soil stabilisation using lime that

"Lime is used as an excellent stabilising material for highly active soil which undergoes frequent expansion and shrinkage, and the properties of the soil determine the rate of reaction with lime, and the high strength of the stabiliser will make the soil gain"

This is to prove that lime reacts or works more with a soil that is more

clayey and has binding properties. According to Osinibu (1995), “lime is understood to work effectively to stabilise a clayey soil that has more fine content in surplus up to 25% because it makes the soil more workable and less plastic”. Also, Garber and Hoel (2000) reported that although oxide and hydroxide of calcium and magnesium are known as lime, the main material that is commonly used for stabilisation with lime are calcium hydroxide (Ca (OH) 2) and dolomite (Ca (OH) 2 + MgO). However, lime has a very important role to play in the stabilisation of earth block, and it can effectively stabilise a fine-grained earth soil with 3% - 10% of lime, based on the soil dry weight It is also more effective to treat plastic clay that is capable of retaining a large amount of water. Mixing lime with a fine-grain soil and the addition of water gives several reactions that are cation exchange and agglomeration or flocculation that takes place immediately with immediate improvement in the earth soil plasticity, workability and increase in strength over time; which takes place during and after curing of CSEB. The long-time reaction is a result of the pozzolanic strength gained due to its presence in the CSEB (Quintus, Mallela, & Smith, 2004). It means that lime gradually gains its strength; the more it stays, the more strength it gains.

2.5 Compressive Strength of CSEB

Compressed Stabilised Earth Blocks (CSEB) are widely studied for their mechanical performance, especially compressive strength, since that property determines their suitability as a load-bearing construction material (see figure 2.14 for setup of compressive strength).

Figure 2.14: Stabilised earth block Specimen in a Compressing Machine

Many related works have reviewed the strength of CSEB, and the results have been very motivating, not only on the economic benefits of using CSEB for low-cost housing but also on its strength as a walling material. Cheeming and Liang-pin (2010) developed a Strength Prediction Model from Green

Compressed Stabilised Earth Block, which achieved a maximum strength of 1.2, 1.9 and 2.4N/mm² for cement content of 5%, 8% and 10%, respectively. The result of the compressive strength did not meet the Malaysian Standard (MS 76: 1972), and further advised that an additional 13% of cement should be added to each soil so as to achieve the standard strength required by the Malaysian Standard. Agbede and Manasseh (2008) reported that bricks made of laterite, admixture with 45% sand and 6% cement, gained a compressive strength of 2.12N/mm² with an increase in cement content after 28days of curing, as shown in Table 2.9. Six percent (6%) cement content is economical for the production of laterite bricks for low-cost housing, and such strength of bricks could be used best for one storey building (Adam, 2001)

.

Table 2.9: Result of Compressive Strength (Agbede and Manasseh, 2008)

Cement Content (%)	**0**	**3**	**6**	**9**
0%Sand Content				
Weight of Bricks(kg)	11.40	12.42	12.67	12.82
Density of Bricks(kg/m^3)	1534.3	1671.6	1705.2	1725.4
Load at Failure (kN)	12.4	35.0	63.0	82.0
Compressive Strength (N/mm²)	0.25	0.70	1.27	1.66
45%Sand Content				
Weight of Bricks(kg)	11.33	13.48	13.59	13.74
Density of Bricks(kg/m^3)	1524.9	1814.3	1829.1	1849.3
Load at Failure (kN)	10	41.0	105.0	164.0
Compressive Strength (N/mm²)	0.20	0.83	2.12	3.31

Portelinha, Lima, Fonts, and Carvalho (2012) reported that cement stabilisation had a higher strength than lime after 7 and 28 days of curing and that cement is more efficient than lime due to its speed of gaining strength in a short period of time. However, it is also clear that compressive strength of CSEB increases as the percentage of stabiliser increases for both lime and cement, but cement stabilized block have a better quality and are cheaper than the block stabilized with lime.

Aguwa (2009) reported on a study of “compressive strength of laterite cement mix” that laterite cement mix improved with an increase in cement percentage content up to 20% and 10% cement content and met the strength of load bearing and non-load bearing wall with a compressive strength of 2.5N/mm² and 1.8N/mm² according to Nigerian Industrial Standard NIS: 87:2004. The results also show that laterite cement mix is an economical building material due to less cement content, and also that the cost of the

block depends so much on the cement content.

2.6 Water Absorption of CSEB

Water absorption of CSEB is the ratio of the mass of water that was absorbed to that of the mass dried in CSEB. Every mass of absorbed water is different in mass between saturated surface-dry (SSD) in CSEB after being placed in water for 24 hours. This process is always expressed in percentage (Ahmade, 2008). However, the absorption of water is greatly influenced by the porosity and surface texture of that particular material. Akeem, Olugbenro, & Kehinde (2012) opined that the water absorption of interlocking blocks decreases with an increase in the percentage of cement stabiliser. The result proved that the cement binds the laterite particles together and reduces the size of pores where water will flow into the block. The block without a stabiliser (control sample) disintegrated in the water. According to the result of the laterite interlocking blocks in a work by Akeem, Olugbenro, & Kehinde (2012) which satisfied the water absorption recommendation of 12% by the Nigeria Industrial Standard (N.I.S: 2004) with a percentage of water absorption of 7.62%, 6.07% and 5.23% for blocks with 5%, 10%, 15% percent of stabilizer respectively as shown in Table 2.10.

Table 2.10: Water Absorption of Cement Stabilised Interlocking Blocks (Akeem, Olugbenro, & Kehinde, 2012)

Cement Stabilisation (%)	Dry Mass (kg)	Wet Mass (kg)	Water Absorbed (%)	Average of Water Absorbed (%)
0	- -	- -	- -	- -
5	14.440 14.530	15.530 15.648	7.55 7.69	7.62
10	14.092 13.871	14.987 14.675	6.35 5.79	6.07
15	14.120 14.333	14.842 15.098	5.11 5.34	5.23

2.7 Effect of External Water on CSEB

Water causes earth blocks to deteriorate. Most traditional walls suffer from such a problem, and there have been so many ways in which water has an effect on earth block or walls made of laterite. Notable kinds of water with this effect are rainwater and rising dampness from the ground.

However, McHenry (1984) and Fransworth (1999) stated that water

also hurts blocks, for it erodes the base of the walls of earth buildings, causing them to crumble and fall apart easily. Since water hurts earth buildings through erosion, it is advisable to use an alternative material to prevent it from getting very moist from rain, soil humidity and groundwater or water from the internals, like water from a leaking tap, pipes or used water.

Observations have been made by UN (1964), Agarwal (1981), Spence (1985), and ILO (1984) on the deterioration of earth blocks, and it can occur in different forms, such as solvent, abrasive and swelling of earth blocks. Solvent is the ability which makes the surface of the block to get wet easily and the capability of that block to absorb and hold water for a long time. This will leave the block to be weak and cause it to fall apart. Solvent is a common failure that occurs in blocks (Sjostrom, 1996). Although Herzog and Mitchell (1963), Houben and Guillaud (1994), pointed out that in stabilized block, when the soils are not properly selected and not properly stabilized the cement or any stabilizing agent will not affect all the content of the blocks leaving the block less durable and easily attacked by water. Moreover, most of the traditional walls which are not properly stabilized or not stabilized at all have the capacity of absorbing water just like the sun-dried bricks which are not stabilized will absorb water and retain it, and as the brick allows the water, then the brick wall will be expected to soften. When this process of water intake keeps repeating itself over years, it may lead to a total softening of the bricks or walls, and this effect may also cause the soil to fall apart from the walls and likely increase during raining season.

Abrasion of the block or walls of a building may sometimes be caused by rainwater (Atkinson 1970, Eaton 1981, Fullerton 1979). Ola and Mbata (1990) also stated that “abrasion, which is caused by rain water, has been identified by many as one of the common deterioration agents”. The only place that really suffers surface erosion is mostly the areas that are liable to frequent rainfall, such as the Tropical areas. Ellison (1944) and Goldsmith et al (1998) discussed the process and the rate at which rainfall removes the loose particles (parts of the block which are not properly bonded with a stabiliser or particle of an unsterilized earth block), and the rate of the eroding process on the bonding state of the block and features of the rainfall. When rain drops on the block, they will definitely impact with a force on it, and with water splashing on the surface of the block, the impact will cause the block particles that are not properly bonded with a stabiliser to fall apart and leave the block surface to get wet.

Figure 2.9: Wall of a Traditional Building that Cracked after Frequent Years of Rainfall

Gunn and Kinzer (1949), Hudson (1963) defined the rate of the rain drop on the blocks as “the drop size, wind speed, fall and impact velocity energy which can impact on the surface of the block and cause the soil particles that are not stabilized to fall apart (removing the particles on the block that are not stabilized)”. Most of these limitations of earth soil as a building material are clear even to the unprofessional and professional, like loss of strength, a high increase in permeability, and mass loss from the block surface. Proper measures are to be taken to improve the strength of the earth blocks and to prevent the earth blocks from absorbing and retaining too much water. Such measures are the proper stabilisation of the earth block, which will be practically demonstrated in this report.

3. Conclusion and Recommendation

Laterite is a versatile and culturally significant construction material found in tropical and subtropical regions. Its historical use in monumental architecture and vernacular housing highlights its durability and adaptability. Today, laterite is utilised in modern applications like compressed stabilised earth blocks (CSEB), road bases, and decorative facades, demonstrating its relevance in sustainable construction.

With a high oxide content, moderate strength, and natural plasticity, laterite is an ideal option for low-cost housing solutions, particularly important in developing countries where affordability is crucial. Locally sourced, it supports regional economies while minimising environmental impact.

However, challenges exist, including variability in composition, weathering susceptibility, and shrinkage under moisture. To enhance its performance, stabilisation with agents like lime, cement, or bitumen is often necessary.

Overall, laterite bridges traditional practices and modern engineering, providing a pathway toward eco-friendly, low-carbon housing solutions

that align with global sustainability goals.

Recommendations

- *Government and Policy Support:* National housing programmes should integrate laterite-based construction, particularly CSEB, into affordable housing schemes to reduce reliance on costly imported materials.
- *Standardisation and Codes:* Establish clear building codes and standards for laterite block production to ensure quality, durability, and safety across regions.
- *Research and Innovation:* Continued research into stabilisation techniques and soil mix optimisation is essential to overcome limitations such as cracking, shrinkage, and moisture sensitivity.
- *Community Empowerment:* Encourage local production of laterite blocks to create employment opportunities, strengthen rural economies, and reduce transportation costs.
- *Sustainability Integration:* Promote laterite as a low-carbon alternative in construction, leveraging its thermal efficiency and natural abundance to meet eco-friendly housing targets.
- *Education and Training:* Provide technical training for builders and communities on modern laterite construction methods, ensuring proper compaction, stabilisation, and maintenance practices.

By adopting these measures, laterite can evolve from a traditional material into a cornerstone of sustainable construction, addressing housing shortages while preserving cultural heritage and environmental balance.

Reference

1. Abdul, S., & Lee, L. (1997). Low cost Housing in Malaysia" . *Utusan poblication and destribution Sdn. Bhd. kuala Lumpur*.
2. Adam, E. A. (2001). Compressed stabilized Earth Block Manufactured in Sudan,. *Graph O ping trance for the UNESCO. http//unisdoc.unesco.org*.
3. Agbede I.O, & Manasseh J. (2008). Use of Cement-Sand Admixture in Laterite Bricks Production for Low Cost Housing. *Leonardo Electronic Journal of practices and technologies*.
4. Ahmad, A. B., & Hasmah, A. z. (2012). Urban Housing wnership: Factors influenced the problem faced by the Bumiputera in the District of Johor Bahru, Johor, malaysia.
5. Ahmade, S. K. (2008). A guide to good quality control practices on asphalt production and construction, (2nd ed). . *Cawangan Senggara Fasiliti Jalan, Malaysia*.
6. Ajao, K., Lawal,, A., Onaolapo, N., & Eniayekan, E. (2012). Development And Preliminary testing of a Compressed Laterite Soil Brick Machine. *Department of Mechanical Engineering, University of Ilorin, Nigeria*.

7. Akeem, A. R., Olugbenro, O. F., & Kehinde , J. A. (2012). Production and Testing of Lateritic Interlocking Blocks. *Journal of Construction in Developing Countries*.
8. Al-Jahdarie et al. (1998). A study of housing situation in the Republic if Yemen.
9. Arman, A., & Munfakh, G. (1970). Stabilization of Organic Soil with Lime. *Engineering Research Bulletin 103*.
10. ASTM C150-94. (n.d.). Standard Specification for Portland Cement. *American Society for Testing and Materials, Annual book of ASTM standards. V. 04. 02 construction. Philadelphia, USA.*
11. Balam, E. (2007). Inheritance vs the Formation of Kaolinete during Lateric soil Formation: A Case Study in the Middle Amazon Basin. *Clay ans Clay Minerals*, p 55, 253-259.
12. Batcbelder, D., Caiola, R.E., & Davenport, S.W. (1985). A Sourcebook for the Use of Local Materials in Construction. The Experiment in International Living, Brattleboro, Vermont, USA.
13. Bell, F. (1993). Enginering Treatment of Soil: soil stabilization . *E and FN SPON London, UK.*
14. Biology Department of Southwest Texas Junior College. (2004). Thermal Change on Three Blocks Material. *Department of Southwest Texas Junior College*.
15. BS 3148. (1980). Methods of test for water for making concrete, (including notes on the suitability of the water.) . *British Standard* .
16. BS EN, 12390. –7. (2000). Density of hardend concrete . *British Standard Intitution, london, England*.
17. BS EN, 197.-1. (2011). Cement. Composition, specifications and conformity criteria for common cements. *British/European Standard*.
18. BS EN, 12390.-3. (2000). Compressive Strength of Testing Specimens. *British Standard Institution, London*.
19. BS, 1377. (1990). Method of Testing Soil for Civil Engineering Purposes. *British Standard Institution, 2 park Street London*.
20. BS, 1377. Part 4. (1990). Method of Testing for Soils for Civil Engineering purposes. *British Standard Institution, London, England*.
21. BS, 1377. Part 2: section 9.5. (1990). Sedimentation by Hydrometer Method. *British Standard Institution, London, UK*.
22. BS, 3148. (1980). Test for Water for making concrete. *British Standard, 2Park Street London* .
23. BS, 3921. (1985). Specification for Clay Bricks. *British Standard Institution, london, England*.
24. BS, 5930. (1999). Classification of Soil: Code of practice for site investigation. *British Standard Institution london, England*.
25. BS, 882. (1973). Specification for Aggregate from Natural Source for Concrete. *London British Standard*.
26. BS, 8812. Part 109. (1990). Testing aggregates. Methods for determination of moisture content. *British Standard London*.
27. Chee-Ming, C., & Liang-pin, L. (2010). Development of a Strength Prediction Model for Green Compressed Stabilized Earthbricks. *Journal of Sustainable Development*.

28. CIRIA, .. (1995). Laterite in road pavements. Westminster, London. *Special publication 47 for TRANSPORT RESEARCH LABORATORY (TRL)*.
29. Eades, J., & Grim,, R. (1960.). Reaction of hydrate lime with pure clay minerals in soil stabilization,. *Highway Research Board Bulletin, 262*.
30. Esther, o., Joseph, E., & Malarizhi, B. (2010). Soil type and different stabilization . *Rink school and building construction university, gainesville*.
31. Fadairo, G., & Ogunmakinde, O.E. (2011). Problem and Prospect of good Housing Delivery in Nigeria: A case study of Lagos State. in Ogunsote, O. O et al (Dds) Proceedings Archibuilt 20011, 17- 22 september. Abuja.
32. Ganssen, R. (1965). Groundsatze der Bodenbilding Hochschultaschensucher,. *Bibiographisces Institute,Manndeim*.
33. Garber, N. J., & Hoel, L. (2000). Traffic and Highway Engineering, 2nd Edition. *Brooks/cole publisheing Company, London*.
34. Gidigasu, M. D. (1976). Laterite soil Engineering. *Elsevier Scientific Publishing Company, Amsterdam*.
35. Gooding, D. .. (1994). Improved Processes for the Production Soil-Cement Building Blocks. . *PhD Thesis. University of Warwick. Coventry, England*.
36. Guillaud, H., & Houben, H. (1994). Earth Construction: a Comprehensive Guide. *CRATerre-EAG. Itermediate Technology Publications. London, England*.
37. Guillaud, H., Joffroy, T., & Odul, p. (1995). Compressed earth blocks manual of design and construction. *A publication of deutsches zentrun fur*.
38. Halid, A., Siti, K. A., & Ismail, A. R. (2013). Compressed Earth Bricks (ICEB) Wall. *www.zwgm.org/index.php/construction/article/view/17*.
39. Haselsteiner, R., Hans-George, S., Osan, C., & Bjorn, S. (2005). Laterite soils for Dam Foundation and Dam Cores- Two Case Studies and Typical properties. *Ficntner GmbH & Co. KG,renewable Energies & Environment, Sarweystrabe 3, stuttgart*.
40. Hicks, R. (2002). Alaska Soil Stabilization Design Guide.
41. Houben, j., & Huillaud, R. (1994). Earth material and construction around the world.
42. ILO/UNIDO. (1984). Small Scal Brickmaking. Technology Series, Memorandum No.6. *International Labour Organisation. Geneva, Switzerland.*
43. Ingles, O. (1962). Bonding Forces in Soils. *In the First Conference of the Australian Road Research Board. Sydney, Australia.*
44. Isiwu, j. (2012). Performance of Laterite-Cement Block as Walling Units in Relation to sandcrete Block. *Department of Civil Engineering, Federal University of Technology, Minna, Nigeria*, p 2.
45. Jayasinghe, C., & Mallawaarachchi, R. S. (2009). Flexural strenght of compressed stabilized earth masonry materials. *materials and designs 30*.
46. Kerali, A. G. (2001). Durability of compressed and cement - stabilised building blocks.
47. Little, D. (1995). Handbook for Stabilization of Pavement Subgrades and Base Courses with Lime. . *Kendall/Hunt, Iowa*.
48. Makasa, B. (2004). Utilisation and Improvement of Lateritic Gravels in a road bases,. *International Institute for Aerospace survey and Earth Sciences Delft. htt/www.itc.nl*.
49. Morton, T. (2008). Design and consruction guidelines. *Bracknell, Berkshire, UK: IHS BRE Press*.

50. MS EN, 197.-1. (2007). Cement Part 1: Composition, Specifications and Coonformity Criteria for Common Cement. *Department of Standards Malaysia*.
51. MS EN, 76. Part 2. (1972). Specification for Bricks and Blocks of Fired BrickEarth, Clay or Shale. *Department of Standard Malaysia*.
52. Nelson, D. J., & Miller , J. (1992). Expensive Soil: Problem and practice in foundation and pavement engineering. *Wiley, New York*.
53. Noor Sharipah bt, Sultan Sidi (2011). The Different Scenarios Of Housing Problem In Malaysia. *Faculty of Technology Management, Business and Entrepreneurship Universiti Tun Hussein Onn Malaysia*.
54. Norton, J. (1986). Building with Earth. A Handbook. *IT Publications Ltd. London, England*.
55. Norton, J. (1997). Building with Earth. *London Intermediate Technology Publications*.
56. Oluwole, E. (2011). The Stability and lime Stabilization Requirement of some lateritic soil sample as pavement. *Int. J. Pure Apple Sci. Technol.*
57. Onaolapo, A. (2010). Modification and testing of a Laterite-Cement Brick Moulding Machine. *Department of Mechanical Engineering, University of Ilorin, Nigeria*.
58. Osinubi, K. J., Ijimdiya, T., & Nmadu, I. (2008). *Book of Abstracts of the 2nd international conference on Engineering Research and Development: Innovations (ICER & D 2008)*.
59. Quintus, Mallela, P. E., & Smith, K. L. (2004). Considration of Lime-stabilized layers in Mechanistic- Emperical Pavement Design. *http/www.training.ce*.
60. Real, R. (2010). Earth Architecture, New York. *Princeton Architectural press.*
61. Rigassi, V. (1995). Compressed Earth Block: Manual of production volum 1. *Deutsches Entwicklungstechnologien Zentrum fur- Gate in: Deutsche Gesellschaft fur Technische Zusammenarbe it (GTZ) GmbH in coordination with BASIN.*
62. Rumana, R. (2007). Traditional House of Bangladesh: Typology of House According to Materials and Location.Virtual Conference on Sustainable Archtectural Design and Urban Planning. *AsiaSustainabilityNet.upc.edu, September 15- 24*.
63. Salfarina, A., Normalina, M, & Azrina, H. (2010). Trend, Problems and Need of Urban Housing in Malaysia. *International Journal of Human and Social Science*.
64. Satprem, m. (2010). Compressed stabilized earth block and stabilized earth technique. *Auroville Earth Institute*.
65. Sjostrom, e. a. (1996). Durability of Building Material and Components 7: Prediction, Degradation and Materials. Proceedings of the Seventh International Conference on Durability of Building Material and Components. *7 DBMC held in Stockholm, Sweden 19-23 may 1996, vol. 1, may 1996. E & FN SPON. London, England*.
66. Solanski, P., Zaman, M., & Hhoury, N. (2009). Engineering properties and moisture sustainability of silty clay stabilized with Lime, class C fly ash, and cement kiln dust. *journal of materials in Civil Engineering*, v. 21:12, p 749.
67. Tamakloe, W. (2012). Initiate Research to Promote Use of Local Materials In Building. *http:/www.newtimes.com.gh/story/initiate-research-to-promote-use-of-local-materials-in-building*.
68. Venkatarama, R., & Jagadish, K. (1987). Spray Eroson studies on Pressed Soil Blocks. *Build Environ, 22 (2): 135-40*.

69. Windstom, B., & Arno, S. (2013). A Report of Contemporary Rammed Earth Contruction and Research in North America. *North American Rammed Earth Building Association (NAREBA) and Earth Dwell Ltd., Port Townsend WA 98368, USA*.

UDC (UO‘K, УДК): 81-25

Raimova Nafosat Olimovna
O’zDJTU mustaqil izlanuvchisi
Toshkent, O’zbekiston
Email: nafosatraimova85@gmail.com
Tel: +998 90 902 98 94
ORCID ID:0009-0009-1345-8946

IJTIMOIY CHEGARALANGAN LEKSIKANING JAMIYATDAGI ROLI VA MUHIMLIGI

ANNOTATSIYA

Ushbu maqola jamiyatda ijtimoiy chegaralangan leksikaning o‘rni va ahamiyati haqida. Maqolada ijtimoiy chegaralangan leksikaning mazmuni va uning jamiyatdagi roli o'rganiladi ya’ni unda ijtimoiy cheklangan leksikaning ta'rifi va jamiyat uchun muhimligi tahlil qilinadi. Ijtimoiy cheklangan leksika ma'lum ijtimoiy guruhlarning o'ziga xos tilidan iborat bo'lib, u guruhlarning madaniyatini, ijtimoiy holatini va tarixiy tajribalarini ifodalaydi. Ijtimoiy chegaralangan leksikaning jamiyatdagi o‘rni va muhimligi, guruhlar o‘rtasidagi muloqotdagi ahamiyati, identifikatsiya yaratish va madaniy farqni aks ettirish kabi rol va vazifalarni o‘z ichiga oladi. Maqola guruhlar o‘rtasidagi muloqotni yaxshilash, identifikatsiya shakllantirish va ijtimoiy o‘zgarishlarni aks ettirishda leksikaning ahamiyatini tahlil qiladi. Maqolada guruhlar o‘rtasida muloqot samaradorligini oshirishda leksikaning roli ko‘rib chiqiladi [1].

Mazkur maqolada ijtimoiy chegaralangan leksikaning jamiyatdagi ahamiyati va o‘rni sotsiolingvistik, funksional hamda stilistik nuqtai nazardan chuqur tahlil etiladi. Sleng, jargon va argo birliklarining ijtimoiy identifikatsiya, kommunikativ samaradorlik va ekspressivlikni ta’minlashdagi ahamiyati ilmiy manbalar orqali yoritiladi. Tadqiqot natijalari ijtimoiy chegaralangan leksikaning jamiyatdagi ijtimoiy tabaqalanish va madaniy jarayonlarning muhim belgilari ekanligini tasdiqlaydi.

Maqolada, shuningdek, axborot texnologiyalari va ijtimoiy tarmoqlarning rivojlanishi bilan ijtimoiy chegaralangan leksikaning tarqalishi va jamiyatdagi ahamiyati yanada ortganligi qayd etiladi. Internet va ijtimoiy tarmoqlarning rivojlanishi bilan yangi so‘zlar, iboralar va hastaglar yuzaga kelmoqda, bu esa leksikaning kengayishiga sabab bo‘lmoqda. Ijtimoiy tarmoqlarda o‘ziga xos so‘z birikmalari shakllanib, guruhlarning fikrlarini tez va samarali bayon etish imkoniyatini taqdim etmoqda [2].

Shu tariqa, maqolada jamiyatdagi ijtimoiy o‘zgarishlarga ijtimoiy chegaralangan leksikaning qanday javob berishiga ham e'tibor beriladi. Bunday leksik guruhlar ijtimoiy o'zgarishlar, noroziliklar yoki yangiliklarni ifoda etish va aks ettirish

uchun xizmat qiladi. Shu sababli, ijtimoiy chegaralangan leksika jamiyatdagi turli tabaqalar o‘rtasidagi aloqaning rivojlanishida muhim rol o‘ynaydi.

Kalit so‘zlar: ijtimoiy chegaralangan leksika, madaniy identifikatsiya, ijtimoiy guruhlar, muloqot, jamiyat, ijtimoiy tarmoqlar, ijtimoiy o‘zgarishlar.

РОЛЬ И ВАЖНОСТЬ СОЦИАЛЬНО СВЯЗАННОЙ ЛЕКСИКИ В ОБЩЕСТВЕ

АННОТАЦИЯ

Данная статья посвящена роли и значению социально ограниченного лексикона в обществе. В статье изучается содержание социально ограниченного лексикона и его роль в обществе, то есть анализируется определение социально ограниченного лексикона и его значение для общества. Социально ограниченный лексикон представляет собой специфический язык определенных социальных групп, выражающий культуру, социальный статус и исторический опыт этих групп. Роль и значение социально ограниченного лексикона в обществе включают такие роли и функции, как его значение в коммуникации между группами, формировании идентичности и отражении культурных различий. В статье анализируется значение лексикона в улучшении коммуникации между группами, формировании идентичности и отражении социальных изменений. В статье рассматривается роль лексикона в повышении эффективности коммуникации между группами.

В данной статье глубоко анализируется значение и роль социально ограниченного лексикона в обществе с социолингвистической, функциональной и стилистической точек зрения. На основе научных источников подчеркивается значение единиц сленга, жаргона и арго в обеспечении социальной идентификации, коммуникативной эффективности и выразительности. Результаты исследования подтверждают, что социально ограниченный лексикон является важным признаком социальной стратификации и культурных процессов в обществе.

В статье также отмечается, что с развитием информационных технологий и социальных сетей распространение и значение социально ограниченного лексикона в обществе возросли. С развитием интернета и социальных сетей появляются новые слова, фразы и хэштеги, что приводит к расширению лексикона. В социальных сетях формируются уникальные словосочетания, предоставляющие возможность быстро и эффективно выражать мнения групп.

Таким образом, в статье также уделяется внимание тому, как социально ограниченный лексикон реагирует на социальные изменения в обществе. Такие лексические группы служат для выражения и отражения социальных

изменений, протестов или нововведений. Следовательно, социально ограниченный лексикон играет важную роль в развитии коммуникации между различными классами в обществе.

Ключевые слова: социально ограниченный лексикон, культурная идентичность, социальные группы, коммуникация, общество, социальные сети, социальные изменения.

THE ROLE AND IMPORTANCE OF SOCIALLY BOUND VOCABULARY IN SOCIETY

ABSTRACT

This article is about the role and importance of socially restricted lexicon in society. The article studies the content of socially restricted lexicon and its role in society, that is, it analyzes the definition of socially restricted lexicon and its importance for society. Socially restricted lexicon consists of the specific language of certain social groups, which expresses the culture, social status and historical experiences of the groups. The role and importance of socially restricted lexicon in society includes such roles and functions as its importance in communication between groups, creating identity and reflecting cultural difference. The article analyzes the importance of lexicon in improving communication between groups, forming identity and reflecting social changes. The article considers the role of lexicon in increasing the effectiveness of communication between groups.

This article deeply analyzes the importance and role of socially restricted lexicon in society from a sociolinguistic, functional and stylistic perspective. The importance of slang, jargon and argot units in ensuring social identification, communicative efficiency and expressiveness is highlighted through scientific sources. The results of the study confirm that socially limited lexicon is an important sign of social stratification and cultural processes in society.

The article also notes that with the development of information technologies and social networks, the spread and importance of socially limited lexicon in society have increased. With the development of the Internet and social networks, new words, phrases and hashtags are emerging, which is leading to the expansion of the lexicon. Unique word combinations are formed in social networks, providing an opportunity to quickly and effectively express the opinions of groups.

Thus, the article also pays attention to how socially limited lexicon responds to social changes in society. Such lexical groups serve to express and reflect social changes, protests or innovations. Therefore, socially limited lexicon plays an important role in the development of communication between different classes in society.

Keywords: socially restricted lexicon, cultural identity, social groups, communication, society, social networks, social change.

KIRISH

Til - jamiyat mahsuli bo‘lib, unda ijtimoiy tuzilma, madaniy qadriyatlar va guruhiy aloqalar namoyon bo‘ladi. Jamiyatda turli ijtimoiy qatlamlar, kasbiy toifalar, yosh guruhlar va submadaniyatlar mavjud bo‘lib, har birining o‘ziga xos nutq xususiyatlari bor. Shu jarayonda ijtimoiy cheklangan leksika paydo bo'ladi [3].

Ijtimoiy chegaralangan leksika muayyan ijtimoiy guruh oralig‘ida ishlatiladigan va umumxalq tilidan semantik yoki stilistik jihatdan farq qiladigan birliklar deb ataladi. Bu hodisa sotsiolingvistika sohasida til va jamiyat orasidagi aloqani tadqiq etishda ahamiyatli ob'ektdir [4].

Zamonaviy globallashuv sharoitida, xususan internet aloqa Ijtimoiy chegaralangan leksika muayyan ijtimoiy guruhning doirasida ishlatiladigan, umumiy til bilan bir oz farq qiluvchi til birliklari deb ataladi. Ular ko‘pincha slang, jargon va argo shaklida ko‘rinadi. Zamonaviy jamiyatda, ayniqsa yoshlar so’zlashuvida, internet aloqalarida va kasbiy sohalarda bunday birlashmalar ko'p uchraydi.

Mazkur tadqiqotning maqsadi – ijtimoiy chegaralangan leksikaning jamiyatdagi o’rni va ahamiyatini aniqlash, shuningdek, uning asosiy funksiyalarini ilmiy asosda tushuntirishdir.

TADQIQOT METODLARI

Tadqiqot davomida tavsifiy, qiyosiy va sotsiolingvistik metodlardan foydalanildi. O‘zbek, rus va ingliz tillaridagi sleng, jargon va argo birliklari matnlar asosida tahlil qilindi. Shuningdek, ilmiy adabiyotlar va lug‘at manbalari o‘rganildi [5].

Tadqiqot davomida quyidagi metodlardan foydalanildi:

tavsifiy (deskriptiv) metod;
sotsiolingvistik tahlil;
qiyosiy tahlil;
kontekstual tahlil;
funksional-stilistik yondashuv.

Material sifatida o‘zbek, rus va ingliz tillaridagi sleng, jargon va argo birliklari olindi. Internet manbalari, badiiy adabiyot va ommaviy axborot vositalari matnlari tahlil qilindi [6].

NATIJALAR

Tahlillar shuni ko‘rsatadiki, ijtimoiy chegaralangan leksika bir nechta muhim vazifalarni bajaradi.

1. Identifikatsiya vazifasi. Ushbu leksika shaxsning belgilangan guruhga tegishliligini ko‘rsatadi. Masalan, yoshlar slengi orqali yosh avlod o‘z ijtimoiy pozitsiyasini namoyish qiladi.

2. Kommunikativ vazifa. Kasbiy jargon mutaxassislar o‘rtasida tez va aniq ma’lumot almashish uchun xizmat qiladi. Masalan, IT sohasida 'bug', 'update', 'login' kabi atamalar keng tarqalgan.

3. Ekspressiv vazifa. Sleng so‘zlari nutqqa hissiy rang berib, muloqotni jonlantiradi.

4. Madaniy vazifa. Argo va sleng submadaniyatlarning shakllanishida muhim ahamiyatga ega [7].

1. Ijtimoiy chegaralangan leksikaning turlari

a) Sleng

Sleng ko‘proq yoshlar nutqida uchraydi va emotsional-ekspressiv rangga ega.

Masalan:

o‘zbek tilida: gap yo‘q, zo‘r, kruto;

ingliz tilida: cool, awesome, chill;

rus tilida: классно, прикол.

b) Jargon

Jargon maxsus kasb yoki ijtimoiy guruhga oid odamlar uchun xosdir.

Masalan:

talabalar nutqida: sessiya yopildi, kontraktga tushdi;

IT sohasida: bug, update, login;

tibbiyotda: anamnez, reanimatsiya (professional jargon sifatida).

c) Argo

Argo ko‘pincha yopiq guruhlarda (masalan, jinoyatchilar) foydalaniladi va ma’no yashirish vazifasini bajaradi.

2. Ijtimoiy chegaralangan leksikaning jamiyatdagi o‘rni

1) Identifikatsiya vazifasi

Bunday leksika shaxsning belgilangan ijtimoiy guruhga tegishliligini ko‘rsatadi. Masalan, yoshlar slengi orqali yosh avlod o‘zini alohida ijtimoiy qatlam sifatida namoyish qiladi.

2) Kommunikativ qulaylik

Kasbiy jargon mutaxassislar o‘rtasida axborotni tez va aniq yetkazish uchun xizmat qiladi.

3) Ekspressivlik

Sleng so‘zlari nutqqa emotsional rang berib, fikrni kuchaytiradi.

4) Madaniy identifikatsiya

Ijtimoiy chegaralangan leksika submadaniyatlarning shakllanishida muhim o‘ringa ega (masalan, internet madaniyati, blogerlar tili).

3. **Zamonaviy jamiyatda ahamiyati**

Globallashuv va raqamli aloqa natijasida ijtimoiy chegaralangan leksika tez tarqalmoqda. Internet orqali inglizcha sleng so‘zlari o‘zbek va rus tillariga kirib kelmoqda (like, trend, story).

Bu jarayon tilning dinamik rivojlanishiga hissa qo‘shadi, lekin adabiy til me’yorlariga ham bir qadar ta’sir ko‘rsatadi [8].

MUHOKAMA

Ijtimoiy chegaralangan leksika jamiyatdagi ijtimoiy tabaqalanishni aks ettiruvchi til vositasidir. U tilning dinamik rivojlanishiga yordam beradi va yangi semantik qatlamlarning paydo bo‘lishiga sabab bo‘ladi. Biroq, adabiy til me’yorlari nuqtai nazaridan, bu birliklarning cheklangan doirada ishlatilishi maqsadga muvofiqdir. Til taraqqiyoti va me’yor o‘rtasidagi muvozanatni saqlash dolzarb masala bo‘lib qolmoqda. Ijtimoiy chegaralangan leksika tilning “pastki qatlami” sifatida qaralsa-da, u jamiyatdagi ijtimoiy jarayonlarni aks ettiruvchi muhim ko‘rsatkichdir [9].

Til va jamiyat o‘rtasidagi o‘zaro bog‘liqlik aynan shunday leksik birliklar orqali yaqqol namoyon bo‘ladi. Biroq, bunday birliklarning haddan tashqari ko‘p ishlatilishi adabiy til me’yorlarining buzilishiga olib kelishi mumkin. Shu sababli, ularni funksional doirada qo‘llash maqsadga muvofiqdir.

XULOSA

Xulosa qilib aytganda, ijtimoiy cheklangan leksika jamiyatning ijtimoiy va madaniy tuzilishini ko'rsatadi. U identifikatsiya, muloqot va ifodali funksiyalarni amalga oshiradi. Globallashuv jarayonida uning ahamiyati yanada ortib bormoqda. Shu sababdan ushbu hodisani ilmiy jihatdan tadqiq etish muhim vazifa sifatida qabul qilinadi.

Ijtimoiy chegaralangan leksika tillarda jamiyatdagi ijtimoiy qatlamlarning lingvistik ko'rsatilishidir [10].

U identifikatsiya, muloqot va ifoda funksiyalarini amalga oshiradi. Zamonaviy raqamli makonda uning ahamiyati yanada oshmoqda.

Til rivojlanishida bunday leksikaning roli ahamiyatli, ammo adabiy me’yor ichida nazorat qilinishi lozim.

FOYDALANILGAN ADABIYOTLAR

1. Labov W. Sociolinguistic Patterns. – Philadelphia, 1972.
2. Crystal D. Language and the Internet. – Cambridge, 2006.
3. Hudson R. Sociolinguistics. – Cambridge, 1996.
4. O‘zbek tilining izohli lug‘ati. – Toshkent, 2020.
5. Yartseva V.N. Lingvisticheskiy entsiklopedicheskiy slovar. – Moskva, 1990.
6. Wardhaugh, R., & Fuller, J. (2015). An Introduction to Sociolinguistics. Wiley-Blackwell.
7. Karimov S.. Ijtimoiy shevalar va ularning o‘zbek tilidagi ifodalari // Tilshunoslik jurnali, 2019.-3(4), 45-53.
8. Allan, K., & Burridge, K. (2006). Forbidden Words: Taboo and the censoring of language. Cambridge University press.
9. Tursunov B. Ijtimoiy chegaralangan leksika va uning semantik tahlili. filologiya fanlari doktori, Toshkent. -2018
10. Raimova N. Ingliz va o‘zbek tillarida ijtimoiy chegaralangan leksikaning struktur semantik hamda stilistik xususiyatlari, Toshkent, 2025

Raximdjanova Dilnavoz Sunnat qizi
“ALFRAGANUS UNIVERSITY” nodavlat oliy ta’lim tashkiloti
v.b. dotsenti, DSc, Toshkent, O‘zbekiston
ruzmatova.dilnavoz@gmail.com
ORCID: 0000-0002-1857-7006

INSON ERKINLIGI MASALASINING PIKO DELLA MIRONDOLA QARASHLARIDAGI AKSI

Annotatsiya. Ushbu maqolada Uyg‘onish davri mutafakkiri Djovanni Piko della Mirandolaning yangi aflotunchilik doirasidagi falsafiy qarashlari tahlil qilinadi. Asarda inson erkinligi, qadr-qimmati va “o‘zini o‘zi shakllantiruvchi tabiat” haqidagi ta’limotning mohiyati ochib beriladi. Shuningdek, Pikoning kosmik iyerarxiyaga nisbatan insonni alohida, mas’uliyatli va ijodkor mavjudot sifatida talqin qilishi, “falsafiy kelishuv” va yangilangan xristianlik g‘oyalarining Uyg‘onish davri gumanizmi hamda keyingi falsafiy oqimlarga ko‘rsatgan ta’siri yoritiladi.

Kalit so‘zlar: yangi aflotunchilik, inson erkinligi, inson qadr-qimmati, falsafiy antropologiya, kosmik iyerarxiya, gumanizm, falsafiy kelishuv, tabiiy din.

Abstract. This article analyzes the philosophical views of the Renaissance thinker Giovanni Pico della Mirandola within the framework of Neoplatonism. The work reveals the essence of his doctrine on human freedom, dignity, and the concept of “self-forming nature.” It also examines Pico’s interpretation of the human being as a distinct, responsible, and creative entity in relation to the cosmic hierarchy, as well as the influence of his ideas of “philosophical concord” and renewed Christianity on Renaissance humanism and subsequent philosophical movements.

Keywords: Neoplatonism, human freedom, human dignity, philosophical anthropology, cosmic hierarchy, humanism, philosophical concord, natural religion.

Аннотация. В данной статье анализируются философские взгляды мыслителя эпохи Возрождения Джованни Пико делла Мирандола в контексте неоплатонизма. В работе раскрывается сущность его учения о свободе человека, человеческом достоинстве и концепции «самоформирующейся природы». Также рассматривается трактовка Пико человека как особого, ответственного и творческого существа по отношению к космической иерархии, а также влияние идей «философского согласия» и обновлённого христианства на гуманизм эпохи Возрождения и последующие философские течения.

Ключевые слова: неоплатонизм, свобода человека, человеческое достоинство, философская антропология, космическая иерархия, гуманизм, философское согласие, естественная религия.

Kirish

Uyg‘onish davri Yevropa falsafasi inson, tabiat va ilohiylik o‘rtasidagi munosabatlarni yangicha talqin etgan muhim tarixiy bosqichdir. Bu davrda antik merosga murojaat

qilish, inson aql-zakovati va erkinligini ulug‘lash, sxolastik cheklovlardan chiqib ketishga intilish falsafiy tafakkurning asosiy yo‘nalishiga aylandi. Ayniqsa, yangi aflotunchilik (neoplatonizm) g‘oyalari Uyg‘onish davri gumanistik dunyoqarashining shakllanishida muhim o‘rin tutdi. Florensiya intellektual muhitida rivojlangan bu oqim nafaqat metafizik va ontologik masalalarni, balki insonning qadr-qimmati, erkin tanlovi va ijodiy imkoniyatlarini markaziy muammo sifatida ilgari surdi.

Ana shunday buyuk mutafakkirlardan biri — Djovanni Piko della Mirandola — Uyg‘onish davri falsafasida inson erkinligi va uning o‘zini o‘zi shakllantirishi haqidagi ta’limotni chuqur va izchil tarzda asoslab bergan faylasufdir. U o‘zining mashhur “Inson qadr-qimmati haqida nutq” asarida insonni kosmik iyerarxiyaning qat’iy pog‘onalariga bog‘lab qo‘yuvchi an’anaviy qarashlardan voz kechib, uni erkin iroda va mas’uliyat sohibi bo‘lgan noyob mavjudot sifatida talqin qiladi. Piko uchun inson tayyor mohiyatga ega emas, balki o‘z tanlovi va ijodiy faoliyati orqali o‘zini doimiy ravishda yaratib boradigan mavjudotdir.

Mazkur maqolada Djovanni Piko della Mirandolaning falsafiy antropologiyasi, ayniqsa inson erkinligi, qadr-qimmati va “o‘zini o‘zi shakllantiruvchi tabiat” haqidagi qarashlari tahlil qilinadi. Shuningdek, uning yangi aflotunchilik doirasida ilgari surgan “falsafiy kelishuv”, “umumiy donishmandlik” va yangilangan xristianlik g‘oyalari Uyg‘onish davri gumanizmi, keyingi naturfalsafiy oqimlar hamda Ma’rifat davri erkinfikrliligi bilan uzviy bog‘liqlikda ko‘rib chiqiladi. Shu orqali Piko ta’limotining Yevropa falsafasi tarixidagi o‘rni va ahamiyatini yoritish maqsad qilinadi.

Tadqiqot metodologiyasi

Tadqiqot olib borish davomida tizimlilik, nazariy-deduktiv xulosa chiqarish, analiz va sintez, tarixiylik va mantiqiylik, qiyosiy-komparativistik tahlil kabi ilmiy-falsafiy tamoyillardan foydalanildi.

Tahlil va natijalar

O‘zining ilg‘or g‘oyalari va aql bovar qilmas iste’dodi bilan Uyg‘onish davrida yashab ijod qilgan Djovanni Piko della Mirandola (1463-1494) Florensiyada yangi aflotunchilik g‘oyalarini rivojlantirgan. Uning ko‘p tillarni bilishi ham fikr va mulohazalarining o‘ziga xos bo‘lishiga xizmat qilgan[1].

Tabiat hodisalarining sababiy aloqasini tan olgan Djovanni Piko insonni g‘oyibdan kelgan taqdir bitigini amalga oshiruvchi tobe xizmatchi holatiga tushirib qo‘yadigan “karomat ko‘rsatuvchi” va “bashorat qiluvchi” astrologiyani rad qilgan. Djovanni Piko della Mirandolaning falsafiy

[1] Djovanni Pikoning o‘sha davr uchun noyob xislat sanalgan arab, qadimiy yaxudiy va armey tillarini bilishi, keyinchalik, uning 22 va hatto 30 tildan xabardorligi borasida tasdiqlanmagan afsonalar paydo bo‘lishiga sabab bo‘lgan [2: 92].

antropologiyasida inson erkinligi haqidagi ta'limot asosiy o'rinni egallaydi. Erkinlik prinsipi uning inson qadr-qimmati to'g'risidagi ta'limoti asosida yotadi. Insonni "ulkan" dunyoning umumiy qonuniyatlarini akslantiruvchi mikrokosmos sifatida o'rgangan antik, o'rta asr, uyg'onish davri allomalaridan farqli ravishda Djovanni Piko insonni kosmik iyerarxiyadan tashqariga olib chiqadi va unga qarama-qarshi qilib qo'yadi. Inson kosmik iyerarxiyadagi uch "gorizontal" dunyolarning hech biri uning ananaviy neoplatonik tuzilmasiga (elementar, samoviy va ilohiy) aralasha olmaydigan o'ziga xos "to'rtinchi" dunyodir; u ularga nisbatan vertikal joylashgan bo'lib, dunyolarning barini kesib o'tadi. U iyerarxiya pag'onalarining o'rtasida turmaydi, uning o'rni barcha pag'onalardan holi. Iloh inson o'rnini iyerarxiyada belgilamagan degan fikrni o'zining mashhur "Inson qadr-qimmati haqida nutqlar"ida yozib qoldirgan: "O, Odam Ato, ma'lum bir o'ringa, qiyofaga, ma'suliyatga o'zingning xohishing, irodang va qaroring tufayli erishishing uchun biz senga atab na aniq joy, na shaxsiy siymo va na ma'lum bir ma'suliyat bermadik. Boshqa turdagi yaratilgan mavjudotlar biz o'rnatgan qonuniyatlarimiz chegarasida aniq faoliyat yuritadi. Sen esa hech qanday cheklovlar bilan chegaralanmaysan, men senga yetkazib bergan vakolat orqali o'zingning siymoyingni o'zing kashf etasan". Inson olamning markazida turadi; u hech qanday o'ziga xos (dunyoviy, samoviy, ilohiy) shaxsiy tabiatga ega emas; na o'lish va na boqiy yashash xususiyatini o'z ichiga olmaydi; u o'zini o'zi "erkin va shavkatli usta" singari yo'lga qo'yishi lozim. Mavjudotlar iyerarxiyasidagi insonning turi hamda o'rni faqat o'zining shaxsiy, erkin, tabir joiz bo'lsa ma'suliyatli tanlovi natijasida aniqlanishi mumkin va shart. U yulduzlar va farishtalar bo'lgan yergacha ko'tarilish hamda hayvoniy holatga tushish imkoniga ega [3: 1,507-508]. Djovanni Piko della Mirandola "o'zi xohlaganidek bo'lish va istaganini boshqarish imkoniyati berilgan insonning yuqori va betakror baxti"ni aynan shunda deb biladi [3: 1,508].

Djovanni Piko insonni ko'klarga ko'tarish va ilohiylashtirish kabi gumanistik an'anani davom ettirgan holda, tanlash erkinligini har qanday faoliyatning asosiy sharti va uning axloqiy bahosi sifatida e'tibor markaziga qo'yadi. Gap inson tabiatini, ya'ni shakllanayotgan, to'g'rirog'i "o'zini o'zi shakllantirayotgan" tabiatini yangicha tushunish borasida ketyapti. U bir marotaba va bir umga berilgan tortiq sifatida emas, balki insonni mustaqil ijodiy faoliyatining natijasi sifatida ko'rinadi. Inson tabiati mustaqal, anglangan va ma'suliyatli tanlovning doimiy shakllanish jarayoni jamlanmasi ko'rinishida o'rganiladi. Insonning "ilohiyligi"ni nafaqat u "xudoning o'ziga xos va o'ziga monand" bo'lib yaratilgani tasdiqlaydi, balki u uchun insoniy mukammallik tayyor holda berilmasdan, aksincha,

unga erishish imkoni borligi ham isbot qiladi.

Djovanni Pikoning “Nutqlar”i va uning butun falsafiy tizimida insonni va insoniy erkni ulug‘lash turli xil ta’limotlar kelishuvi orqali falsafani tubdan yangilash dasturiga asos bo‘lib xizmat qilgan. Bu umumiy “kelishuv” Fichinoning “umumiy din” haqidagi g‘oyasini davomi sifatida ketdi. Bu yerda gap qarama-qarshi qarashlarni eklektik kelishuvi to‘g‘risida emas, balki ularda mujassamlashgan yagona va umumiy haqiqatni ko‘rsatish borasida ketyapti. Djovanni Piko tomonidan ilgari surilgan umumiy falsafiy donishmandlik, uning mo‘ljaliga ko‘ra, ortodoksal-katolik talqinidan ancha uzoq, yangilangan xristianlik bilan qorishib ketishi lozim bo‘lgan.

Uyg‘onish davriga mansub aflotunchilik o‘rta asr sxolastikasiga qarshi turuvchi umumlashgan falsafiy tizimni yaratish borasidagi birinchi urinish bo‘ldi. O‘rta asr va antik davrning yangi aflotunchiligi an’anasiga asoslangan holda, XIV-XV asrlardagi gumanistik fikrlarning yutuqlaridan foydalanib, yangi aflotunchilar o‘rta asr an’analariga qarshi bo‘lgan falsafiy polemika sohasini kengaytirishdi. E’tibor markaziga tabiiy va ilohiy muqaddimalarning o‘zaro aloqadorligi muammosi ko‘rinishida namoyon bo‘luvchi chuqur ildiz otgan ontologik muammolarni qo‘yish orqali ular yangi dunyoning panteistik (garchi u ba’zi paytlarda mistik bo‘yoqlar bilan bo‘yalsada) suratini ishlab chiqishdi. “Ilohiylashgan” kosmos birligi, tabiatni umumiy ruhlanganligi haqidagi fikrlar, tabiatni “ichki usta” sifatida tushunish, bularning bari XVI asrnining naturfalsafasida rivojlanishga erishdi.

Olamning go‘zalligi haqidagi ta’limot, uning ilohiylashtirilishi nafaqat o‘rta asr asketizmini[2] yengib o‘tishga olib keldi, balki estetik va axloqiy g‘oyalarni nazariy asoslashga, ilk Uyg‘onish davri ustalari ijodida olamning go‘zalligi va uyg‘unligini izlashga asos bo‘lib xizmat qildi. Sxolastikaning kitobiy bilimlaridan ko‘ra “tabiiy sehr” to‘g‘risidagi yangicha taassurot o‘zining mistik yondashuviga qaramasdan tabiat haqida bilimlarni amaliy qo‘lga kiritishga zamin yaratdi. “Umumiy din” va falsafiy ta’limotlar “kelishuv”i konsepsiyalari xristianlikning axloqiy idealini gumanistik tarzda qayta talqin qilishga ta’sir ko‘rsatdi. Keyinchalik u XVI asrning birinchi yarmidagi gumanistik fikrlar bilan birga rivojlandi. Keyinchalik u XVII-XVIII asrlarda e’tiqod qilish hamda ibodat marosimlaridagi xilma-xillikdan holi va elementar axloqiy normalar yig‘indisiga olib boruvchi deistlarning “tabiiy din” to‘g‘risidagi ta’limotiga o‘zining sezilarli hissasini qo‘shdi. Uning ta’sirini Ma’rifat davrining hurfikrligida ham ko‘rishimiz mumkin.

[2] Asketizm – (yunoncha “aske” – birornarsa bilan mashg‘ul bo‘lish) zohidlik, qanoat qilib yashash, moddiy boyliklardan imkoniyati boricha kamroq foydalanish tuyg‘usiga asoslangan g‘oya [1: 37].

Adabiyotlar ro‘yxati

1. Фалсафа. Қомусий луғат. – Тошкент: “Ўзбекистон файласуфлари миллий жамияти нашриёти”, “Шарқ” нашриёт-матбаа акциядорлик компанияси бош таҳририяти, 2004.
2. Горфункел А.Х. Философия эпохи Возрождения. Учебное пособие. — М.: Высшая школа, 1980.
3. История эстетики. Памятники мировой эстетической мысли. В 1 т. – М., 1962.
4. Rakhimdjanova D.S. Practical importance of the transformational interpretation of the phenomenon of freedom in ancient times and in contemporaneity. – Philosophy and Life. – ISSN: 2181-9505, https://doi.org/10.5281/zenodo.6852328. – Tashkent, 2024. – P. 120-129.
5. Rakhimdjanova D.S. The concept of the idea of freedom in ancient and medieval philosophy. - Psychology And Education Journal. – ISSN: 00333077, https://doi.org/10.17762/pae.v58i1.1562 – 1195 Stroud Court Westerville, OH 43081, 2021. – P. 4553-4563.
6. Rakhimdjanova D.S. Comparative Analysis of the Interpretation of the Phenomenon of Transformational Freedom in Antiquity with Its Modern Approach. - International Journal of Social Science Research and Review. – ISSN: 2700-2497, http://dx.doi.org/10.47814/ijssrr.v6i1.921 – Germany, Duisburg, 2023. – P. 457-466.
7. Raximdjanova D.S. Erkinlik tushunchasini transformatsion xususiyatini ikki davr o‘rtasidagi differensiatsiyasini sotsiologik so‘rovnoma orqali tahlili. – International scientific journal of Biruni. – ISSN (E) 2181-2993, Volume 2, Issue 02. – Tashkent, 2023. – B. 33-46.

МРНТИ 16.21.07

Хамракулова Ш. А.
Старший преподаватель Центра преподавания языков
филологического факультета
Университет Альфраганус
Hamrakulovashoira49@gmail.com
https://orcid.org/0009-0000-0567-327X

ЯЗЫКОВАЯ ЛИЧНОСТЬ КАК ОБЪЕКТ КОМПЛЕКСНОГО АНАЛИЗА В СИСТЕМЕ ГУМАНИТАРНЫХ НАУК

Аннотация: Статья посвящена анализу понятия «языковая личность» как одного из центральных интердисциплинарных терминов в системе гуманитарных наук. Рассматривается генезис понятия, начиная с фундаментальных трудов Ю. Н. Караулова и Г. И. Богина, и прослеживается его эволюция через этап критического осмысления на рубеже 1990-х и 2000-х годов. Особое внимание уделяется методологическому подходу Е. В. Иванцовой, позволяющему структурировать современные дефиниции по родовому компоненту, уровню обобщенности и приоритетной области анализа. В работе обосновывается тезис о том, что интердисциплинарная трансформация термина не ведет к потере его научной значимости, а, напротив, расширяет его эвристический потенциал в рамках антропоцентрической парадигмы.

Ключевые слова: языковая личность, интердисциплинарность, антропоцентризм, лингвистическая методология, когнитивный уровень, лингвокультурология, терминологическая трансформация, коммуникации.

GUMANITAR FANLAR TIZIMIDAGI KOMPLEKS TAHLIL OBYEKTI SIFATIDA TIL SHAXSI

Annotatsiya: Maqola gumanitar fanlar tizimidagi markaziy intizomiy atamalardan biri sifatida «til shaxsi» tushunchasini tahlil qilishga bag‘ishlangan. Yu. N. Karaulov va G. I. Boginning fundamental asarlaridan boshlab tushunchaning genezisi ko’rib chiqiladi va uning 1990 va 2000-yillar oxirida tanqidiy tushunish bosqichi orqali evolyutsiyasi kuzatiladi. Ye.V. Ivantsovaning tug’ilish komponenti, umumlashtirish darajasi va tahlilning ustuvor sohasi bo’yicha zamonaviy definitsiyalarni tuzish imkonini beruvchi uslubiy yondashuviga alohida e’tibor qaratilmoqda. Ishda atamaning interdisiplinar o‘zgarishi uning ilmiy ahamiyatini yo‘qotishiga olib kelmaydi, aksincha, antroposentrik paradigma doirasida uning evristik salohiyatini kengaytiradi, degan tezis asoslanadi.

Kalit so‘zlar: til shaxsi, interintizomiylik, antroposentrizm, lingvistik metodologiya, kognitiv daraja, lingvokulturologiya, terminologik transformatsiya, kommunikatsiyalar.

THE CONCEPT OF LINGUISTIC PERSONALITY AS AN INTERDISCIPLINARY TERM IN MODERN SCIENCE

Abstract: This article analyzes the concept of "linguistic personality" as a central interdisciplinary term in contemporary humanities. The author examines the concept's genesis, beginning with the seminal works of Yu. N. Karaulov and G. I. Bogin, and traces its evolution through the critical reflection of the late 1990s and early 2000s. Particular attention is given to E. V. Ivantsova's methodological approach, which allows for the structuring of modern definitions by generic component, level of generality, and priority area of analysis. The paper substantiates the thesis that the interdisciplinary transformation of the term does not lead to a loss of its scientific significance, but, on the contrary, expands its heuristic potential within the anthropocentric paradigm.

Key words: linguistic personality, interdisciplinarity, anthropocentrism, linguistic methodology, cognitive level, linguacultural studies, terminological transformation, communications.

Введение

Исследуя проблему проявления личности в языке, утверждается мысль, что основополагающей величиной современной науки является человек и данное утверждение на сегодняшний день считается общепризнанным. Языковая личность, то есть человек как носитель языка, значится тем объектом, который объединяет науки и активно формулируются философами, культурологами, психологами, лингвистами.

Идея о неразрывной связи языка и личности прошла долгий путь — от гумбольдтианского понимания "духа народа" до оформления современной теории языковой личности в конце XX века. Сегодня этот термин перерос границы лингвистики, превратившись в мощный инструмент междисциплинарного анализа. Рассмотрение языковой личности как "узлового" понятия позволяет увидеть, как индивидуальное сознание структурируется через язык и как социальные институты влияют на речевой портрет современного человека.

Как указано выше, с 90-х гг. XX в. понятие «языковая личность» «…становится стержневым системообразующим филологическим понятием. Большинством исследователей в настоящее время оно оценивается как интегративное, послужившее началом нового этапа в развитии языкознания – антрополингвистики» [7, с. 15]. В данной работе понятие языковой личности анализируется как полиаспектный термин, чей

теоретический фундамент опирается на принципы интердисциплинарности.

В русском языкознании упоминание о ЯЛ впервые встречается в работе В.В. Виноградова «О художественной прозе» (1930). Опираясь на идеи Ф. де Соссюра о разделении языка и речи, Виноградов подчеркивал: чтобы понять социальную природу творчества, нужно изучать «структурные оболочки» личности автора. Ученый несколько раз использует этот термин наряду с понятиями «поэтическая» и «литературная личность», но четкого теоретического определения он ему тогда так и не дал.[3, с. 91].

Термин «языковая личность» закрепился в научной терминологии спустя 50 лет. Развивая идеи В. В. Виноградова, изучением этого феномена занялась целая плеяда исследователей (Г. И. Богин, Ю. Н. Караулов, В. И. Карасик, К. Ф. Седов и др.), что позволило детально описать структуру и функции ЯЛ в современной лингвистике.

Материалы и методы

В качестве материала исследования был привлечен широкий спектр научной литературы: от базовых работ, заложивших фундамент теории (Ю.Н. Караулов, Г.И. Богин), до современных трудов, расширяющих междисциплинарные границы рассматриваемого концепта. Применение метода теоретического анализа и синтеза позволило дифференцировать ключевые подходы к пониманию языковой личности в лингвистике, психолингвистике и когнитивистике.

В 1980 г. Г.И. Богин в книге «Современная лингводидактика» дал первое определение: «Центральным понятием лингводидактики является языковая личность – человек, рассматриваемый с точки зрения его готовности производить речевые поступки. Языковая личность – тот, кто присваивает язык, то есть тот, для кого язык есть речь. Языковая личность характеризуется не столько тем, что она знает о языке, сколько тем, что она может с языком делать», – писал он [1, с. 3]. В этой же работе, рассматривая признаки идеальной ЯЛ, он подчеркивает, что «человек обладает родовой способностью быть языковой личностью, но каждый индивид еще должен стать ею» [*Там же*]. В докторской диссертации Г.И. Богин дополняет понятие, ЯЛ определяется там как «человек, рассматриваемый с точки зрения его готовности производить речевые поступки, создавать и принимать произведения речи» [2, с. 1]. В этой цитате можно заметить, что Г.И. Богин расширяет границы термина, переводит лингвистику в поле этики и психологии действия: слово «поступок» здесь уже не просто «говорение», а социальный акт.

Немного позднее в книге «Русский язык и языковая личность» (1987) появилось определение Ю.Н. Караулова, объясняющего ЯЛ как

«…совокупность (и результат реализации) способностей к созданию и восприятию речевых произведений (текстов), различающихся, а) степенью структурно-языковой сложности, б) глубиной и точностью отражения действительности и в) определенной целевой направленностью» [6, с. 245]. В этой же монографии автор дает и принципиально другое толкование: «…языковая личность есть личность, выраженная в языке (текстах) и через язык, есть личность, реконструированная в основных своих чертах на базе языковых средств» [*там же,* с. 38]. Оба понятия с некоторыми изменениями в формулировках вошли в энциклопедию «Русский язык» под ред. Ю.Н. Караулова.

ЯЛ в первом значении определена как «наименование комплексного способа описания языковой способности индивида, соединяющего системное представление языка с функциональным анализом текстов», во втором – как «…любой носитель того или иного языка, охарактеризованный на основе анализа произведенных им текстов с точки зрения использования в этих тестах системных средств данного языка для отражения видения им окружающей действительности (картины мира) и для достижения определенных целей в этом мире» [9, с. 671].

Ю.Н. Караулов — создатель самой известной трехуровневой модели языковой личности. Его цитаты подчеркивают, что за словами всегда стоит интеллект и психология. В следующей цитате ученого напрямую указывается интердисциплинарность термина: «Языковая личность — это углубление и развитие категории "личность" в ее психологическом, философском и социологическом смыслах, осуществленное через изучение ее языка — дискурса, текстов».

Работы Ю. Н. Караулова получили широкую популярность во многом благодаря их интегративному характеру. Автор сумел синтезировать достижения лингвистики, психологии и социологии, предложив универсальный инструмент — трехуровневую модель языковой личности. Это сделало его концепцию востребованной не только среди филологов, но и среди дидактиков, культурологов и специалистов в области теории коммуникации.

Но надо отметить, несмотря на широкую популярность, концепт «языковой личности» сталкивается и с критическими оценками в научной среде. В частности, В.Л. Краев классифицирует данное сочетание как терминологически несостоятельное, полагая, что его использование свидетельствует скорее о периоде «общей неопределенности» в методологии исследования [8, с. 110]. Схожую скептическую позицию занимает В.А. Чудинов. Его аргументация строится на двух ключевых тезисах: 1) Избыточность понятия: типа «масляного масла», так как формирование личности невозможно вне

процесса социализации и освоения национального языка. Следовательно, атрибут «языковая» уже имплицитно содержится в самом понятии «личность»; 2) Логическое несоответствие: автор указывает на подмену понятий, отмечая, что индивид оперирует не всем языком в его целостности, а конкретными речевыми формами — возрастными, территориальными или социальными диалектами. [12]

Упоминание этих авторов позволяет нам обозначить хронологический рубеж: 1) До середины 90-х: Период становления и энтузиазма (Караулов, Богин); 2) Рубеж 90-х и 2000-х: Период «методологического кризиса» и жесткой критики (Краев, Чудинов), когда термин обвиняли в метафоричности.

3)Современный этап (после 2010-х): Период стабилизации, когда термин окончательно признан интердисциплинарным и перестал считаться «несостоятельным».

Результаты и обсуждение

Как видим, в целом, использование данного термина в ряде областей научного поиска − лингводидактике и психолингвистике, стилистике художественной речи и лингвокультурологии, коммуникативной лингвистике и лингвоперсонологии − свидетельство чрезвычайной востребованности обращения к «человеческому фактору» в языке, маркирование антропологического ракурса исследований. Высокая частотность нового термина связывается учеными с его синтетическим потенциалом: он выступает связующим звеном, обеспечивающим междисциплинарность современных исследований человека, интеграцию гуманитарных наук, а внутри лингвистики – интеграцию различных ее областей при изучении рассматриваемого явления.

Определения, предложенные основоположниками теории, содержат ключевые положения, которые легли в основу большинства последующих трактовок этого понятия. Опираясь на исследования Е. В. Иванцовой, выделим три ключевых аспекта в определениях языковой личности: родовой компонент, уровень обобщенности объекта и приоритетную область анализа феномена [4, с.26].

Применение классификации Е. В. Иванцовой к дефинициям ведущих лингвистов позволяет наглядно увидеть интердисциплинарную трансформацию понятия (см. таблицу). Рассмотрим некоторые из них, В.И. Карасик: «Языковая личность — это средоточие культурных ценностей, закрепленных в языке и проявляющихся в коммуникативном поведении» [5, с.8]. Дефиниция О.Б.Сиротиной: «Языковая личность — это совокупность индивидуальных особенностей человека, обеспечивающих ему тот или иной уровень владения языком и эффективность речевого общения» [11, с.4].

Таблица сравнительного анализа

Автор	Родовой компонент	Уровень обобщенности	Область анализа
Ю. Н. Караулов	Индивид, Личность	Глобальный (этнос)	Когнитивно-психологическая
В. И. Карасик	Обобщенный образ	Типовой (культура)	Лингвокультурологическая
О. Б. Сиротинина	Совокупность черт	Индивидуальный	Коммуникативно-прагматическая

Так, если в определении В. И. Карасика приоритетной областью выступает культура и трансляция ценностей, то О. Б. Сиротинина смещает фокус на индивидуальные коммуникативные навыки. Это еще раз подтверждает тезис о том, что содержание термина "языковая личность" напрямую зависит от методологических задач конкретной науки (социолингвистики, культурологии или прагматики).

Выводы и заключение

Проведенный анализ позволяет констатировать, что понятие «языковая личность» окончательно утвердилось в современной науке как фундаментальный интердисциплинарный термин. Подводя итоги исследования, можно сформулировать следующие выводы: термин трансформировался из метафорического обозначения в строгую аналитическую категорию, современная наука доказала, что «неопределенность» термина отражала не дефицит научной точности, а процесс формирования новой, антропоцентрической парадигмы; вариативность дефиниций демонстрирует интердисциплинарную трансформацию понятия, (по классификации Е. В. Иванцовой) мы убедились, что смещение акцентов — от «обобщенного образа» (В. И. Карасик) к «индивидуальным особенностям» (О. Б. Сиротинина) — не создает понятийной полисемии, а, напротив, обеспечивает интеграцию лингвистики с культурологией, психологией и прагматикой; термин обладает эвристической ценностью: языковая личность сегодня выступает «точкой сборки» для изучения человека в многообразии его проявлений, она позволяет исследовать не только систему языка, но и стоящие за ней ценностные иерархии, когнитивные стратегии и социальные роли, что особенно актуально в эпоху цифровой коммуникации.

В конечном итоге, именно интердисциплинарный статус

языковой личности делает этот термин жизнеспособным. Он остается открытой системой, способной адаптироваться к новым открытиям науки, сохраняя при этом свое концептуальное ядро — идею о неразрывном единстве языка, мышления и человеческой индивидуальности.

ЛИТЕРАТУРА

1. Богин Г.И. Современная лингводидактика. Калинин: Калинин. гос. ун-т, 1980. 61 с.

2. Богин Г.И. Концепция языковой личности: Автореф. дис. … д-ра фиолол. наук. Л., 1982. 31 с.
3. Виноградов В.В. Избранные труды: О языке художественной прозы. М.: Наука, 1980. 360 с.
4. Иванцова Е.В. О термине «языковая личность»: Истоки, проблемы, перспективы использования. Вестник Томского государственного университета. Филология №4(12), 2010).
5. Карасик, В. И. Языковой круг: личность, концепты, дискурс. — Волгоград: Перемена, 2002. — 477 с.
6. Караулов Ю.Н. Русский язык и языковая личность. М.: Наука, 1987. 262 с.
7. Кочеткова Т.В. Проблема изучения языковой личности носителя элитарной речевой культуры (обзор) // Вопросы стилистики. Саратов, 1996. Вып. 26. С. 14−24.
8. Краев В.Л. Психолингвистика и межкультурное взаимопонимание. М., 1991. 350 с.
9. Русский язык: Энцикл. 2-е изд., перераб. и доп. М.: БРЭ, 1997. 704 с.
10. Седов К. Ф. Дискурс и личность: эволюция коммуникативной компетенции. — М.: Лабиринт, 2004. — 160 с.
11.Сиротинина О. Б. Когнитивная лингвистика и проблема языка как системы и как средства общения // Известия Саратовского университета. Новая серия. Серия: Филология. Журналистика. — 2007. — Т. 7, вып. 1. — С. 3–8.
12. Чудинов В.А. Проблема языкового субъекта // [http://chudinov.ru/problema-yazyikovogo subekta/.

Haqberdiyev B.R.
Alfraganus universiteti umumkasbiy fanlar kafedrasi (PhD) dotsenti
b.haqberdiyev@afu.uz
bahtiyor.haqberdiyev@mail.ru

“ART&ENGINEERING” FANINI INTERYER DIZAYNDA TUTGAN O’RNI.

Annotatsiya: Ushbu maqolada "Art&Engineering" fanining zamonaviy interyer dizayndagi fundamental o'rni va ahamiyati tahlil qilinadi. Muallif san'atning estetik tamoyillari va muhandislikning aniq hisob-kitoblari o'rtasidagi sintezni o'rganadi. Maqolada parametrik dizayn, aqlli yoritish tizimlari va innovatsion materialshunoslikning interyer muhitini shakllantirishdagi ta’siri yoritilgan. Maqolada muhandislik yechimlarisiz san’at asari darajasidagi interyerni yaratish imkonsiz ekanligi, bu ikki soha birlashmasi inson hayot sifati va qulayligini oshirishga xizmat qilishi asoslab berilgan.

РОЛЬ ДИСЦИПЛИНЫ “ART&ENGINEERING” В ДИЗАЙНЕ ИНТЕРЬЕРА

Аннотация: В данной статье анализируется фундаментальная роль и значение дисциплины “Art&Engineering” в современном дизайне интерьера. Автор исследует синтез эстетических принципов искусства и точных инженерных расчетов. В статье рассматривается влияние параметрического дизайна, систем умного освещения и инновационного материаловедения на формирование интерьерной среды. Обосновывается, что создание интерьера на уровне произведения искусства невозможно без инженерных решений, и подчеркивается, что объединение этих двух областей служит повышению качества жизни и комфорта человека.

THE ROLE OF “ART&ENGINEERING” IN INTERIOR DESIGN

Abstract: This article analyzes the fundamental role and significance of the “Art & Engineering” discipline in modern interior design. The author explores the synthesis between the aesthetic principles of art and precise engineering calculations. The paper highlights the impact of parametric design, smart lighting systems, and innovative materials science on the formation of the interior environment. It is substantiated that creating an interior at the level of a work of art is impossible without engineering solutions, and it is argued that the integration of these two fields serves to enhance human quality of life and comfort.

Kalit so’zlar: Art&Engineering, STEAM, texnika, san’at, interyer dizayn, parametrik shakllar, konsepsiya, muhandislik, kompitensiya, integratsiya, funksionallik, estetika, texnologik innovatsiyalar, ergonomika, vizual tasavvur, badiiy ifoda, qurilish materiallari, konstruksiya, yoritish, akustika, ergonomika.

Ключевые слова: Art&Engineering, STEAM, техника, искусство, дизайн интерьера, параметрические формы, концепция, инженерия, компетенция,

интеграция, функциональность, эстетика, технологические инновации, эргономика, визуальное воображение, художественное выражение, строительные материалы, конструкция, освещение, акустика.

Keywords: Art&Engineering, STEAM, technique, art, interior design, parametric forms, concept, engineering, competence, integration, functionality, aesthetics, technological innovations, ergonomics, visual imagination, artistic expression, construction materials, construction, lighting, acoustics.

Kirish. (Introduction) Interyer dizayn yo‘nalishida “Art&engineering” fani san’at (badiiy-estetik qarashlar) va muhandislik (texnik, konstruktiv, texnologik bilimlar) integratsiyasiga asoslanib, interyer loyihalash jarayonida ijodiy hamda texnik kompetensiyalarni uyg‘un rivojlantirishga xizmat qiladi. "Art&Engineering" fani ta'lim tizimida san’at va texnik fanlarda tobora ommalashib bormoqda. Ko'plab maktablar va universitetlar STEAM sohalarini san'at bilan birlashtirgan yangi dasturlarni taklif qilmoqdalar. STEAM (Science-fan, technology-texnologiya, engineering-muhandislik, Art-san’at mathematics-matematika) ta’limi - bu - real hayot talablaridan kelib chiqqan holda akademik ilmiy-texnikaviy konsepsiya doirasida integratsiyalashgan holda o‘qitishdir. Bu talabalarga ijodiy fikrlash, innovatsiya va muammolarni hal qilish qobiliyatlarini rivojlantirishga yordam beradi, bu esa ularni kelajakda muvaffaqiyatli bo'lishlariga yordam beradi.

“Art&engineering” fanining asosiy maqsadi: interyer dizaynda san’at va muhandislik yondashuvlarini integratsiyalash, talabalarda estetik va texnik kompetentlikni uyg‘un rivojlantirish, amaliy interyer loyihalarini badiiy jozibador va texnik jihatdan mukammal yaratish, zamonaviy dizayn muhitida innovatsion, funksional va ergonomik interyer yechimlarini ishlab chiqishga tayyorlashdan iborat [1. B-65-66].

Mavzuga oid adabiyotlar tahlili (Literature review). “Art&Engineering” (San'at va Muhandislik) chorrahasidagi tadqiqotlar dunyo miqyosida STEAM (Science, Technology, Engineering, Art, Mathematics) ta'lim tizimi va Sanoat dizayni rivojlanishi bilan bevosita bog'liq. Bu sohada ham klassik muhandislik-arxitektura namoyandalari, ham zamonaviy raqamli texnologiyalar bo'yicha mutaxassislar ilmiy izlanishlar olib borishgan. Interyer va arxitekturada biologiya, muhandislik va san'atni birlashtirish bo'yicha dunyodagi eng yetakchi olimlardan biri Neri

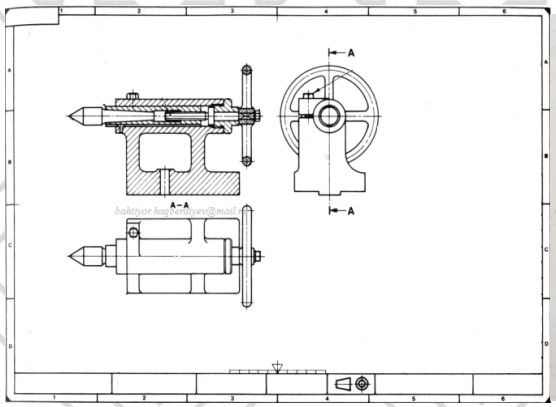
Oxmandir. Olimning ishlarida materiallarning tuzilishini muhandislikda, estetik shakl san'at bilan qanday bog'lash haqida ilmiy izlanishlar olib brogan.

Bino va xona interyerlari muhandislik jihatdan inson psixologiyasi va san'at bilan qanday uyg'unlashishi kerakligini matematik va ijtimoiy jihatdan tahlil qilgan yana bir mashxur olim A. Christopherdir. Uning "A Pattern Language" nomli kitobi ham mashxurdir. Dizayndagi shakl va funksiya uyg'unligi, sanoat buyumlarining interyerdagi estetikasi bo'yicha ilmiy maktab yaratgan olimlardan biri E.V. Jherevga tegishli. Respublikamizda arxitektura va dizaynda innovatsion texnologiyalar va estetik yechimlar uyg'unligi bo'yicha tadqiqotlar olib borgan olimlarda Q.S. Gulyamov, me'morchilik nazariyasi va dizayn tarixi bo'yicha yirik olimlardan yana biri M.K.Axmedov hisoblanib, uning asarlarida an'anaviy san'at va konstruktiv muhandislik yechimlari tahlil qilingan. Zamonaviy dizayn ta'limida STEAM yondashuvlarini tatbiq etish bo'yicha izlanishlar olib borayotgan tadqiqotchilardan biri Sh.R. Muratov hisoblanadi.

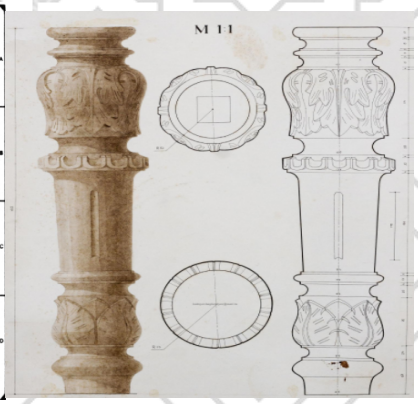
Tadqiqot metodologiyasi (Research Methodology). "Art&Engineering" fanining interyer dizayndagi o'rni - interyer muhitini yaratishda san'atning estetik tamoyillari bilan muhandislikning texnik, konstruktiv va funksional yechimlarini uyg'unlashtirish orqali professional dizayner kompetensiyasini shakllantirishdan iborat. "Art&Engineering" fani quyidagi asosiy maqsadlarga ega: Ijodiy fikrlashni rivojlantirishda san'at elementlari muhandislik va texnologiya sohalarida yangi g'oyalar yaratishga yordam beradi, innovatsiyalarni rag'batlantirish jarayonlarida san'at va muhandislikning kombinatsiyasi yangi mahsulotlar, xizmatlar va yechimlarni yaratishga olib keladi, yuzaga kelgan muammolarni hal qilish qobiliyatlarini oshirishda esa, san'at va muhandislik usullari muammolarni turli nuqtai nazarlardan ko'rib chiqishga va samarali yechimlar topishga yordam beradi, STEAM sohalariga qiziqishni oshirish: San'at elementlari STEAM sohalarini qiziqarliroq va tushunarliroq qiladi, dizayn ko'nikmalarini rivojlantirish o'rnida san'at va dizayn tamoyillari muhandislik loyihalarini yanada estetik va foydalanuvchilar uchun qulay qilishga yordam beradi.

San’at qismi maqsadi: interyerda estetik did, kompozitsiya va rang yechimlarini shakllantirish, talabalarda ijodiy fikrlash, vizual tasavvur va badiiy ifoda ko‘nikmalarini rivojlantirish, dizayn orqali inson psixologiyasi va muhit uyg‘unligini tushunish, zamonaviy san’at, dizayn trendlarini interyer loyihasiga qo‘llash[2. B-16]. Texnik qismi maqsadi: interyer loyihasining texnik, konstruktiv va texnologik asoslarini o‘rgatish, qurilish materiallari, konstruksiya, yoritish, akustika, ergonomika kabi bilimlarni egallash, loyihani real texnik talablar asosida ishlab chiqish ko‘nikmasini shakllantirish, zamonaviy raqamli loyihalash texnologiyalari (CAD, 3D modellash) bilan ishlash. Ushbu fan mutaxassislik talabalarini ijodiy fikrlash bilan birga texnik muammolarni hal qilishga o‘rgatadi va zamonaviy interyer loyihalash jarayoniga tayyorlashda ko’makdosh bo’ladi.

Tahlil va natijalar (Analysis and results). Konstruktsion tahlil chizmalaridan na’munalar:



1-rasm



2-rasm

3-rasm

Ishlatilgan idishlarni (butilka, banka, keramik idish, plastik qadoq va boshqalar) san’at (Art) + chizma/muhandislik (Engineering) integratsiyasida amaliy ish sifatida ishlatish — ekologik dizayn, kreativ tafakkur va konstruktiv fikrlashni rivojlantiradi. Quyida interyer dizayn yo‘nalishi uchun mos amaliy loyiha g‘oyalari keltiriladi (1-2-3-rasmlar).

Bosqichlar:

✔ Detallash: buyum qismlarini ajratib chizish.

✔ Yig‘ish sxemasi: qanday birikishi ko‘rsatish.

✔ Texnik tavsif: material, mustahkamlik, ishlash printsipi.

Zamonaviy ta’lim jarayonida fanlararo integratsiya muhim ahamiyat kasb etmoqda. Ayniqsa, arxitektura, dizayn va muhandislik yo‘nalishlarida san’at va texnik tafakkurning uyg‘unligi talab etiladi. “Art&Engineering” fani aynan shu sinergetik yondashuv asosida shakllanib, talabalarni bir vaqtning o‘zida estetik va konstruktiv fikrlashga o‘rgatadi. Talabalarda ijodiy g‘oya ishlab chiqish, uni muhandislik chizmasi asosida modellashtirish va real mahsulotga aylantirish ko‘nikmalarini shakllantirish. Hozirgi zamonda faqat texnik bilimning o'zi yetarli emas [3. B-113]. Masalan, Steve Jobs Apple mahsulotlarini yaratishda aynan san'at va muhandislik chorrahasida turib ish

ko'rgan. U texnologiyani "chiroyli va tushunarli" bo'lishi kerakligini isbotladi.

“G’oyalaringni loyihala” usuli

Art&Engineering fanida amaliy ishlar - bu shunchaki rasm chizish yoki kod yozish emas, balki ikki sohani bitta mahsulotda birlashtirishdir. Bu fan doirasida siz ham laboratoriyada, ham ustaxonada ishlashingizga to'g'ri keladi. “Art&Engineering” fani bo’yicha chizmachilik va dizayn fanida olingan bilim va malakalarni amaliy qo’llash, ularni tahlil va baholashni nazarda tutuvchi majmuali o’qitish usulini amalga oshiradi. Talabalar yuqori darajada, bu g’oyyalariningni loyihala usulidan foydalanganda, yangi g’oyalarni muhokamaga tashlaganda, ularni oson va qulay loyihalashda, takomillishtirishda, har bir g’oyani loyihalashni samarali echimini nazorat qilishda, har bir ishtirokchi talabani g’oyaviy loyihasini ko’pchilik bo’lib tahlil qilishda va xolislik va shaffoflik bilan bajarilgan ish natijalarini baholashda ishtirok etadilar.

Fan o’qituvchisi tomonidan mavzular va ularning maqsadlari yoritiladi. Talabalarga bir kichik g’oyani loyihalashni yondashuvi mohiyati bilan tanishtiradi. Keyin bir mavzu bo’yicha variantlar taklif etadi va mazmuni to’g’risida ma’lumot beradi, variant turlari, ularning kutilayotgan natijalari va baholash mezonlarini sanab o’tadi. G’oyalar haqida ma’lumot beradi, o’z taklifini ham aytadi. G’oyalarni loyihalashni samarali va muammoli usullari va ularni tahlilini tavsiya etadi. Guruhda talabalar hamkorlikda ishlashni tashkillashtirish tayyorgarligini tushuntiradi, talabalar orasida xayrihona munosabat muhitini yaratadi. Natijada talabalar hamkorlik ishni ijodiy bajaradilar. Fan o’qituvchisi guruhni nazorat qiladi, lekin ularga rahbarlik qilmaydi: ta’lim oluvchilar o’zlari uchun erkin g’oyalarini loyihalashadi bu orada xato qilsalar ham, o’zlari ishlashlariga ruxsat beradi. Har bir talaba g’oyaviy loyihalaridagi variantini to’g’ri javoblarini bir-birlariga tekshirtirib natijasini fan o’qituvchisiga ko’rsatishadi, g’oyaviy loyiha variantlarini noto’g’ri yoki to’liq bo’lmaganlarni sharhlaydi, aniqlaydi. Variantni noto’g’ri loyihalagan talabaning o’ziga xatosini topishni taklif qiladi. Agar u buni qila olmasa, boshqa talabalardan yordamga chaqiradi va g’oyani loyihalash varianti bo’yicha ishni yakun qiladi, qilingan ishlarni kelgusida kasbiy faoliyatlarida

ahamiyatga ega ekanligi muhimligiga talabalar e'tiborini qaratadi. G'oyalaringni loyihala usuli orqali talabalar o'zlariga tegishli bo'lgan variantlarni bajaradi, G'oyalaringni loyihala usulining asosiy vazifasi - talabalarni o'quvbilish faoliyatini faollashtirish, fazoviy tasavvurlvri orqali g'oyalar o'ylab topish, loyihalash va ularni mustaqil tushunish va muammoli vazifalarni echishga qiziqtirish va ularda muomala madaniyati, fikr almashinish malakalarini rivojlantirishi, ijodiy topshiriqni echishda birlamchi yo'l fikrlarini engib o'tishni tarbiyalaydi[4.b-153].

Talabalar tomonidan o'zlari echimini topa oladigan g'oyaviy loyihalay olishga ko'zlari etadigan variantlardan tanlaydilar. Kerak bo'lganda birbirlaridan va fan o'qituvchisidan qo'shimcha ma'lumotlar oladilar. Variantlarini g'oyaviy maqsadlarini aniqlaydilar, loyihani samarali echimi bo'yicha kutilayotgan natijalarini muhokama qilib oladilar. Strategik rejalarini o'z oldilariga belgilab oladilar: o'zlarini g'oyalarini shakllantiradilar, variantlari bo'yicha loyihalashni yo'nalish va bajarish bosqichlarini, ular tartibini aniqlaydilar. Fan o'qituvchisi bilan o'z variantlari bo'yicha g'oyalarni loyihalashni samarali va muammoli usullari orqali ko'tilayotgan natijalarini tahlil etish usulini belgilab oladi. Talaba o'zini variantlarida g'oyalarni loyihalashdagi muammoni hal etishning turli imkoniyatlarini guruh talabalari bilan hamjihatlikda muhokama qiladilar, ularni loyihaviy echimini tahlil qiladilar, eng oson, qulay va samarali echimlarini topadilar, fazoviy tasavvurlari orqali g'oyalarini ifodalaydilar. Talabalar bir-birlariga va fan o'qituvchisiga variantlari bo'yicha g'oyalarni loyihalashni natijalarni ma'lum qiladi, guruh talabalari tomonidan xolislik va shaffoflik bilan baholanadi. boshqa guruh talabalari uchun qiyinroq va muammoli variantlarini muhokama qilib echimini topadilar. Dars so'nggida har bir talabani variantlari bo'yicha g'oyalarni loyihalashda erishilgan natijalarni o'zlari sharhlaydi, fan o'qituvchisi tomonidan xato va kamchiliklarni ko'rsatiladi [5.B-97].

Undan tashqari Plastik chiqindilarni maydalab, ularni eritish va 3D printer uchun filament (xomashyo) tayyorlash. So'ngra ushbu materialdan murakkab parametrik haykallar chop etish natijasida shunchaki plastik emas, balki muhandislik chizmalari

asosida yaratilgan murakkab san'at namunasi paydo bo'ladi. Agar Art&engineering fani uchun eski, ishlamaydigan texnika bo'lsa, uni qismlarga ajratish kerak bo'ladi va har bir detalga (shurub, plata, prujina) alohida estetik element sifatida qarash kerak. Ularni birlashtirishda “Oltin kesim qonini” qoidalariga amal qilgan holda muhandislik chizmalaridan haqiqiy san'at darajasiga ko'tariladi [6.B-78].

Xulosa va takliflar (Conclusion/Recommendations). Zamonaviy interyerdagi to'lqinsimon shiftlar, murakkab geometrik devor panellari aynan matematik algoritmlar (Engineering) va vizual go'zallik (Art) mahsulidir. Devor ortiga yashirilgan akustik tizimlar, mebel ichiga o'rnatilgan simsiz quvvatlagichlar yoki havo tozalash tizimining dekorativ panellar ortiga berkitilishi. Xona minimalistik va san'at asaridek ko'rinadi, lekin u eng zamonaviy muhandislik yutuqlari bilan jihozlangan bo'ladi. Bugungi interyerda “Art&Engineering” eski buyumlarni qayta ishlab, ulardan yuqori texnologik va estetik buyumlar yaratishni ham o'z ichiga oladi. Masalan, eski sanoat quvurlaridan zamonaviy "Loft" uslubidagi javonlar yoki yoritgichlar yasash. Muhandisliksiz san'at amaliy bo'lmaydi, san'atsiz muhandislik esa quruq va jonsiz ko'rinadi.

Foydalanilgan adabiyotlar ro‘yxati (References)

1. Haqberdiyev, B. R., Ismag’llova, M. S. Q., & Imomnazarova, D. F. Q. (2025). Raqamli texnologiyalarda arxitektura va dizayn. *Academic research in educational sciences*, (Conference 1), 65-66.
2. Haqberdiyev, B., & Ismog‘ilova, M. (2025). O‘zbekiston shaharlarining tarixiy arxitekturasini zamonaviy dizayn bilan uyg ‘unlashtirish. Natsciences. uz-Topical Issues of Natural and Applied Sciences, 1(2), 15-18.
3. Rustamovich, H. B. (2025). Texnik va san'at fanlarini integrativ o'qitishda sinergetik kompetentlikni takomillashtirish. 112-117
4. Hakberdiyev, B. (2026, January). Integrative approaches through synergetic competence in the subjects of drawing and composition. In International Conference on Science, Education & Law (Vol. 2, No. 1, pp. 152-154).
5. Rustamoviç, H. B. (2025). Kültürel bağlamda iç mekan tasarimi ve estetik çeşitlendirme. " Yurt faxri", 1(1).
6. Haqberdiyev, B. R., & Rustamov, U. (2021). Creative design of buildings and structures. Current research journal of pedagogics, 2(09), 76-78.

Ushbu jurnal Toshkent shahar Axborot va ommaviy kommunikatsiyalar boshqarmasining «Ommaviy axborot vositasi sifatida faolyatini amalga oshirish»ga №060125 raqamli guvohnomasi asosida ruxsat etilgan.
Nashrga ruxsat berildi 15.02.2026 y.
Bichimi 84/60.1/8. Bosma tabog’i 5.
«ALFRAGANUS UNIVERSITY» nashriyotida tayyorlandi.
Muharrir: Xolbekov S.