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# INTERNATIONAL SCIENTIFIC RESEARCH CONGRESS

December 20-21, 2024  
Istanbul

## ABSTRACT BOOK

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# Social and Humanities

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# The Mediating Role of Romantic Intimacy in the Relationship Between Emotional Attachment and the Perception of Shared Happiness in Adults

*Yetişkinlerde Duygusal Bağlanma ile Mutluluk Paylaşımı Algısı Arasındaki İlişkide Romantik Yakınlığın Aracı Rolü*

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## ABSTRACT

The aim of this study is to examine the mediating role of romantic intimacy in the relationship between emotional attachment and the perception of shared happiness among university students. The sample of the study consists of 474 university students, 314 (66.2%) female and 160 (33.8%) male, between the ages of 18-40, studying in Turkey and the TRNC. Demographic Information Form, Inventory of Experiences in Close Relationships - Relationship Structures Scale, Perception of Shared Happiness Scale, and Intimacy in Romantic Relationships Scale were used as data collection tools. The data analysis process was carried out with SPSS-22 program. Mediator analysis was conducted using the Hayes Process Macro plug-in. As a result of the analysis, it was found that the level of emotional attachment had a negative effect on romantic intimacy and also negatively affected the perception of shared happiness. When romantic intimacy was included in the model, it was found that the effect of emotional attachment on perception of shared happiness changed and romantic intimacy assumed a partial mediating role in this effect. Accordingly, when romantic intimacy is lower, the effect of emotional attachment on the perception of shared happiness is more negative.

**Keywords:** Emotional attachment, perception of shared happiness, romantic intimacy

## ÖZET

Bu çalışmanın amacı, üniversite öğrencilerinde duygusal bağlanma ve mutluluk paylaşımı algısı arasındaki ilişkide romantik yakınlığın aracı rolünü

incelemektir. Araştırmanın örneklemini 18-40 yaş aralığında, Türkiye ve KKTC’de eğitim görmekte olan 314’ü (%66,2) kadın ve 160’ı (%33,8) erkek olmak üzere 474 üniversite öğrencisinden oluşmaktadır. Veri toplama araçları olarak Demografik Bilgi Formu, Yakın İlişkilerde Yaşantılar Envanteri-İlişki Yapıları Ölçeği, Mutluluk Paylaşımı Algısı Ölçeği ve Romantik İlişkilerde Yakınlık Ölçeği kullanılmıştır. Veri analiz süreci, SPSS-22 programı aracılığıyla gerçekleştirilmiştir. Aracı rol analizleri Hayes Process Macro eklentisi ile yapılmıştır. Analiz sonucunda, duygusal bağlanma düzeyinin romantik yakınlık üzerinde negatif bir etkisinin olduğu ve aynı zamanda mutluluk paylaşımı algısını da negatif yönde etkilediği bulgusuna ulaşılmıştır. Romantik yakınlık modele dâhil edildiğinde, duygusal bağlanmanın mutluluk paylaşımı algısı üzerindeki etkisinin değiştiği ve romantik yakınlığın bu etkide kısmi bir aracılık rolü üstlendiği tespit edilmiştir. Buna göre, romantik yakınlığın daha düşük olması durumunda, duygusal bağlanmanın mutluluk paylaşımı algısı üzerindeki etkisi de daha olumsuz olmaktadır.

**Anahtar Kelimeler:** Duygusal bağlanma, mutluluk paylaşımı algısı, romantik yakınlık

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# The Intelligent Coherent States of a Spin System

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**Chadia QOTNI**

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## **ABSTRACT**

A spin intelligent coherent state is defined as an eigenstate of the spin component in the direction specified by the angles  $(\beta, \varphi)$ . It satisfies the minimum uncertainty relation, with equal uncertainties distributed over any two orthogonal components normal to the direction of the total spin vector  $S$ . Starting from this concept, we apply the notion of coherent state to quantum groups and discuss the properties of the associated uncertainty relations. we have shown the intelligent behavior of these states in the context of minimizing the uncertainty relation.

**Keywords:** Schrodinger Equation, Wave Function, Coherent State, Harmonic Oscillator, nonlinear air coherent states, Quantum information.



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## Multilateral Cultural Diplomacy

### *Specific Features and Added Value of Regional Cooperation*

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#### **ABSTRACT**

Nowadays the political agenda already includes culture, an important sector of the international relations. There are specificities of international cultural cooperation for example not based on reciprocity alone, not depending on the culture and cultural richness of the participating countries, special inclusion of NGOs, much more diverse and complex toolbox than the traditional diplomacy.

The analysis focuses on the evolution of the cultural cooperation in the frame of international organizations established by states (cultural issues intertwined by economic interests, the utopian approach of the "intellectual cooperation", the appearance of the national cultures in intergovernmental organizations, the universal institutionalization), on the instruments of cultural diplomacy varying greatly from region to region (instruments commonly used by nation states as well, specific regional instruments (e.g. presidency, thematic year, regional awards, special programmes like Capital of Culture)).

Cultural diplomacy has to operate effectively in an increasingly competitive and expanding cultural space, where the norm crusader Europe's influence is steadily diminishing, so this study aims to provide an overview of the non-European regional IGOs (e.g. ASEAN, AU, LAS, OAS, OIC) and institutionalized international cooperation created on a linguistic or cultural basis (e.g. OIF, Ibero-American Summits, CPLP, TÜRKSOY) to demonstrate the generally accepted multilateral cultural diplomacy.

**Keywords:** cultural diplomacy, evolution of international cultural cooperation, toolbox of multilateral cultural diplomacy, regional IGOs' activity in cultural issues

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# **Academic Motivation and Self-Efficacy: An Integrative Analysis Using MSLQ and SELF to Predict Learning Outcomes**

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**Ghiță LULIA-ADELINA**

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## **ABSTRACT**

Our research investigates the interplay between academic motivation and self-efficacy in predicting students' learning outcomes, utilizing two validated instruments: the Motivated Strategies for Learning Questionnaire (MSLQ) and Self-Efficacy for Learning Form (SELF). The study aims to provide an in-depth understanding of how motivation and self-efficacy influence academic performance in higher education contexts. By examining the relationship between these constructs, the study seeks to clarify the mechanism through which students' motivation orientation affect their engagement and efficacy in learning. The findings of the study will contribute to the development of evidence-based strategies designed to enhance academic achievement and promote self-directed learning among our students. Preliminary results indicate a significant correlation between evaluation anxiety and study effectiveness. Further analysis of other significant findings will be presented in subsequent sections. Through a comprehensive and methodologically rigorous approach, this study offers valuable insights into the psychological factors that underpin student success.

**Keywords:** strategies, self-efficacy, anxiety evaluation, MSLQ; SELF

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# Ghana's Debt Restructuring Debacle: Securing Debt Sustainability to Deepen Economic Woes

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**Mawuko DZA**  
University of Education, Ghana

## **ABSTRACT**

The huge government expenditure and debt servicing processes in recent years have worsened Ghana's economic woes. With respect to the high fiscal risks of the country, reliable fiscal consolidation measures were required to offset the excessive public debt to minimize the domestic financing risks in the immediate post COVID-19 era. This study aimed to investigate Ghana's domestic debt restructuring program sanctioned by the IMF in the post COVID-19 era and its implications on the economic outlook of the country. It deployed the qualitative research approach by interviewing fifty respondents purposively selected. The study reveals that the fiscal management strategy adopted by the government aimed at restoring fiscal discipline, controlling external borrowing, and putting the public debt on a downward trajectory to secure debt stability has plunged the country into perilous economic situations. Additionally, the study found out that although restructuring the country's debt sourced the much-needed IMF funds for stabilizing the economy, the conditions attached to the loan have adversely affected living standards of Ghanaians. The study recommends strengthening domestic policies, value addition to primary commodities and active involvement of civil society and other non-state actors in policy decision making to avoid continual resort to the IMF for economic bailouts.

**Keywords:** debt sustainability, domestic debt restructuring, IMF, economic hardship, standard of living

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# **A comprehensive Evaluation Approach using Geosite Assessment Model, the case of Sotira and Bogova Waterfalls in Albania**

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## **ABSTRACT**

The evaluation of geosites is an important step in understanding and promoting geodiversity while fostering sustainable tourism and environmental management. The Geosite Assessment Model (GAM) is a structured and quantitative methodology designed to assess geosites the scientific, educational, aesthetic, and functional values of geosites. This paper presents the application of the GAM technique to selected geosites of the Bogova and Sotira waterfalls, providing insights into their potential for geotourism development and conservation strategies. The results highlight the importance of integrating scientific evaluations with socio-economic factors to establish geosites as tools for education and sustainable regional development. Furthermore, the findings underscore the GAM's flexibility and applicability across diverse geological and geomorphological settings, making it a valuable tool for researchers, planners, and policymakers.

This research contributes to the growing body of literature on geosite evaluation and provides a replicable framework for assessing geosites at both local and in national levels. Recommendations for improving geosite conservation and promoting geotourism through interdisciplinary approaches are also discussed.

**Keywords:** Geosite Assessment Model, geodiversity, Bogova waterfall, Sotira waterfall, sustainable development

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## **Degradation Risk Assessment for conservation priorities in Albania's geosites focus on Gradec and Osum canyons, and Pirrogashi Cave**

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### **ABSTRACT**

The assessment of degradation risks in geosites is essential for their preservation, sustainable use, and integration into geotourism and educational activities. This study employs a quantitative risk assessment technique to evaluate the degradation susceptibility of geosites, focusing on the Gradec and Osum canyons, and Pirrogashi Cave. The method integrates physical, environmental, and anthropogenic factors to calculate a comprehensive risk index, offering a clear framework for prioritizing conservation efforts.

Key indicators analyzed include three criteria to assess degradation risk: natural vulnerability (8 indicators), anthropogenic vulnerability (8 indicators), and public use (28 indicators). Results highlight different risk levels underscoring the need for implementing conservation measures to mitigate degradation risks and enhance the long-term sustainability of these geosites.

This research contributes to the development of strategies for balancing conservation with socio-economic opportunities. Recommendations for stakeholder collaboration and integration of geosite risk assessments into regional planning processes are also discussed.

**Keywords:** Geosite degradation risk assessment, quantitative assessment, canyons of Osum and Gradec, Pirrogashi cave, natural and anthropogenic vulnerability, public use criteria

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# Interventions for Enhancing Motivation and Self-Efficacy in Educational Settings

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## **ABSTRACT**

A. Toffler argued, as early as the last century, that the illiterate is no longer the one who cannot read or write, but the one who does not know how to learn. Therefore, the competence to learn how to learn becomes a key competence that must be developed in our students. Experts argue that among the five controllable dimensions of this competence, the emotional-affective and motivational dimensions are key components. Our previous research investigations, involving 50 participants, aged between 19 and 40 years, recruited from the Faculty of Letters and Sciences (Petroleum - Gas University of Ploiesti), have investigated correlations between data obtained from MSLQ and SELF questionnaires. The analyzed data obtained indicated a significant correlation between anxiety in test / evaluation situation and both general study habits and test preparation strategies among the participants. These results have been used as evidence-based interventions aimed at enhancing academic motivation and self-efficacy in educational settings will focus on these two dimensions. Drawing on established frameworks such as the MSQ and the SELF scale, the present analysis focuses on practical strategies that educators can employ to foster intrinsic motivation, and ultimately improve learning outcomes. This interventions discussed include goal-setting techniques, along with a synthesis of current literature, offering actionable recommendations for developing the competence **to learn how to learn**.

**Keywords:** strategies; competence; anxiety evaluation; MSLQ; SELF

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# Women in Peace and Reconciliation: Lessons from Bosnia-Herzegovina and Northern Ireland

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**Lec. Maisha KARIM**

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## **ABSTRACT**

This article examines the transformative role of women in post-conflict peace-building processes, focusing on Bosnia-Herzegovina and Northern Ireland as case studies. In both regions, women emerged as pivotal actors in rebuilding societies fractured by conflict, contributing not only to reconciliation efforts but also to sustainable development and governance. Drawing on historical context, the article highlights how women's perspectives and participation have shaped policies and initiatives aimed at fostering long-term peace.

The study explores the challenges women faced in these deeply patriarchal societies, including political marginalization and societal resistance, while also underscoring their resilience and innovative strategies for inclusion. By comparing the distinct yet interconnected experiences of women in these two contexts, the report sheds light on common themes, such as the importance of grassroots movements, community engagement, and international support in amplifying women's voices.

Ultimately, the analysis demonstrates that women's active involvement is not merely beneficial but essential to creating inclusive and durable peace. The article concludes by offering policy recommendations to enhance women's roles in future peace-building efforts, emphasizing the need for gender-responsive frameworks in post-conflict recovery and governance. This work aims to inspire a deeper understanding of the critical contributions women make in transforming conflict into a foundation for peace.

**Keywords:** Women in peacebuilding, post-conflict recovery, gender and reconciliation

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## Examining Cultural Values in Urban Conversation Areas: Burdur Urban Site as a Case Study

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### ABSTRACT

Historically, cities have been influenced by many factors, resulting in diverse socio-cultural, economic, and physical transformations. Activities facilitating cultural changes in urban environments have always been intrinsically linked to human activities. Consequently, urban conservation areas are shaped in both temporal and spatial dimensions, informed by the perspectives of the societies within which they are situated. Historical cultural sites serve as pivotal elements that confer identity to urban centers, nestled within new environments that often exhibit high degrees of similarity, along with their physical and social contexts. The implications of spatial and social transformations in urban historical environments on their inhabitants are of considerable importance. A reciprocal relationship exists between settlement areas and their users, characterized by mutual influence. In this regard, spatial interventions conducted within the Burdur urban protected area will be analyzed as illustrative examples of the impacts of these changes throughout the process. Ultimately, it is untenable to conceive of urban historical areas in isolation from the social dynamics that animate them. Thus, an evaluation of protected urban spaces through the lens of sustainable conservation practices is of paramount importance. This study aims to scrutinize the socio-cultural impacts of both former and current users on the Burdur urban protected area, facilitating an assessment of the transformations experienced by these urban protected areas from the perspectives of their users. The ultimate goal of this study is to provide valuable insights into the relationship between urban spaces and their communities, which can inform future urban planning and conservation efforts.

**Keywords:** cultural values, urban conversation areas, urban, Burdur



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# The Noun Phrase in Dosoftei's Writings: The Quantifier

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## ABSTRACT

In the present paper, we aim to analyze the noun phrase in Dosoftei's writings, focusing on the syntactic function of quantifier. The paper will be divided into two parts, the first one dealing with the theoretical framework and the second one being dedicated to the analysis of the investigative corpus. After providing a definition of the noun phrase, quantification and quantifiers, we will focus on means of expressing quantification in Romanian. Then, we will observe the peculiarities of the quantifier as a syntactic function introduced in the *Basic Grammar of Romanian Language*, describing both internal and external quantifiers. As far as the investigative corpus is concerned, we will first discuss the class of substitution of the quantifier. We will then proceed to the description of complex noun phrases, in which quantifiers co-occur with other syntactic positions, namely determiners, modifiers and possessors. We will first discuss the internal structure of each noun phrase and then we will provide examples to support our demonstration. All in all, the examination of the investigative corpus will reflect the complex possibilities of structuring the noun phrase, illustrating the diversity of syntactic constructions in Old Romanian, as far as the quantifier is concerned.

**Keywords:** noun phrase, quantifier, quantification, internal quantifier, external quantifier

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# The Holy Eucharist and the Eschaton

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## **ABSTRACT**

The **purpose** is the correct understanding of the essence of the Holy Eucharist and the Eschaton. The **subject** of the study is the Holy Scripture of the New Testament and the **object** is the Holy Eucharist, where the Lord Jesus Christ utters the founding Eucharistic words: "...take, eat: this is My Body... drink of it, all of you; for this is My Blood of the New Testament..." (Matt. 26: 26-28).

The **method** that I use in this report is historical-critical.

The **task** is to show through the Holy Scripture of the New Testament that in the sacrament of the Holy Eucharist, in which the offered holy gifts, bread and wine are transformed during the Eucharistic prayer of the priest, (εὐχέλῃς) through the Holy Spirit into the body and blood of Christ, are a mystical - real sacrifice, which we accept within ourselves through living faith in God.

The **hypothesis** is that we, through faith in the founding words of the Savior (Matt. 26: 26-28), which are actually received by Christians through the transformed holy gifts of the Holy Spirit, are united in a living relationship with God through the sacrament of the Holy Eucharist. Which is both a remembrance (ἀνάμνησις) of Christ's sacrifice and suffering on the cross, but it is also joy in Christ's resurrection, victory over death and hell. Holy Communion is not imaginary (symbol and image) nor is it just a memory, but is a living and real communion (κοινωνία) with the body and blood of Christ; it is also gratitude (Mark 14: 23), "εὐχαριστία" for the sacrifice on the cross.

**Keywords:** The Holy Eucharist and the Eschaton

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# Addressing Generalized Anxiety Disorder with the Schema Therapy Approach: A Case Study

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## **ABSTRACT**

This study examines the process of addressing the symptoms of Generalized Anxiety Disorder (GAD) in a 29-year-old female client within the framework of the Schema Therapy approach. The sessions were conducted with supervision support as part of the Clinical Psychology Master's Program at Istanbul Aydın University, with a total of 12 sessions. During the assessment process, the Young Schema Questionnaire, Young Mode Inventory, Young Parenting Inventory, Rygh Avoidance Inventory and Rygh Compensation Inventory were applied.

According to the assessment results, the client exhibited schemas of self-sacrifice, subjugation, abandonment, approval seeking, suspicion and punitive as well as the moods of a hurt child, a compliant listener, and a demanding parent. Furthermore, maladaptive coping styles were prominently observed.

During therapeutic interventions, cognitive, behavioral, and experiential techniques specific to the Schema Therapy approach were used to reduce the effects of maladaptive schemas and moods, with the aim of strengthening the healthy adult mode.

At the end of the treatment, a significant reduction in the client's generalized anxiety symptoms was observed, and progress was made in strengthening the healthy adult mode. The study supports the effectiveness of the Schema Therapy approach in alleviating GAD symptoms.

**Keywords:** schema therapy, generalised anxiety disorder, cognitive strategies, experiential strategies

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## Participation of Women in the R&D Workforce

### *Ar-Ge İşgücüne Kadınların Katılımı*

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#### **ABSTRACT**

Research and Development (R&D) Centers are organizations that respond to technological changes with high-cost projects and have a direct impact on human life by producing new technologies. The R&D field of work stands out as an area where women are not sufficiently represented. The aim of this study is to question how women employees exist in R&D units as a male-dominated profession and how they find a place for themselves in the context of human capital and cultural capital. The study aims to analyze the gender inequalities experienced by women in R&D and innovation fields based on human and cultural capital approaches and to reveal how women express themselves and achieve success in a male-dominated field. In order to achieve this aim, a mixed research method was used, in which quantitative and qualitative research techniques were applied together. Data were obtained from 400 participants working in R&D and Technocity Centers and 20 participants were interviewed. With the field research carried out in some selected R&D and Technocity Centers in Turkey, answers to the research questions were sought in line with the experiences of women working in this field. According to the results of the study, women have higher cultural capital and men have higher human capital. However, it has been revealed that women face discrimination, restrictions and difficulties stemming from both human capital and cultural capital in work areas that require qualification and experience, such as R&D and Technocity Centers. Although women's participation and visibility in work areas identified with men, such as R&D, Engineering and Technocity, has increased, it is possible to say that gender-based prejudices are reproduced in these areas. This study has underlined the importance of gender equality in the R&D work area and shown that women's performance in this field and their contributions to productivity should not be ignored.

**Keywords:** R&D, gender, cultural capital, human capital

#### **ÖZET**

Araştırma ve Geliştirme (Ar-Ge) Merkezleri, yüksek maliyetli projelerle teknolojik değişimlere yanıt veren ve yeni teknolojiler üreterek insan yaşamına

doğrudan etkisi olan organizasyonlardır. Ar-Ge çalışma alanı ise, kadınların yeterince temsil edilmedikleri bir alan olarak göze çarpmaktadır. Bu çalışmanın amacı erkek egemen bir meslek alanı olarak Ar-Ge birimlerinde, kadın çalışanların nasıl var olduklarını ve kendilerine nasıl yer bulduklarını beşerî sermaye ve kültürel sermaye bağlamında sorgulamaktır. Çalışmada beşerî ve kültürel sermaye yaklaşımlarını temel alarak kadınların Ar-Ge ve yenilik alanlarında tecrübe ettikleri cinsiyet eşitsizliklerini analiz etmek, erkek egemen bir alanda kadınların kendilerini nasıl ifade ettiklerini ve başarıya nasıl ulaştıklarını ortaya çıkarmak amaçlanmaktadır. Bu amacı gerçekleştirmek üzere nicel ve nitel araştırma tekniklerinin bir arada uygulandığı karma araştırma yöntemi kullanılmıştır. Veriler Ar-Ge ve Teknokent Merkezlerinde çalışan 400 katılımcıdan anket 20 katılımcıdan da mülakat yoluyla elde edilmiştir. Türkiye’den seçilmiş bazı Ar-Ge ve Teknokent Merkezleri’nde sürdürülen alan araştırması ile bu alanda çalışan kadınların deneyimleri doğrultusunda araştırma sorularına cevaplar aranmıştır. Çalışmanın sonucuna göre, kadınların kültürel sermayesi daha yüksek erkeklerin ise beşerî sermayesi daha yüksek çıkmıştır. Ancak kadınların Ar-Ge ve Teknokent Merkezi gibi nitelik ve birikim gerektiren çalışma alanlarında gerek beşerî sermayeden kaynaklı gerekse kültürel sermayeden kaynaklı ayrımcılık, kısıtlama ve zorluklarla karşılaştıkları ortaya koyulmuştur. Ar-Ge, Mühendislik ve Teknokent gibi erkeklerle özdeşleştirilen çalışma alanlarına kadınların katılımı ve görünürlüğü her ne kadar artış gösterse de toplumsal cinsiyet temelli önyargıların bu alanlarda yeniden üretildiğini söylemek mümkündür. Bu çalışma ile Ar-Ge çalışma alanında cinsiyet eşitliğinin öneminin altı çizilerek kadınların bu alanda ortaya koyabilecekleri performans ile verimliliğe yapacakları katkıların göz ardı edilmemesi gerektiği gösterilmiştir.

**Anahtar Kelimeler:** Ar-Ge, Toplumsal Cinsiyet, Kültürel Sermaye, Beşeri Sermaye

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# The Impact of Geomagnetic Storm Conditions on the Ground Positions

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**Asst. Prof. Dr. F. NOBAKHT-ERSI**  
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## **ABSTRACT**

Geomagnetic storms are natural events that have the intrinsic ability for influence on a various of new technologies utilized on the ground. An investigation of such effect of geomagnetic storm conditions of different intensities on the ground positions driven by Global Navigation Satellite System (GNSS) is discussed in the present paper. Attention is confined to ground positions under weak and intense geomagnetic storm conditions. It is thereby two different scenarios have been conducted. The first scenario focuses on evaluating the positioning performance in the presence of intense and strong geomagnetic storm disturbances while the second study is concerned about the positioning accuracy under weak geomagnetic storm conditions. Our numerical results demonstrate that an intense geomagnetic storm can have a significant influence on GNSS positions specially in the case of single constellation (GPS) positioning. Furthermore, a weak geomagnetic storm circumstances can have an insignificant effect on GNSS positions quality.

**Keywords:** GNSS, geomagnetic storm, accuracy, position, single-constellation

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# An AI Chatbot Communication for Micro-Learning in Higher Education

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## ABSTRACT

Large Language Models (LLMs) show potential in artificial intelligence, particularly in education. This research investigates micro-learning using AI-enhanced communication via the 'Student's Assistant' and 'Research Companion' chatbots in Malaysian higher education. The study highlights the increasing dependence of educational institutions on AI-based solutions for delivering adaptive learning experiences and individualized support. A comprehensive and diverse methodology analyzes the correlation between rapid formulation, engineering techniques, and LLM results. Two methodologies assess the impact of rapid structuring strategies, including persona and template applications, on LLM outcomes. The impact of sophisticated prompt engineering techniques, such as few-shots and chain-of-thought prompts, on LLM replies is analyzed. The 'Study Companion' methodology further employs applied sciences courses for experimental purposes. The results possess considerable ramifications for artificial intelligence in education. This research establishes a foundation for enhanced AI-driven instructional aids by identifying the factors influencing LLM performance. The study examines the obstacles in contemporary education, namely the need for precise, relevant, and varied instructional material, and offers both scholarly and practical perspectives. The research underscores the need for continuous investigation and enhancement to use AI in education as it progresses appropriately.

**Keywords:** AI-enhanced chatbots, Large language models (LLMs), Micro-learning, Adaptive learning experiences, Educational content optimization.

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## Regional Differences in Motivations regarding Labor Mobility: University Students' Perspective

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### ABSTRACT

Many countries currently experience the "brain drain" phenomenon, i.e. the departure of qualified people, which is complex and affects many areas. This paper investigates the phenomenon from the regional perspective and in the context of global production networks. Its aim is to compare the identified push and pull factors influencing the labor mobility of university students in two regions of the Czech Republic – Ústí nad Labem (UnL) and Mladá Boleslav (MB). Within this benchmarking of two regions, it is monitored whether the students' assessment is unique for the given regions. A questionnaire construction (N=108) and a non-parametric test were used. The comparison between regions was carried out by evaluating the importance, satisfaction and differences between the defined factors. The difference revealed the factor "image" as a possible pull factor for both groups of students, however, it occurs at a very low value, as well as the factors "good environment" for students from MB and "family and friends" for students from UnL. The biggest difference is found among students from UnL when it comes to the "good job" factor, which can be one of the main reasons for departure. By contrast, for students from MB, the strongest push factor is "affordable housing". Evaluations are important for regional actors who make decisions about regional development. Finally, strategic measures are formulated to consolidate and strengthen the position in global networks and in the competition for talent.

**Keywords:** Brain Drain, Pushfactors, Pull factors, University students, Structurally affected region



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# **A Qualitative Evaluation on the Historical Development of Local Governments in Turkey**

## ***Türkiye’de Yerel Yönetimlerin Tarihsel Gelişimi Üzerine Nitel Bir Değerlendirme\****

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### **ABSTRACT**

Local governments are administrative units that operate within the framework of the principle of autonomy, emphasizing the participation of local populations in the planning and execution of public services at the local level. The historical development of local governments in Turkey has been shaped by political and social transformations, undergoing restructuring in response to changing needs and reforms from the Ottoman era to the Republic. This study examines the historical transformations experienced by local governments in Turkey from the Ottoman period to the present, based on institutional and legal frameworks. The research associates the formation process of local governments with the administrative reforms initiated during the reign of Mahmud II and focuses on the emergence of provincial special administrations (il özel idareleri) and municipal practices during the Tanzimat Era. The centralized administrative approach of the early Republican period is analyzed within the context of the 1930 Municipal Law, discussing the strict control of local government bodies and their decisions by the central administration. Furthermore, the 1982 Constitution, which created a hybrid structure combining central and local governance elements in Turkey, is evaluated in terms of its impact on the modernization of local government units. This study employs a qualitative methodology, drawing on historical documents, constitutional regulations, and local government legislation to analyze the institutional structures, functions, and relationships of local governments with the central administration. The findings reveal that local governments have demonstrated dynamic development throughout their historical evolution, directly influenced by the participation of local populations in governance and the level of autonomy of local units. Particularly, the roles of

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\* \*Bu çalışma, İlyas Dal’ın “Türkiye’de Yerel Yönetimlerin Denetimi” adlı devam etmekte olan yüksek lisans tez çalışmasının bir kısmından alınarak üretilmiştir.

provincial special administrations and municipalities in this historical process are examined in detail as the fundamental building blocks of local governance.

**Keywords:** history of administration, central government, Türkiye, local governments, decentralization

## ÖZET

Yerel yönetimler, yerel düzeyde kamu hizmetlerinin planlanması ve yürütülmesinde yerel halkın katılımını esas alan, özerklik ilkesi çerçevesinde faaliyet gösteren yönetim birimleridir. Türkiye’de yerel yönetimlerin tarihsel gelişimi, siyasi ve toplumsal dönüşümlerle şekillenmiş; Osmanlı’dan Cumhuriyet’e uzanan süreçte, değişen ihtiyaçlar ve reformlar doğrultusunda yeniden yapılandırılmıştır. Bu çalışmada, Türkiye’de yerel yönetimlerin Osmanlı’dan günümüze kadar yaşadığı tarihsel dönüşümler, kurumsal ve hukuki çerçeveye dayalı olarak incelenmiştir. Araştırma, yerel yönetimlerin oluşum sürecini, II. Mahmud Dönemi’nde başlatılan idari reformlarla ilişkilendirmekte ve Tanzimat Dönemi’nde ortaya çıkan il özel idareleri ile belediyeçilik uygulamalarını merkeze almaktadır. Cumhuriyet’in ilk yıllarındaki merkeziyetçi yönetim anlayışı, 1930 tarihli Belediye Yasası bağlamında ele alınarak, yerel yönetimlerin merkezi yönetim tarafından sıkı bir şekilde denetlenmesi tartışılmıştır. Ayrıca, 1982 Anayasası ile Türkiye’nin merkezi ve yerel yönetim unsurlarını birleştiren karma bir yapıya evrilmesi, yerel yönetim birimlerinin modernleşme süreci açısından değerlendirilmiştir. Bu çalışma, tarihsel belgeler, anayasal düzenlemeler ve yerel yönetim mevzuatına dayalı olarak, yerel yönetimlerin kurumsal yapılarını, işlevlerini ve merkezi yönetimle olan ilişkilerini nitel bir yöntemle analiz etmektedir. Araştırmanın bulguları, yerel yönetimlerin tarihsel süreç boyunca dinamik bir gelişim gösterdiğini ve bu gelişimlerin yerel halkın yönetime katılımı ile yerel birimlerin özerklik düzeyini doğrudan etkilediğini ortaya koymaktadır. Özellikle il özel idareleri ve belediyelerin tarihsel süreçteki rolleri, yerel yönetimlerin temel yapı taşları olarak detaylı bir şekilde ele alınmıştır.

**Anahtar Kelimeler:** İdare Tarihi, Merkezi Yönetim, Türkiye, Yerel Yönetimler, Yerinden Yönetim

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## **Diames: Educational Material for Teaching Greek as a Foreign Language to Refugees & Immigrants**

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### **ABSTRACT**

This presentation focuses on new educational material, which can be used - in combination with another printed manual -as a basic and/or auxiliary method of Greek as a foreign language, by both teachers and students. For the latter, the material can also function as a self-teaching method. In this condition, which is related to the physiognomy of the material, lies primarily its particularity, as it is organized on an electronic platform, and the correctness of the answers in the majority of the activities is checked automatically and simultaneously during their implementation. The material covers basic and significant communication needs, as defined by the Common Framework of Reference for Languages, is a key part of a broader ambitious program implemented by the Hellenic Open University (EAP in Greek) and concerns the psychosocial support and empowerment of refugees and immigrants.

**Keywords:** educational material, platform, needs assessment

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# Attachment Styles, Self-Construal, and Perceived Stress in University Students

## *Üniversite Öğrencilerinde Bağlanma Stilleri, Benlik Kurgusu ve Algılanan Stres*

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### **ABSTRACT**

The aim of this study is to examine the predictive roles of attachment style and self-construal on perceived stress among university students in Turkey. The sample of the study consists of 399 university students, 199 female and 180 male, aged between 18-30. Demographic Information Form, Relationship Scales Questionnaire, Relational-Individualistic-Collectivist Self Scale and Perceived Stress Scale were used to collect data. The obtained data were analyzed using SPSS-25 program. As a result of multiple regression analysis, it was seen that attachment style scores could explain 8.9% of the variance in perceived stress score. Accordingly, it was found that the attachment style with the highest explanatory power on perceived stress was the secure style, followed by fearful and preoccupied styles, respectively, and that the avoidant style had no significant effect on perceived stress. According to these findings, it can be said that the secure style has a role in reducing perceived stress, while the fearful and preoccupied styles have a role in increasing perceived stress. Again, as a result of multiple regression analysis, it was seen that self-construal scores could explain 9% of the variance in perceived stress scores. Accordingly, it was found that the one with the highest explanatory power on perceived stress was relational self-construal; individualistic self-construal did not have a significant effect on perceived stress. According to these results, it can be said that while relational self-construal has an increasing role in perceived stress, collectivistic self-construal has a decreasing role in perceived stress.

**Keywords:** Attachment Styles, Self-Construal, Perceived Stress

## ÖZET

Bu araştırmanın amacı, Türkiye’deki üniversite öğrencilerinde bağlanma stili ile benlik kurgusunun algılanan stres üzerindeki yordayıcı rollerini incelemektir. Araştırmanın örneklemi 18-30 yaş aralığında 199’u kadın 180’i erkek toplam 399 üniversite öğrencisinden oluşmaktadır. Verilerin toplanması amacıyla Demografik Bilgi Formu, İlişki Ölçekleri Anketi, İlişkisel-Bireyci-Toplulukçu Benlik Ölçeği ve Algılanan Stres Ölçeği kullanılmıştır. Elde edilen veriler SPSS-25 programı kullanılarak analiz edilmiştir. Çoklu regresyon analizi sonucunda, bağlanma stili puanlarının algılanan stres puanındaki değişimin %8,9’unu açıklayabildiği görülmüştür. Buna göre, algılanan stres üzerinde en fazla açıklayıcılık gücüne sahip olan bağlanma stili güvenli stil olduğu; ardından sırasıyla korkulu ve saplantılı stillerin geldiği; kaçınan stili ise algılanan stres üzerinde anlamlı bir etkiye sahip olmadığı bulunmuştur. Bu bulgulara göre, güvenli stili algılanan stresi azaltıcı bir rolü varken, korkulu ve saplantılı stillerin algılanan stresi arttırıcı bir rolü olduğu söylenebilir. Yine çoklu regresyon analizi sonucunda benlik kurgusu puanlarının algılanan stres puanındaki değişimin %9’unu açıklayabildiği görülmüştür. Buna göre, algılanan stres üzerinde en fazla açıklayıcılık gücüne sahip olanın ilişkisel benlik kurgusu olduğu; bireyci benlik kurgusunun ise algılanan stres üzerinde anlamlı bir etkiye sahip olmadığı bulunmuştur. Bu sonuçlara göre, ilişkisel benlik kurgusunun algılanan stresi arttırıcı bir rolü varken, toplulukçu benlik kurgusunun algılanan stresi azaltıcı bir rolü olduğu söylenebilir.

**Anahtar Kelimeler:** Bağlanma Stilleri, Benlik Kurgusu, Algılanan Stres

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# **Intertwining Threads of Sustainability: A Comparative Study of Ryukyu Bingata and Kasuri with Terengganu Batik and Songket**

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## **ABSTRACT**

Sustainability has emerged as a prominent issue in recent years. The existing strategy for sustainability in cultural assets demonstrates how present developmental requirements are seen to address future demands more effectively. The emphasis on sustainability in cultural heritage management is both challenging and stimulating. Notwithstanding the obstacles in growth, motivation is on the rise in the sector. This study examines contemporary sustainability in the cultural history of Ryukyu Bingata and Ryukyu Kasuri textiles in Japan and Terengganu Batik and Songket in Malaysia. A qualitative analysis of specific case studies examines the cultural heritage sector's growing emphasis on sustainability, initiated by the UN 2030 Agenda for Sustainable Development Goals. Cultural heritage conservation, a niche discipline within a limited industry, must adhere to the same sustainable development criteria as other sectors (Japan and Malaysia). Irrespective of individual sustainability philosophies, societal norms dictate the parameters for cultural heritage management. The condition of cultural heritage differs globally. Maintaining big collections at museums and art institutions is costly, and trained cultural heritage conservators hinder cultural heritage management. Consequently, cultural heritage conservators may facilitate sustainable social, economic, and environmental advancement. Nonetheless, sustainable conservation practices and novel materiality methods may contradict current conservation ideas, necessitating a reevaluation of these theories to uphold elevated professional standards. Professionals in cultural heritage conservation possess extensive worldwide networks and facilitate sustainable development via international collaboration and sustainable methodologies.

**Keywords:** Ryukyu Bingata, Ryukyu Kasuri, Batik Terengganu, Songket Terengganu, Sustainable Development

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# In the Context of Allegory and the "Other," Emir Alper's Cinema from beyond the Hill to Burning Days

## *Alegori ve Öteki Bağlamında Tepenin Ardından Kurak Günlere Emin Alper Sineması*

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### **ABSTRACT**

In a cinematic narrative, concepts such as allegory, metaphor, and the "other" can be understood and interpreted through various components. With an interdisciplinary perspective, it is possible to perform more nuanced readings of these elements using a semiotic approach. In a cine-society, the protagonist enters the narrative from a specific point of view. During this process, their level of consciousness is shaped by the distinction between "us" and "the other," depending on temporal, geographical, cultural, and political factors. Often, the protagonist is marginalized within the cine-society to which they belong, but at times, they may assume a position that marginalizes the society itself. In this context, the protagonist, as the subject of a cine-narrative, undergoes significant transformations as a result of their experiences on their journey. The dynamics and social fabric of the province they travel to often evoke a sense of alienation and marginalization—both toward themselves and their environment. This study aims to provide valuable insights to researchers from this reading perspective. Analyzing allegorical and metaphorical signs situated in the countryside through concepts such as literal and connotative meanings is essential to understanding the impact of communication mechanisms via a cinematic agent. This analysis also facilitates a comprehensive interpretation of the films. In this context, the selected films serve as ideal examples for exploring the intricate relationship between social impact and cinematic narrative. The scope of this study, which seeks to examine and discuss the concepts of allegory, metaphor, and the "other" from a semiotic perspective, is defined by Emin Alper's cinema. His works as a screenwriter and director form the sample for this analysis. Specifically, *"Beyond The Hill"* (2012) and *"Burning Days"* (2022) are selected as the primary research objects, offering a rich basis for discussing the construction and representation of these concepts within the specified framework.

**Keywords:** Cinema, Emin Alper's Cinema, Allegory, Other, Semiotic Film Analysis

## ÖZET

Sinemasal bir anlatıda, alegori, metafor ve öteki gibi kavramları birçok bileşen üzerinden anlaşılabilir ve yorumlanabilir. Disiplinler arası bir bakış açısıyla bu bileşenleri, göstergebilimsel bir yaklaşımla daha nitelikli okumalar gerçekleştirmek mümkündür. Bir sine-toplumda, kahramanımız belirli bir bakış açısıyla anlatıya dahil olur. Bu süreçte, zamansal, coğrafi, kültürel ve politik faktörlere bağlı olarak 'biz' ve 'öteki' ayrımı üzerinden kahramanın bilinç düzeyi şekillenir. Çoğu zaman, kahraman dahil olduğu sine-toplumda ötekileştirilir; ancak bazen de içinde bulunduğu toplumu ötekileştiren bir konuma da geçebilir. Bu bağlamda, bir sine-anlatıda özne konumunda olan kahraman, çıktığı yolculukta yaşadığı deneyimler sonucu belirli dönüşümler geçirir. Kahraman gittiği taşranın dinamikleri ve sosyal dokusu sebebiyle, hem kendisine hem de çevresine karşı bir yabancılaşma ve ötekileştirme hissi uyandırır. Bu çalışma, böyle bir okuma perspektifinde araştırmacıya önemli veriler sunmayı amaçlamaktadır. Taşrada geçen alegorik ve metaforik göstergelerin düzanlam veya yananlam gibi kavramlarla analiz edilerek bir sinematik eyleyen üzerinden iletişim mekanizmalarının etkisini anlamak ve bir okuma gerçekleştirmek önem taşımaktadır. Bu bağlamda, ele alınacak olan filmler, toplumsal etki ve sinemasal anlatı arasındaki bu ilişkiyi derinlemesine incelemek için ideal birer örnektir. Buradan hareketle, alegori, metafor ve öteki kavramlarını göstergebilimsel bakış açısıyla anlamayı ve tartışmayı amaçlayan bu çalışmanın evrenini Emin Alper sineması; bir senarist/yönetmen olarak Emin Alper'in üretimleri ise örneklemini oluşturmaktadır. Ele alınan inşayı ve temsili, ilgili bakışla tartışmayı mümkün kılacak olan *"Tepenin Ardı"* (2012) ve *"Kurak Günler"* (2022) filmleri bu çalışmanın araştırma nesneleri konumundadır.

**Anahtar Kelimeler:** Sinema, Emin Alper Sineması, Alegori, Öteki, Göstergebilimsel Film Çözümlemesi



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# **The Use of EMDR (Eye Movement Desensitization and Reprocessing) in the Treatment of Specific Phobia (Arachnophobia): A Case Study**

## ***Özgül Fobi (Araknofobi) Tedavisinde EMDR (Göz Hareketleri ile Duyarsızlaştırma ve Yeniden İşleme) Kullanımı: Bir Olgu Sunumu***

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### **ABSTRACT**

Specific phobias are characterized by intense fear, panic feelings, and avoidance behaviors directed toward a particular object, living being, or situation, significantly impacting individuals' daily lives. In this case study, the highly generalized arachnophobia (fear of spiders) of a 49-year-old female client was addressed using EMDR (Eye Movement Desensitization and Reprocessing) therapy. The client experienced significant difficulties in her daily life due to her fear of spiders. This fear was not only triggered by actual spiders but also by the word "spider," as well as photos, silhouettes, or similar objects that evoked the idea of a spider. Within the scope of EMDR therapy, the client's core traumatic memories that caused this fear were identified and processed. The treatment was carried out over 8 sessions, and in accordance with the EMDR protocol, the goal was to desensitize the client to both traumatic memories and fear triggers. At the end of the treatment process, a significant reduction in the client's fear of spiders was achieved, and an improvement in her social life was observed. It was reported that the client responded more calmly and controlled when encountering triggers in her daily life, and her self-confidence had increased. This case study highlights the effectiveness of EMDR therapy in the treatment of specific phobias and supports the effectiveness of this method in addressing generalized phobias.

**Keywords:** Specific phobia, EDMR, Arachnophobia

### **ÖZET**

Özgül fobiler, bireylerin günlük yaşamını olumsuz olarak önemli ölçüde etkileyen, belirli bir nesne, canlı ve duruma yönelik yoğun korku, panik duyguları ve kaçınma davranışları ile karakterize edilir. Bu olgu sunumunda, 49 yaşında bir kadın danışanın oldukça genelleşmiş olan araknofobisi (örümcek korkusu) EMDR (Göz

Hareketleriyle Duyarsızlaştırma ve Yeniden İşleme) terapisiyle ele alınmıştır. Danışan, örümcek korkusu nedeniyle günlük yaşamında zorluklar yaşamaktadır. Bu korku yalnızca gerçek örümceklerle değil, örümcek kelimesiyle, örümceği çağrıştıran fotoğraf, siluet ya da benzer objelerle de tetiklenmektedir. EMDR terapisi kapsamında danışanın korkusuna neden olan temel travmatik anıları belirlenmiş ve işleme sürecine dahil edilmiştir. Tedavi 8 seans boyunca sürdürülmüştür ve EMDR protokolü doğrultusunda danışanın hem travmatik anılara hem de korku tetikleyicilerine karşı duyarsızlaştırılması hedeflenmiştir. Tedavi süreci sonunda danışanın örümcek korkusunda belirgin bir azalma sağlanmış ve sosyal hayatında iyileşme gözlenmiştir. Danışanın günlük yaşantısında tetikleyicilerle karşılaştığında daha sakin ve kontrollü bir tepki verdiği ve kendine olan güveninin arttığı rapor edilmiştir. Bu olgu sunumu, EMDR terapisinin özgül fobilerin tedavisindeki etkinliğine dikkat çekmekte ve genelleşmiş fobilerin ele alınmasında bu yöntemin etkinliğini desteklemektedir.

**Anahtar Kelimeler:** EMDR, Özgül Fobi, Araknofobi

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# **Disintermediation in Travel Distribution Channels: The New Role of Travel Agencies in the Changing Tourism Industry**

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## **ABSTRACT**

The tourism industry has been identified as the industry most directly affected by the rapid growth of the internet. The internet broke the closed and rather labyrinthine circuit of tourism, bringing the customer into direct contact with the producer. The result was the development of direct distribution channels, bypassing the traditional intermediaries (tour operators - travel agencies). Many people spoke about disintermediation in the tourism industry and predicted the end of the traditional intermediaries. In this context, the purpose of this chapter is to examine the changes brought about by the rapid growth of the internet in the operation of traditional travel agencies and the extent to which travel agencies have adapted to the new reality. In order to meet this aim, qualitative research was conducted using semi-structured, in-depth interviews with forty travel agents in Greece. The results showed that travel agencies have an unusual relationship with the internet. The internet is a threat as it can take away part of their clientele, but at the same time it creates new opportunities for business. Travel agents are investing in their online presence, while relying on their consultative role, personalized services and long-term trusting relationships with their clients to survive.

**Keywords:** disintermediation, reintermediation, travel industry, travel agencies, distribution, internet

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# **Preserving Human Dignity: The Impact of European and International Public Law on Managing Mass Graves**

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## **ABSTRACT**

Mass graves, as one of the ghastly results of atrocities and times of crisis, pose very serious questions of law and morality intersected by European and international public law. This study examines how international humanitarian law, European human rights law, and the general principles of international public law respond to the respect due to the dead in regard to the discovery, exhumation, and handling of mass graves. This study analyzes the duties imposed upon states by the Geneva Conventions, the European Convention on Human Rights, and customary international law regarding dignified treatment of the dead, identification of the deceased persons, and proper ways of performing burial ceremonies. By interpreting the nuances of European legislation on the function of forensic science and new technologies with a view to meeting legal thresholds of identification and exhumation while respecting cultural and religious traditions, the research would evaluate the challenges of balancing the evidentiary needs of war crimes tribunals with the dignity and privacy due to the deceased persons and their family members.

**Keywords:** mass graves, human dignity, post-conflict justice, genocide, migration, international law

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# The Effect of Macro-Economic Factors on Foreign Trade: The Example of Türkiye

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## **ABSTRACT**

In Turkey, foreign trade has a great share in the country's economy and development. The area and volume of foreign trade is expanding every day. However, today, the lack of necessary measures in foreign trade and inadequate incentives are narrowing the area of foreign trade. In periods of high inflation, the failure to cover costs and the failure to provide support to companies are also examples of these. In our study, the definitions of inflation, unemployment and economic growth, which are macroeconomic factors affecting foreign trade, were made, compared and the measures to be taken were specified. Foreign trade, which is expanding every day, is falling behind due to the lack of the necessary infrastructure. Macroeconomic factors are of great importance for foreign trade. Failure to take measures with the increase in inflation brings unemployment. With the increase in unemployment, sufficient production is not made in companies. In this case, serious problems arise for exporting companies. Economic growth is also affected in this way and harms the country's economy. Foreign trade and macroeconomic factors, which are interconnected like chain links, are all affected by each other. The recovery and improvement of these affected areas takes many years. Although they seem like simple problems at first, they negatively affect the country's economy, households, and companies, especially foreign trade. When we look at it today, although free trade and the lack of a quota system are ignored for easy trade, they bring with them serious problems and prepare the ground for a collapse for the country.

**Keywords:** foreign trade, inflation, unemployment, economic growth

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# The Novel *Tomorrow* by Graham Swift: Why Does It Have No Ending?

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## **ABSTRACT**

The purpose of this paper is to analyse the way in which the novel *Tomorrow* by Graham Swift, a contemporary British writer, has no ending. The analysis is done based on a reader-response criticism, which relies on the background knowledge and emotional experience of the readers towards any text and the role these two play in its interpretation. The entire story of the novel takes place during one night, and it consists of the monologue of a 49-year old mother, addressed to her two teenage children, about the secret of their birth: they were born by artificial insemination, and she feels she needs to tell them this secret and she is concerned about their reaction to it, but also to their grandmothers' reaction, if they choose to tell them in their turn. The reviews about this novel had focused on the way in which it has no suspense, and no real surprise in the end. The novel also has no ending. Readers are prompted to wonder why, and make hypotheses. The novel's having no end shows that life is not arranged like a novel, echoing Virginia Woolf, and that the mother's life had not happened according to the usual structure.

**Keywords:** reader-response criticism, literary studies, cultural studies, active reader

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## The Short Story *The Duchess and the Jeweller* by Virginia Woolf: An Analysis

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### ABSTRACT

The purpose of this paper is to analyse the short story *The Duchess and the Jeweller* by Virginia Woolf, a representative of British Modernist literature. The analysis is based on a reader-response approach, allowing knowledgeable readers to draw on their background knowledge of Woolf's works to compare this to her other one. The action surprises readers, since we are faced with characters that remind them of French writer's Guy de Maupassant's short stories, where jewellery items were part of the action, and fake vs genuine jewellery items were present. Social life, readers infer, based on their free associations with the image of the fake vs authentic jewellery items, is a matter of conventions and hypocrisy, as well as being cunning to achieve someone's self interests. We are never ourselves in society. In the end, the jewellery items make reference to both the past of the jeweller, who sold stolen dogs in his youth and cheap watches at a high price, thus deceiving the others, and to the future of the jeweller, who is sold by the duchess fake pearls, as he falls in love with Diana, her daughter, who can be a genuine jewel, figuratively.

**Keywords:** reader-response criticism, literary studies, modernism, free associations

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# **Sustainable Development Goals as a Catalyst for Forming Global Citizens in Democratic Educational Contexts**

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## **ABSTRACT**

This paper presents an educational project rooted in the principles of democratic education, designed for primary school students, which integrates selected Sustainable Development Goals (SDGs) through collaborative activities. The initiative aims to equip students with the knowledge and skills that will allow them to be global citizens, who actively engage in their communities and collaborate with others to create a more peaceful, sustainable, and equitable world.

Through diverse activities and by raising students' awareness of pressing global issues and fostering key soft skills students explore human rights topics, such as war, refugees, and child labor, aligning with SDG 16: Peace, Justice, and Strong Institutions. They collaborate on initiatives addressing climate change under SDG 13: Climate Action, and work together to protect and preserve the world's cultural and natural heritage, addressing SDG 11: Sustainable Cities and Communities. All activities are framed within the context of providing quality education that supports lifelong learning opportunities for all (SDG 4).

This project emphasizes student-centered learning, participatory decision-making, equality and inclusivity, critical thinking, creativity, and empathy, aiming at urging students to plan and act towards a sustainable future. By linking global challenges with local contexts, this educational endeavor nurtures future global citizens to contribute to a more equitable and sustainable world.

**Keywords:** UN sustainability agenda, global citizens, education within democratic frameworks, educational project



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# **Cultural Heritage, Sustainable Development Goals, and Digital Citizenship through an Interdisciplinary Learning Scenario**

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## **ABSTRACT**

This paper explores an innovative interdisciplinary learning scenario that interweaves cultural heritage, sustainable development goals (SDGs), and digital citizenship for English language teaching within a primary school setting. This scenario engages students in researching European monuments using digital tools, crafting digital brochures, and participating in online collaborative interactions. The scenario's activities aim to enhance intercultural awareness, fostering a deeper understanding and appreciation of Europe's rich cultural diversity.

By incorporating themes of cultural heritage, the current scenario promotes values of shared responsibility and mutual respect, aligning with the principles of active citizenship. Simultaneously, it strengthens students' digital literacy and equips them with essential skills for navigating an increasingly interconnected and digitalized world. Through the integration of SDGs, students are also introduced to global challenges, encouraging them to reflect on sustainable practices and their roles as global citizens.

The scenario underscores the significance of connecting language learning with broader educational goals, demonstrating how students can simultaneously develop linguistic proficiency, intercultural competence, and digital citizenship skills. This innovative scenario is implemented as an interdisciplinary one involving the combination of multiple school subjects as it is a vehicle for cultivating active and responsible future citizens capable of addressing the complexities of a globalized society.

**Keywords:** cultural legacy, UN development goals, digital citizenship, cross-disciplinary learning project, education

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## Performance of Capital Market at the Covid 19 Pandemic Period in Indonesia: Bibliometrics Approach

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### **ABSTRACT**

Covid 19 Pandemic is health crisis which cause economic crises. Many sectors of economy in Indonesia was affected by Covid 19 Pandemic include Capital Market. The development of Indonesian Capital Market has been tested through various events in history in Indonesian economy. One of these events is the global financial crisis. These challenges always have an impact on Indonesian Capital Market sentiment, including the shock of the Covid-19 pandemic. Challenges that must be faced by the Indonesian Capital Market. The government has made various efforts to protect the Indonesian Capital Market through regulation, improvement and reform of Indonesian Capital Market governance. The government is trying to improve the performance of the Indonesian Capital Market to recover and continue to increase investor confidence to maintain the confidence of investors, especially small-scale investors. paper has purposes to explain the performance of Capital Market in Indonesia at the Covid 19 pandemic period. This research uses methodology descriptive qualitative with literature review with bibliometrics analysis approach. The result of this research give comprehensive explanation about the performance of Capital Market at Covid 19 Pandemic period in Indonesia based on the explanation exposure based on the literature review which is described by bibliometrics approach.

**Keywords:** Performance, Capital Market, Covid 19 Pandemic, Indonesia, Bibliometrics

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# Working on Self-Worth with EMDR: A Case Report

## *Öz Değerin Emdr ile Çalışılması: Bir Olgu Sunumu*

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### ABSTRACT

This study focuses on the therapy process of a 33-year-old male client working in the service sector. The client sought therapy due to difficulties in romantic and interpersonal relationships. The therapy goals were defined as helping the client feel more valuable, gaining self-confidence, coping more effectively with his challenges, and establishing healthy boundaries in relationships.

Throughout his school years, the client struggled to form close relationships. Certain experiences with someone he was in love with caused him disappointment and a sense of worthlessness. He perceives himself as being taken advantage of in many romantic and close relationships but feels unable to change this pattern. The client has difficulty setting boundaries in relationships, struggles to say "no," and finds his problems overwhelming. Similar challenges are present in his workplace, contributing to low self-esteem.

The client believes that he is not worthy of love and that he is valued and loved by others only when he behaves kindly and generously. Despite numerous dating attempts, he has been unable to experience a stable relationship free of exploitation. In the workplace, his inability to say "no" results in taking on responsibilities beyond his role, causing him significant distress.

During the therapy process, the client recalled an early memory from his schoolyard as the first memory explored. This memory was closely associated with his core belief, "I am not worthy of love." Using EMDR therapy, the goal was to help the client transform this negative belief into "I am worthy of love."

After working through the first memory, the client experienced a significant reduction in the belief "I am not worthy of love" and began to adopt the belief "I am worthy of love" to a greater extent. Through the therapy process, the client felt more valuable, realized his worthiness of love, and understood that he could maintain relationships with healthy boundaries.

This case presentation highlights the effectiveness of EMDR therapy in reprocessing and transforming negative self-beliefs into adaptive ones.

**Keywords:** EMDR, self-esteem, self-compassion, self-confidence, self-worth, boundary-setting, trauma.

## ÖZET

Bu çalışmada 33 yaşında hizmet sektöründe çalışan erkek bir danışanla gerçekleştirilen terapi süreci ele alınmıştır. Danışan terapiye romantik ilişkilerinde ve kişiler arası ilişkilerde yaşadığı sorunlar nedeniyle başvurmuştur. Terapi hedefi kendini daha değerli hissetmek, kendine güvenmek, yaşadığı sorunlarla daha kolay başa çıkmak ve insanlarla sağlıklı sınırlar koymaktır.

Danışan okul hayatı boyunca yakın ilişkiler kurmakta zorlanmıştır, âşık olduğu kişi ile yaşadığı bazı anılar onda hayal kırıklığına neden olmuş ve kendini değersiz hissetmesine neden olmuştur. Danışan birçok romantik ilişkide ya da yakın ilişkide kullanıldığını düşünmektedir. Fakat bu durumun önüne bir türlü geçemediğini ifade etmiştir. İlişkilerde sınırlar koymakta zorlanmaktadır. Hayır demekte zorlanmakta ve sorunlar onun için içinden çıkılmaz bir durum almaktadır. İş yerinde de benzer sorunlar sürmekte ve bu durum onda düşük özsaygıya neden olmaktadır. Danışan sevmeye layık olmadığını, yalnızca insanlara iyi davrandığında, her zaman verici olduğunda başkaları tarafından değer gördüğüne, sevildiğine inanmaktadır. Birçok flört denemesi olmakta ama istikrarlı bir ilişki, sömürülmediği bir ilişkiyi bir türlü deneyimleyememektedir. İş yerinde de hayır diyememe sorunu nedeniyle sorumlu olduğundan fazla iş yapmaktadır ve bundan çok rahatsız olmaktadır.

Terapi sürecinde danışan ilk anısı olarak okul bahçesinde yaşadığı bir anıyı getirmiştir. Bu anı danışanın "Ben sevmeye layık değilim" inancıyla ilişkilidir. EMDR terapisiyle, danışanın bu olumsuz inancı "Ben sevmeye layığım " şeklinde dönüştürmesi amaçlanmıştır.

İlk anıyı çalıştıktan sonra " Ben sevmeye layık değilim" inancı önemli ölçüde azalmıştır ve danışan "Ben sevmeye layığım" inancına daha çok sahip olmuştur. Terapi sürecinde danışan kendini daha değerli hissetmiş, sevmeye layık olduğunu, sağlıklı sınırlarla da ilişkilerini yürütebileceğini görmüştür.

Bu olgu sunumu, EMDR terapisinin olumsuz kendilik inançlarının yeniden işlenmesi ve adaptif bir şekle dönüştürülmesinde etkinliğini vurgulamaktadır.

**Anahtar Kelimeler:** EMDR, özsaygı, öz şefkat, özgüven, öz değer,sınır koymak, travma

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## **EFL Instructors' Perceptions of ICC (Intercultural Communicative Competence) in Türkiye Context**

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### **ABSTRACT**

As a result of globalization in communication and the status of English as a lingua franca, educational institutions are expected to provide an interculturally inclusive teaching environment where language teachers foster welcoming and culturally responsive language teaching. Therefore, this study aims to explore EFL instructors' perceptions on ICC and examine their culture-related practices in their classes in preparatory schools at universities in Ankara, Türkiye. Designed as quantitative research, the study utilizes an ICC Exploration Survey to collect data. The survey bases its questions on Byram's ICC Model (1997) as the theoretical framework of the study. The data are analyzed through SPSS to conduct a descriptive analysis. It is aimed to reveal significant results to guide language instructors and those who learn more about ICC in EFL education while raising awareness of it and encouraging the implementation of culture in language teaching. The findings reveal that teachers highly value cultural diversity and have culturally sensitive perceptions of ICC while they frequently incorporate cultural experiences and diverse culture-related activities. It is believed that this paper will have some implications for EFL teachers, instructors, learners, as well as materials developers to maintain an emphasis on ICC awareness.

**Keywords:** English Language Teaching, Intercultural Communicative Competence (ICC), culture

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# **The Jaganmohan Community and the Influence of Their Akhara Culture in Habiganj, Bangladesh**

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## **ABSTRACT**

Community-based religious practice is very common in the Indian subcontinent where a group of people practices a unique and distinct culture to spread their faith and belief system. These specific communities are distinct and unique according to their rituals and architectural ideology. The Jaganmohan Community in Habiganj, Bangladesh is considered the root of several spiritual theories. It's been a long time since they have preached from their main temple complex in Habiganj. Their influential culture and its impact on the main temple complex is a major issue of this research, for instance, how their traditions and spirituality shaped the entire temple complex is one of the major concerns of the study. Another purpose of this research is to investigate the Jaganmohan community, its impact on the surrounding infrastructure, and the influential Akhara culture in Bangladesh. The study deeply analyzes the lifestyle and cultural practices of the community. The study also discusses the community's impact on the local businesses and economy.

**Keywords:** Akhara, Jaganmohan Community, Culture, Temple-Complex, Brithangal Boro Akhara, Habiganj

**Determination of Metaphorical perceptions of students  
Learning Turkish as a Foreign Language towards Turkish  
*Yabancı Dil Olarak Türkçe Öğrenen Öğrencilerin Türkçeye  
Yönelik Metaforik Algılarının Belirlenmesi***

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## ABSTRACT

In order to make teaching more effective in foreign language teaching process, researches are conducted to determine students' perceptions and attitudes towards language. Determining students' metaphorical perceptions has an important place among these studies. The aim of this study is to determine the metaphorical perceptions of students who learn Turkish as a foreign language towards the concept of 'Turkish'. The study group of the research consists of 32 students who are learning Turkish at levels B1 and above in Yunus Emre Institute in 2024. Phenomenological design, one of the qualitative research methods, was used in the study. The data of the study were obtained by the students filling in the blanks in the statement 'Turkish is like ....., because .....' three times. As a result of the research, the metaphors produced by the students for the concept of 'Turkish' were categorised according to their common characteristics. It was seen that the metaphors were concentrated on natural beauties such as 'flower', 'tree', 'sun', 'star' and concepts related to art such as 'music', 'series', 'film', 'song', 'orchestra'. In addition, metaphors expressing family and sincerity such as 'mother', 'child', 'friend' and 'friend' were also identified. Based on the results of the research, it can be said that students have positive feelings towards Turkish.

**Keywords:** Language Teaching, Teaching Turkish as a Foreign Language, Turkish, Metaphor

## ÖZET

Yabancı dil öğretim sürecinde öğretimin daha etkili olmasını sağlamak amacıyla öğrencilerin dile karşı algı ve tutumlarını belirlemeye yönelik araştırmalar yapılmaktadır. Bu araştırmalar arasında öğrencilerin metaforik algılarının tespit edilmesi de önemli bir yere sahiptir. Bu çalışmanın amacı, yabancı dil olarak Türkçe öğrenen öğrencilerin “Türkçe” kavramına yönelik metaforik algılarının

belirlenmesidir. Araştırmanın çalışma grubunu Yunus Emre Enstitüsünde, 2024 yılında, B1 ve üstündeki seviyelerde Türkçe öğrenmekte olan 32 öğrenci oluşturmaktadır. Araştırmada nitel araştırma yöntemlerinden biri olan fenomenoloji deseni kullanılmıştır. Araştırmanın verileri öğrencilerin üç kez “Türkçe ..... gibidir, çünkü .....” ifadesindeki boşlukları doldurmasıyla elde edilmiştir. Araştırma sonucunda öğrencilerin “Türkçe” kavramına yönelik ürettiği metaforlar sahip olduğu ortak özelliklerine göre kategorilere ayrılmıştır. Metaforların “çiçek”, “ağaç”, “güneş”, “yıldız” gibi doğa güzellikleri ve “müzik”, “dizi”, “film”, “şarkı”, “orkestra” gibi sanatla ilgili kavramlar üzerinde yoğunlaştığı görülmüştür. Ayrıca aile ve samimiyeti ifade eden “anne”, “çocuk”, “arkadaş”, “dost” gibi metaforlar da tespit edilmiştir. Araştırma sonuçlarından hareketle öğrencilerin Türkçeye karşı olumlu duygulara sahip olduğu söylenebilir.

**Anahtar Kelimeler:** Dil Öğretimi, Yabancı Dil Olarak Türkçe Öğretimi, Türkçe, Metafor



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# **Innovative Initiatives in Destination Management to Achieve Sustainable Tourism Development**

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## **ABSTRACT**

Innovation in tourism destinations is generally more challenging than in tourism businesses due to the involvement of numerous stakeholders in the development process. This fragmentation makes it harder to coordinate efforts. However, fostering innovation in tourism destinations is crucial for promoting sustainable development. This paper looks at the actions taken by a public organization in a rising tourist destination to support sustainable tourism development. The Tourism Department of the Municipality of Veria, Greece has implemented various initiatives to boost the destination's local culinary identity, enhance collaboration between stakeholders, achieve economies of scale, and increase its overall value. Efforts also include embracing digital transformation and expanding the use of digital media to promote the destination. Additionally, innovative strategies have been developed to create new tourism products and ensure the resilience of both the destination and local tourism businesses in the wake of the COVID-19 pandemic. These initiatives aim to help the area recover economically and prepare for future tourism opportunities. Even though all examples may not apply to every destination, these strategies offer valuable insights for similar tourism destinations. They also highlight key factors that Destination Management Organizations (DMOs) could take into account for their own sustainable development plans.

**Keywords:** innovation, destination management, gastrodiploacy, resilience, tourism awareness, digital transformation

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## Similar Approaches to Woman in Talmud and Hadith Narratives

### *Talmud ve Hadis Rivayetlerinde Kadına Dair Benzer Yaklaşımlar*

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#### **ABSTRACT**

We know that the oral religious tradition, both in Jewish and Muslim societies, has taken its place immediately after the Holy Books as the primary sources for interpreting revelation. In practice, the narrations in these sources have mostly found a solid place in the religious tradition without the need to question their accuracy. When we look at the narratives on women in particular, we see that - despite the unity of essence in the creation of man in the Quran and In the Holy Bible, despite the unity of purpose in the creation of man, we see that women are repositioned in the background, not from the perspective of the Creator, but from the perspective of men. Here, we present a comparative study aimed at correctly understanding the fundamental sources of religion that make humanbeing, women and men, responsible for the construction of a good world together.

**Keywords:** woman, religious tradition, Talmud, Hadith

#### **ÖZET**

Sözlü dinî geleneğin gerek Yahudi gerek Müslüman toplumlar içerisinde, vahyin yorumlandığı temel kaynaklar olarak Kutsal Kitapların hemen ardından yerini aldığını biliriz. Uygulamada ise çoğunlukla bu kaynaklardaki rivayetler, doğruluğu sorgulanmaya ihtiyaç duyulmadan dinî gelenek içinde kendisine sağlam bir yer bulmuştur. Bunların içerisinde özellikle kadın konusundaki anlatımlara bakıldığında -Kur'an'da insanın yaratılışındaki öz birliğine ve Kutsal Kitapta insanın dünyaya indirilişteki amaç birliğine rağmen- kadının Yaraticının değil de erkeğin gözünden adeta yeniden ve geri planda konumlandırıldığını görürüz. Burada, İnsanı kadın ve erkek birlikte iyi bir dünyanın inşasında me'mur kılan dinin temel kaynaklarını doğru anlamaya yönelik karşılaştırmalı bir çalışma sunuyoruz.

**Anahtar Kelimeler:** Kadın, Dini Gelenek, Talmud, Hadis

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# Verbal Errors of Romanian Learner English: Causes and Solutions

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## **ABSTRACT**

Globally, at least one billion learners of all ages are studying English, the language of diplomacy, tourism, and mass media. Romanian learners fit the universal learner profile, choosing to increase their exposure to English for long-term benefits such as access to education abroad and better job opportunities.

Even for highly motivated individuals, the process of learning English is long and arduous. Grammatical errors frequently occur in the learning process among Romanian learners of English, reflecting deviations from morphological and syntactic norms. The causes of these errors can be attributed to three main factors: interference from the native language, excessive generalization, and insufficient exposure to the target language. As a result, Romanian learners' English often involves the incorrect use of verbs in various contexts, such as confusion between the simple present and present continuous, confusion between the past simple and present perfect, incorrect conjugation of third-person singular verbs, improper use of gerunds and infinitives, incorrect use of the auxiliary verb "do" in questions and negations, and misuse of modal verbs.

This study aims to analyze the verbal errors made by Romanian learners while studying English and to propose potential solutions to help them correct and avoid these errors in the future.

**Keywords:** Romanian learner English; verbal errors, language interference, causes of errors, solutions, error analysis

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# Spiritual Counseling's Yesterday and Today

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## **Abstract**

In our age, human beings are drowning in an ever-increasing number of problems and face various spiritual and spiritual problems in the face of the difficulties they face. In problems where material medicine is insufficient, they are always looking for a guide and a hand that will save them from the vortex they have fallen into. Spiritual counseling and guidance, which emerged mostly in the West in the last century and has recently attracted attention in our country, is an important field that will come to the aid of human beings. For this reason, a good understanding of the concept of spiritual counseling and guidance plays a remarkable role in determining the ways and methods of its contributions to people and thus to society. In this context, firstly, the concepts of spirituality and spiritual counseling were defined in our study; after giving information about the historical process of spiritual counseling and guidance in the world, the development stages in our country were mentioned. Finally, the spiritual counseling and guidance services provided in the West and in our country are mentioned.

**Keywords:** Psychology of Religion, Spiritual Counseling and Guidance, Spirituality, Religion.

## **Özet**

Çağımızda giderek artan sorunlar yumağı içinde boğulan insanoğlu, karşılaştığı zorluklara karşı çeşitli manevi ve ruhsal problemlerle de karşı karşıya gelmektedir. Maddî tıbbın yetersiz kaldığı sorunlarda daima bir yol gösterici ve düştüğü girdaptan kurtarılmasını sağlayacak bir el aramaktadır. Geçtiğimiz yüzyılda daha çok Batı'da ortaya çıkan ve son dönemde de ülkemizde ilgi görmeye başlayan manevi danışmanlık ve rehberlik, insanoğlunun yardımına koşacak önemli bir alandır. Bu nedenle manevi danışmanlık ve rehberlik (MDR) kavramının iyi anlaşılması, insanlara ve dolayısıyla da topluma sunacağı katkıların yol ve yöntemlerinin belirlenmesinde de dikkat çekici bir rol oynamaktadır. Bu bağlamda çalışmamızda öncelikle maneviyat ve manevi danışma kavramlarının tanımı yapılmış; manevi danışma ve rehberlik alanının dünyadaki tarihî süreciyle ilgili bilgi verildikten sonra ülkemizdeki gelişim aşamalarına değinilmiştir. Son olarak günümüzde Batı'da ve ülkemizde verilen manevi danışmanlık ve rehberlik hizmetlerinden bahsedilmiştir.

**Anahtar Kelimeler:** Din Psikolojisi, Manevi Danışmanlık ve Rehberlik, Maneviyat, Din.

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# The Integration of Gender Identity in Social Work Education: Ethical and Deontology

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## **Abstract**

The integration of gender identity in social work education is a multifaceted challenge that demands a thoughtful, principled, and comprehensive approach.

By grounding this work in ethical considerations of autonomy, beneficence, non-maleficence, and justice, as well as a deontological commitment to the profession's core values, social work educators can (Yan et al., 2021) (Franco, 2020) cultivate a more inclusive, equitable, and transformative educational experience for all students.

Building on the ethical and deontological foundations established in the previous sections, the integration of gender identity in social work education should also be informed by (Simon et al., 2021) a critical examination of intersectionality and the ways in which multiple, intersecting identities and systems of oppression impact the experiences and outcomes of gender diverse individuals.

To fully integrate gender identity into social work education, it is essential to foster a "brave space" within the classroom and curriculum that encourages critical reflection, dialogue, and a willingness to engage with discomfort and (Simon et al., 2021) challenge existing power structures.

**Keywords:** Gender Identity, Social Work, Education, Ethics, Deontology

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## **Towards a Deeper Understanding of Global Economic Processes**

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### **ABSTRACT**

The economic turmoil that is shaking the world or the poverty from which some countries are unable to extricate themselves calls for new scientific research in the field of economics. One way is a deeper understanding of economics and money. It is essential to understand that the economy can be of two kinds, that is, it can be a closed and an open economy. In closed economies there is no money. Open economies, on the other hand, involve the use of money. The power of money in two countries is theoretically the same (parity) when, say, no one in one country buys anything from the other country and, at the same time, no one in that country buys anything from the other country. Therefore, the power of money is measured by the money of each country divided by the balance between buying and selling. Naturally, all selling implies buying and the opposite.

**Keywords:** economy, many, economic crises, scientific research.

# Science and Engineering



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# **Model for Predicting Density and Viscosity of CO<sub>2</sub> for Enhanced Gas Recovery and Carbon Sequestration in Depleted Gas Reservoir: A Case study of Niger-Delta Formation**

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## **ABSTRACT**

In response to United Nations Paris Agreement of 2050 Carbon Neutrality Goal and in compliance with Kyoto Protocol on Clean Development Mechanism (CDM), all hands must be on deck to achieve these goals, including Niger-Delta region of Nigeria. No mathematical correlation in place for predicting density and viscosity of supercritical carbon-dioxide (CO<sub>2</sub>) for Enhanced Gas Recovery-Carbon Capture and Sequestration (EGR-CCS). Three categories of mathematical correlations were developed by Split Regression Analytical method (SRA) and validated using Equation of State Models (EOS-M) for predicting density and viscosity of pure carbon-dioxide under supercritical conditions at varying reservoir depths. The models ranges from reservoir depths of 1000 -5000m which are ideal for EGR-CCS projects. The new "NDF-Model" matched with Peng Robinson and Soave-Redlich-Kwong Equation of States (EOS) at the tested reservoir conditions showing low Absolute Average Deviation (AAD) with the EOS models. Application of the new models on four gas reservoirs (Res.1, Res.2, Res.3 & Res.4) in Niger-Delta Formation (NDF) shows encouraging Relative Density Difference (RDD) and Relative Viscosity Difference (RVD). The RDD and RVD of "Carbon-dioxide on Natural Gas" ranges from 65.28-80.22% and 59.02-76.82% respectively, which promises smoother displacement of natural gas by CO<sub>2</sub> during Enhanced Gas Recovery.

**Keywords:** Model, Density, Viscosity, Enhanced Gas Recovery, CO<sub>2</sub> sequestration, Equation of state.



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## Blood Flow in Stenotic Vessels

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### ABSTRACT

This paper presents an experimental study of the laminar flow of a non-Newtonian blood through 75% (by area reduction) stenotic tubes. The blood fluid behaviour was described by the Herschel Bulkey non-Newtonian model. The blood fluids were aqueous solutions of 0.1% Carbopol 940. Upstream flow conditions were steady and spanned a range of generalized Reynolds numbers  $Reg$  from 0.20 to 13.66. The velocity profiles were measured with a Laser Doppler Anemometry (LDA). This study allows us to see locally the influence of the geometry and the non-Newtonian character of the fluid on the velocity profiles, the pressure drops and flow resistance. From the experimental data, the frictional resistance decreases with increasing generalized Reynolds number  $Reg$  and resistance gave a weak value in a stenotic tube as compared to the flow in a simple tube. At the level of stenosis, a correlation relating of the Euler number to the generalized Reynolds number is developed. To compare the upstream and downstream parts of the stenosis, it is preferable to represent the pressure drops by the friction factor  $f$ . This friction factor ( $f$ ) decreases linearly with the generalized Reynolds number  $Reg$  both upstream and downstream.

**Keywords:** Blood, Non-Newtonian, Stenosis, LDA, Pressure Drop

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# Transformation from Traditional To Contemporary Techniques in Sand Filter Bed: A Review

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## **ABSTRACT**

Sand filter beds have been a cornerstone of water filtration for decades, employing a traditional technique of using sand as the primary filtering medium. However, recent advancements in materials technology have revolutionized the efficiency and sustainability of the systems. The present study explores the transformation of sand filter beds, starting with the traditional technique and then delving into the cutting-edge materials and technologies that have emerged. The traditional technique involves using layers of sand to physically trap suspended particles and impurities from water as it flows through the filter bed. While effective, this method has limitations in terms of filtration efficiency, maintenance requirements, and environmental impact. Advancements in materials technology have introduced a range of innovative filter media, including synthetic materials, nanostructured compounds, hybrid media, and smart materials. These materials offer enhanced particle capture, longer lifespan, improved adsorption capabilities, and reduced fouling, leading to more efficient and sustainable sand filter beds. Key areas of research include understanding the long-term performance and durability of new filter media, optimizing filter bed designs for specific contaminants, integrating smart technologies for real-time monitoring and control, and assessing the environmental impact and sustainability of advanced materials to overcome a research gap between traditional and advanced sand filter bed technologies. Addressing the research gap is crucial for further advancing the technology, enhancing water quality, reducing maintenance costs, and promoting environmental sustainability in water treatment systems.

**Keywords:** Sand filter bed, Materials, Applications, Mechanism

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# Effects of Magnetic Field and Structural Parameters on Multi-Photon Absorption Spectra in Morse Quantum Wells with Electron-phonon Interactions

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## ABSTRACT

This study presents a systematic theoretical exploration of multi-photon nonlinear optical absorption in quantum wells (QWs) with a Morse confinement potential under magnetic field influence. Using stationary states from electron confinement in Morse QWs and Landau levels, derived through the effective mass approximation by solving the Schrödinger equation, we calculated the optical absorption power with multi-photon absorption (MPA) using second-order perturbation theory. The model includes electron-phonon interactions, addressing both optical and acoustic phonon mechanisms in the MPA process. Results indicate that one-photon absorption (1PA) peaks are larger and appear to the right of two-photon (2PA) peaks, while 2PA peaks similarly occur rightward of three-photon (3PA) peaks, with resonance peak positions following the magneto-phonon resonance condition and remaining unaffected by temperature. Increasing magnetic field strength and aluminum concentration shifts the absorption spectra to the blue, while a wider QW produces a red shift. These variables, along with thermal excitation, also impact peak intensity and full width at half maximum (FWHM), where increased magnetic field and aluminum concentration enlarge the FWHM, while wider QWs reduce it. Highlighting the role of nonlinear absorption (2PA, 3PA) in optical absorption analysis, this Morse QW model reveals promising magneto-optical properties with potential for optoelectronic applications.

**Keywords:** Morse quantum wells, multi-photon absorption spectra, electron-phonon interactions

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# Metabolic Engineering of *S. Cerevisiae* to Produce Taxadiene

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## ABSTRACT

**Background:** Metabolic engineering enables the sustainable and cost-efficient production of complex chemicals. Efficient production of terpenes in *Saccharomyces cerevisiae* can be achieved by recruiting an intermediate of the mevalonate pathway. The present study aimed to evaluate the engineering strategies of *S. cerevisiae* for the production of taxadiene, a precursor of taxol, an antineoplastic drug. **Result:** SCIGS22a, a previously engineered strain with modifications in the mevalonate pathway (MVA), was used as a background strain. This strain was engineered to enable a high flux towards farnesyl diphosphate (FPP) and the availability of NADPH. The strain MVA was generated from SCIGS22a by overexpressing all mevalonate pathway genes. Combining the background strains with 16 different episomal plasmids, which included the combination of 4 genes: tHMGR (3-hydroxy-3-methylglutaryl-CoA reductase), ERG20 (farnesyl pyrophosphate synthase), GGPPS (geranyl diphosphate synthase) and TS (taxadiene synthase) resulted in the highest taxadiene production in *S. cerevisiae* of 528 mg/L.

**Conclusion:** Our study highlights the critical role of pathway balance in metabolic engineering, mainly when dealing with toxic molecules like taxadiene. We achieved significant improvements in taxadiene production by employing a combinatorial approach and focusing on balancing the downstream and upstream pathways. These findings emphasize the importance of minor gene expression modification levels to achieve a well-balanced pathway, ultimately leading to enhanced taxadiene accumulation.

**Keywords:** *S. cerevisiae*, taxadiene, genetic engineering

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# Neuro-psychological Onterpretation of Mathematical Results Reported in case of Continuous-time Hopfield Neural Networks. Part.1.

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## **ABSTRACT**

In this paper, for the mathematical description of electrical phenomena (voltage state) appearing in nervous system, continuous-time Hopfield neural network is used. The equilibriums of the continuous-time Hopfield neural network are interpreted as equilibriums of the nervous system. An equilibrium for which the steady state is locally exponentially stable is interpreted as robust equilibrium of the nervous system. That is because a small perturbation of steady voltage, the network recover the steady voltage. A path of equilibrium states which steady states are locally exponentially stable is interpreted as a path of robust equilibriums of the nervous system. This is a way to follow in healthcare for conduct the nervous system from a pathologic robust equilibrium into in a non-pathologic robust equilibrium. For illustration, path of robust equilibriums to follow in nervous control is computed.

**Keywords:** continuous-time Hopfield neural network; nervous system; robust equilibrium; fragile equilibrium, repulsive equilibrium, nervous system control.

**MSC:** 37B25; 62M45; 65P20; 92B20.

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# Neuro-psychological Onterpretation of Mathematical Results Reported in case of Continuous-time Hopfield Neural Networks. Part. 2.

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## **ABSTRACT**

In this paper, for mathematical descriptions of electrical phenomena (voltage state) appearing in nervous system discrete-time Hopfield neural network is used. The equilibrium states of a discrete-time Hopfield neural network are interpreted as equilibriums of the nervous system. An equilibrium state for which the steady state is locally exponentially stable is interpreted as robust equilibrium of the nervous system. That is because after a small perturbation of the equilibrium steady state the network recover the equilibrium. A path of equilibrium states for which the steady states are locally exponentially stable is interpreted as a path of robust equilibriums of the nervous system. This is a way to follow in healthcare for transfer gradually the nervous system from a pathologic robust equilibrium into a non-pathologic robust equilibrium. For illustration, computed way of transfer is presented.

**Keywords:** discrete-timeHopfield type neural networks; nervous system; robust equilibrium; nervous system control.

**MSC:** 37B25; 62M45; 65P20; 92B20.

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# Biosynthesis of Copper Oxide Nanoparticles and Determination of Their Antioxydant and Photocatalytic Properties

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## ABSTRACT

Nanoparticles are getting great attention of researchers due to its unique properties and usage of same in all the scientific fields. The present study was aimed to the synthesis of copper oxide nanoparticles using *Eucalyptus globulus* L. leaf extracts via green synthetic pathway and evaluate its antioxidant and photocatalytic activity. The formation of CuO-NPs has been confirmed by UV-Visible, FTIR and XRD analysis. The total phenolic content (TPC) of aqueous extract of *Eucalyptus globulus* L. was determined using Folin-Ciocalteu method. However, the aluminum chloride colorimetric assay was used for the quantitation of total flavonoid content (TFC). The results showed that extract possess high levels of phenolics compounds (350  $\mu\text{gAGE/mgE}$  (TPC) and 270  $\mu\text{gQE/mgE}$  (TFC)) which can be a potential reducing and stabilizing agents for the CuO-Nanoparticles synthesized. The examination of antioxydant properties using the DPPH free radical scavenging method, revealed the presence of a strong activity of extract and CuO-NPs with  $\text{IC}_{50} = 0.14 \text{ mg/mL}$  and  $\text{IC}_{50} = 0.27 \text{ mg/mL}$ , respectively. The photocatalytic study was performed for the degradation of methylene blue with solar energy. The results indicate that CuO-NPs degrades about 80 % of the methylene blue dye in time span of about 120 min.

**Keywords:** Copper oxide NPs, *Eucalyptus globulus*, antioxydant, photocatalytic

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# Synthesis and Characterization of Ibuprofen complex with Cu(II)-ion

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## ABSTRACT

Ibuprofen (isobutylphenyl propionic acid) is one of the most commonly used non-steroidal anti-inflammatory drugs and has been used for many years in the treatment of diseases such as rheumatoid arthritis. Interactions between molecules and metals provide various possibilities of influencing their properties. Metal ions in combination with NSAIDs have an advantage over the drug molecules themselves. The complex of Cu(II) ions with ibuprofen was synthesized and characterized. FTIR, UV-Vis and optical microscopy confirm the positive action of the metal with the isobutylphenyl propionic acid molecule. The  $^1\text{H}$  NMR method confirms the complex between the molecule and the metal.

**Keywords:** complex, Ibuprofen, metal, Cu(II)-ion, FTIR,  $^1\text{H}$  NMR



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# Ferroresonance Analysis and Artificial Intelligence Based Detection in Electrical Power Systems

## *Elektrik Güç Sistemlerinde Ferrerezonans Analizi ve Yapay Zeka Tabanlı Tespiti*

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### **ABSTRACT**

Ferroresonance is of serious importance in electrical power systems. It is a complex and harmful event, particularly encountered in high-voltage electrical power systems, that can lead to severe failures. This event can cause voltage and current fluctuations in the system, resulting in equipment damage, prolonged downtime, and energy losses. Ferroresonance occurs due to the magnetic saturation of ferromagnetic cores and the influence of components approaching the resonant frequency in the system. These phenomena in high-voltage systems can damage equipment, particularly transformers and capacitors.

The effects of ferroresonance include equipment failures, system outages, and energy losses. Timely detection of such events is critical to ensuring system security. While traditional methods are insufficient, approaches such as artificial intelligence (AI)-based techniques, machine learning, deep learning, and time series analysis offer effective solutions for early diagnosis of ferroresonance events. By analyzing anomalies in the system, AI methods can predict the occurrence of ferroresonance and detect possible failures in advance. In this study, three artificial intelligence (AI) based techniques such as K-Nearest Neighbor (KNN), Support Vector Machines (SVM) and Long Short-Term Memory (LSTM) networks were applied to detect and analyze ferroresonance events in power systems. The main objective of the study was to examine the effectiveness of these machine learning models in detecting ferroresonance events based on real-time voltage and current data.

A set of simulated power system data representing normal and ferroresonance states were used in the training and testing processes of each model. KNN was selected as the base classifier due to its ability to obtain effective results with small and medium-sized data sets. SVM was used to handle more complex cases of ferroresonance with its nonlinear data classification ability. LSTM was applied to predict dynamic and evolving ferroresonance events, especially with its ability to learn long-term dependencies in time series data.

**Keywords:** Ferroresonance detection, ferroresonance effect, ferroresonance Modeling, ferroresonance analysis, artificial intelligence

## ÖZET

Elektrik güç sistemlerinde ferrerezonans olayı ciddi önem arz etmektedir. Özellikle yüksek gerilimli elektrik güç sistemlerinde karşılaşılan ve ciddi arızalara neden olabilen karmaşık ve zararlı bir olaydır. Bu olay, sistemdeki gerilim ve akım dalgalanmalarına yol açarak, ekipman hasarlarına, arıza sürelerinin uzamasına ve enerji kayıplarına sebep olabilir. Ferrerezonans, ferromanyetik çekirdeklerin manyetik doygunluğa ulaşması ve sistemde rezonans frekansına yaklaşan bileşenlerin etkisiyle ortaya çıkar. Yüksek gerilim sistemlerdeki bu olgular, özellikle transformatörler ve kondansatörler gibi ekipmanlara zarar verir.

Ferrerezonansın etkileri arasında ekipman arızaları, sistem kesintileri ve enerji kayıpları bulunur. Bu tür olayların zamanında tespit edilmesi, sistemin güvenliğini sağlamak için kritik öneme sahiptir. Geleneksel yöntemler yetersiz kalırken, yapay zeka(YZ) tabanlı teknikler, makine öğrenmesi, derin öğrenme ve zaman serisi analizi gibi yaklaşımlar, ferrerezonans olaylarının erken teşhisi için etkili çözümler sunmaktadır. YZ yöntemleri, sistemdeki anormallikleri analiz ederek, ferrerezonansın oluşumunu tahmin edebilir ve olası arızalar önceden tespit edilebilir.

Bu çalışmada, güç sistemlerinde ferrerezonans olaylarını tespit etmek ve analiz etmek amacıyla K-En Yakın Komşu (KNN), Destek Vektör Makineleri (SVM) ve Long Short-Term Memory (LSTM) ağları gibi üç yapay zeka (YZ) tabanlı teknik uygulanmıştır. Çalışmanın temel amacı, bu makine öğrenmesi modellerinin, gerçek zamanlı voltaj ve akım verilerine dayalı olarak ferrerezonans olaylarını tespit etme etkinliğini incelemektir.

Normal ve ferrerezonans durumlarını temsil eden bir dizi simüle edilmiş güç sistemi verisi, her modelin eğitim ve test süreçlerinde kullanılmıştır. KNN, küçük ve orta büyüklükteki veri setleriyle etkili sonuçlar elde edebilmesi nedeniyle temel sınıflandırıcı olarak seçilmiştir. SVM, doğrusal olmayan veri sınıflandırma yeteneği ile ferrerezonansın daha karmaşık durumlarını ele almak için kullanılmıştır. LSTM, zaman serisi verilerindeki uzun vadeli bağımlılıkları öğrenme yeteneği ile özellikle dinamik ve gelişen ferrerezonans olaylarını tahmin etmek için uygulanmıştır.

**Anahtar Kelimeler:** ferrerezonans tespiti, ferrerezans etkisi, ferrerezonans modelleme, enerji şebekesi kararlılığı, ferrerezonans analizi, yapay zeka

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# Artificial Intelligence Based Busbar Differential Protection System

## *Yapay Zeka Tabanlı Bara Diferansiyel Koruma Sistemi*

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### ABSTRACT

Supporting the busbar differential protection system with artificial intelligence (AI) has the potential to significantly increase the safety and efficiency of energy systems. While traditional protection systems detect abnormalities on the busbar by measuring specific current differences, these systems often rely on fixed settings and limited data analytics. As the complexity of electrical networks increases, more dynamic and adaptable solutions are needed. With the introduction of AI technologies, protection systems not only detect instantaneous faults, but also have a predictive capability that allows future faults to be predicted in advance. This enables the system to be managed more proactively and contributes to minimizing power outages by preventing faults before they occur. AI can collect and analyze large amounts of data from energy systems using machine learning and deep learning algorithms. This data continuously learns the normal operating conditions of the system and can quickly detect abnormal situations. In addition, AI-based systems can be adapted to the needs of different transformer substations thanks to real-time data analysis and customizable algorithms. As a result, it is possible to maximize the reliability of the system by increasing the sensitivity and flexibility of busbar differential protection systems, especially in large power plants and industrial facilities. Artificial intelligence also analyzes past fault records to predict how similar situations may occur in the future and thus can detect busbar faults.

**Keywords:** busbar systems, protection systems, differential protection, energy systems, reliability and efficiency, artificial intelligence

### ÖZET

Bara diferansiyel koruma sistemini yapay zeka (YZ) ile desteklemek, enerji sistemlerinin güvenliğini ve verimliliğini önemli ölçüde artırma potansiyeline sahiptir. Geleneksel koruma sistemleri, belirli akım farklarını ölçerek bara üzerindeki anormallikleri tespit ederken, bu sistemler genellikle sabit ayarlara ve sınırlı veri analitiğine dayanır. Elektrik şebekelerinin karmaşıklığı arttıkça, daha dinamik ve uyarlanabilir çözümlere ihtiyaç duyulmaktadır. Yapay zeka teknolojilerinin devreye girmesiyle, koruma sistemleri yalnızca anlık arızaları tespit etmekle kalmaz, aynı zamanda gelecekteki arızaların önceden tahmin

edilmesine olanak tanıyan bir öngörü yeteneğine de sahip olur. Bu, sistemin daha proaktif bir şekilde yönetilmesini sağlar ve arızaların meydana gelmeden önce engellenmesi yoluyla enerji kesintilerinin en aza indirilmesine katkıda bulunur. Yapay zeka, makine öğrenimi ve derin öğrenme algoritmalarını kullanarak enerji sistemlerinden büyük miktarda veri toplayabilir ve analiz edebilir. Bu veriler, sistemin normal çalışma koşullarını sürekli olarak öğrenir ve olağan dışı durumları hızlı bir şekilde tespit edebilir. Ayrıca, yapay zeka tabanlı sistemler, gerçek zamanlı veri analizi ve özelleştirilebilir algoritmalar sayesinde farklı trafo merkezlerinin ihtiyaçlarına göre uyarlanabilir. Sonuç olarak özellikle büyük enerji santralleri ve endüstriyel tesislerde, bara diferansiyel koruma sistemlerinin hassasiyetini ve esnekliğini artırarak, sistemin güvenilirliğini en üst düzeye çıkarmak mümkündür. Yapay zeka ayrıca, geçmişteki arıza kayıtlarını inceleyerek gelecekte benzer durumların nasıl oluşabileceğini öngörür ve böylece bara arıza tespitinde bulunabilir.

**Keywords:** bara sistemleri, koruma sistemleri, diferansiyel koruma, enerji sistemleri, güvenilirlik ve verimlilik, yapay zeka

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# Comparison of Techniques that Increase RSA Speed

## *RSA Hızını Artıran Tekniklerin Kıyaslanması*

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### **ABSTRACT**

The RSA algorithm is one of the most widely used asymmetric encryption algorithms. This algorithm, which was developed about half a century ago and has been frequently used in daily life, especially in recent years, is based on the difficulty of factoring the number obtained from the product of two large prime numbers, and basically consists of key generation, encryption and decryption steps. In the key generation step, two different keys are obtained, the public key and the private key. The step of obtaining the keys is very important because it directly affects the next steps, i.e., the encryption and decryption steps. The public key is used in the encryption step, while the secret key is used in the decryption process. In this article, the definition and operation of the RSA algorithm are mentioned, as well as methods such as the Chinese Remainder Theorem, Montgomery, Barrett, which affect the speed of this algorithm. The main purpose of this article is to compare the RSA algorithm with the specified methods in terms of encryption and decryption times. Tools such as tables and graphs were used in this comparison. As a result of the comparison, the most appropriate optimization was determined for the faster operation of the RSA algorithm.

**Keywords:** RSA, encryption, decryption, Chinese Remainder Theorem, Montgomery, Barrett

### **ÖZET**

RSA algoritması, en çok kullanılan asimetrik şifreleme algoritmalarının başında gelir. Yaklaşık yarım asır önce geliştirilen ve özellikle son yıllarda gündelik hayatta sıkça kullanılan bu algoritma, iki büyük asal sayının çarpımından elde edilen sayının çarpanlarına ayrılmasının zorluğuna dayanıp, temel olarak anahtar üretimi, şifreleme ve deşifreleme adımlarından oluşur. Anahtar üretimi adımında açık anahtar ve gizli anahtar olmak üzere iki farklı anahtar elde edilir. Anahtarların elde edilme adımı oldukça önemlidir çünkü bu adım doğrudan bir sonraki adımları, yani şifreleme ve deşifreleme adımlarını etkiler. Şifreleme adımında açık anahtar kullanılırken, deşifreleme işleminde gizli anahtar kullanılır. Bu makalede, RSA algoritmasının tanımı ve işleyişinden bahsedildiği gibi, bu algoritmanın hızını etkileyen Çin Kalan Teoremi, Montgomery, Barrett gibi metotlardan da kısaca söz edilmiştir. Bu makalenin asıl amacı, RSA algoritmasının belirtilen metotlarla beraber şifreleme ve deşifreleme süreleri bakımından kıyaslanmasıdır. Bu kıyaslamada tablo ve grafik gibi araçlar kullanılmıştır. Yapılan kıyaslamaların sonucunda, RSA algoritmasının daha hızlı çalışması için en uygun optimizasyon tespit edilmiştir.

**Anahtar Kelimeler:** RSA, şifreleme, deşifreleme, Çin Kalan Teoremi, Montgomery, Barrett

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# **Reducing carbon Footprint and Enhancing Sustainability in Natural Printing Practices via Imprint Technology using Pre-Mordant and Post-Mordant Techniques on Cotton Fabric Printing with Flower and Leaf**

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## **ABSTRACT**

Clothing serves several essential functions, including protection, identification, and adornment. Among the methods used to enhance fabrics, printing techniques play a significant role, with traditional methods such as block printing and screen printing being widely utilized. Recently, eco-printing has emerged as a contemporary and sustainable technique that utilizes plant materials to create unique colors and patterns on textiles. Mordants, particularly few Natural Mordants are critical in this process as they enhance and improve color quality with changes in the natural pigment of the flower & leaf and base colour of the fabric resulting in unexpected results. This study aims to investigate the effects of pre-mordanting and post-mordanting on the color quality, shape, depth, fastness properties, and overall aesthetics of cotton fabrics printed with natural dyes derived from flowers and leaves.

Flower and leaf impression printing, also known as floral impressionism or pounding, is an innovative technique that uses the natural shapes and colors of flowers to create unique prints on fabric. This eco-friendly method involves pressing fresh flowers or leaf into cloth, either by hand or using a hammer for printing press, to transfer their intricate patterns and vibrant hues. As the textile industry faces scrutiny for its significant environmental impact, adopting sustainable practices like flower & leaf impression printing can revolutionize fabric printing and reduce pollution.

**Keywords:** carbon footprint, sustainability, natural printing, imprint technology, natural mordant

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# Effect of Synthesized Nanocomposite Photo-Cathode Electrodes on the Performance of Dye-Sensitized Solar Cells

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## ABSTRACT

Dye-sensitized solar cells (DSSCs) have attracted significant attention in the field of renewable energy due to their low-cost manufacturing processes and wide design flexibility. New generation photo-cathode structures that can serve as alternatives to Pt are being developed for DSSCs. For use in the photo-cathode electrode of DSSCs, nanocomposite structures of Graphene Oxide (GO) and Reduced Graphene Oxide (rGO) synthesized by the Hummers method were formed between binary metal oxides, with spinel-type  $\text{NiFe}_2\text{O}_4$  synthesized via the hydrothermal method. Additionally, the photo-anode  $\text{TiO}_2$  was synthesized using the sol-gel method. J-V analysis, Incident Photon-to-Current Efficiency (IPCE), and Electrochemical Impedance Spectroscopy (EIS) analyses were performed to evaluate the photovoltaic performance of the synthesized DSSCs. The Power Conversion Efficiency (PEC) and Incident Photon-to-Current Efficiency (IPCE) values for the  $\text{TiO}_2$ -N719-(GO-Ni-Fe) cell were 0.31% and 3.4%, respectively, while for the  $\text{TiO}_2$ -N719-(rGO-Ni-Fe) cell, the values were 0.71% and 6.2%. Through EIS analysis, the resistances occurring at the interfaces of the DSSCs were identified in order to comprehensively investigate the kinetics of the photoelectrochemical processes. In conclusion, it is anticipated that the efficiency levels of DSSCs can be enhanced through optimization of the photo-cathode materials and improvements in cell design. This study provides a foundation for the development of new strategies and material designs to improve low efficiency values.

**Keywords:** Counter electrode, Dye-sensitized solar cell, Graphene Oxide, GO-rGO/ $\text{NiFe}_2\text{O}_4$  Nanocomposite, Hydrothermal Method, Reduced Graphene Oxide



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# Application of Global Geopotential Models and Digital Terrain Models for Determination of Local Geoid Model

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## **ABSTRACT**

One of the most important tasks in geodesy is defining of a geoid model for a certain region (local or global). Different teoretical, methodological, numerical and data problems are needed to be solved in order to get the wanted results. The methods that will be used for geoid determination are KTH and CSH. KTH is a method defined by the Royal Institute of Technology in Stockholm, Sweden. It is a stochastically modified method by using the least square adjustment of the Stokes formula for determining geoid undulations. CSH (classic Stokes-Helmert) is the second method that is defined by deterministic modification of the Stokes integral and it is based on the RCR (Remove-Compute-Restore) principle. For the calculations, the main focus is on the dataset used for the analysis and these data are: global geopotential models, digital terrain models, gravity anomalies, GNSS measurements and terrain corrections. The calculations are done by using seven GGM (Global Geopotential Models) and were used satellite only models (GOCE, GRACE and GOCE+GRACE). When it comes to digital terrain models, four different models were used (SRTM, ASTER, TANDEM-X, MERIT).

Final models that are calculated with KTH and CSH are fitted to the GNSS/levelling points by using corrector surfaces (4 fit parameter). For the fitting procedure, the gravimetric geoid undulations are compared with the geometric geoid undulations. Final results show an agreement of 6.15 cm (KTH) and 5.65 cm (CSH) by means of RMSE (root mean square error).

**Keywords:** Geoid, GGM, DEM, KTH, CSH, GNSS/levelling



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# The Effect of Different Solvents and Their Aqueous Mixtures on the Polyphenol Content and Antioxidant Activity of *NIGELLA Sativa* Seed Extracts

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## ABSTRACT

*Nigella sativa* L. (black cumin) is an annual herbaceous plant belonging to the Ranunculaceae family. Seeds of plant *Nigella sativa* are known for their therapeutic potential and are widely used in herbal medicine. These seeds are applied in the treatment of various health issues, including digestive system disorders, respiratory diseases, and inflammation relief. This study examined the impact of organic solvents and their aqueous mixtures on the efficiency of polyphenol extraction, flavonoid isolation, and antioxidant activity of *Nigella sativa* seeds. Radical scavenging was tested using the DPPH method, while the FRAP method was employed to assess the potential for reducing oxidative stress. Extracts prepared by mixing organic solvents with water demonstrated significant efficiency, with the highest antioxidant capacity recorded in these combinations. The results indicated that pure acetone was the most effective solvent for extracting polyphenols from *Nigella sativa* seeds, while the best result for flavonoid isolation was achieved using pure ethanol.

**Keywords:** *Nigella sativa*, antioxidant capacity, polyphenols, flavonoid, solvents

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# Application of the PSInSAR Technique for Monitoring Deformations in the City of Skopje

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## **ABSTRACT**

PSInSAR (Persistent Scatterer Interferometric Synthetic Aperture Radar) is an advanced multi-interferogram InSAR technique widely utilized for detecting small displacements in urban and non-urban environments. This method is highly effective in monitoring ground deformations by leveraging the stability of persistent scatterers such as buildings and infrastructure. PSInSAR relies on the analysis of phase information from multiple Synthetic Aperture Radar (SAR) satellite images to achieve millimeter-level precision.

This study focuses on the application of the PSInSAR technique for monitoring ground displacements in the Skopje region, a seismically active area prone to various geohazards. A dataset of 101 Sentinel-1 SAR images, acquired between November 11, 2015, and March 16, 2024, was processed to derive deformation time series and identify displacement trends. The results highlight the capability of PSInSAR in detecting subtle ground movements, which are crucial for urban planning, infrastructure maintenance, and geohazard mitigation.

By presenting the core principles of the PSInSAR technique and its practical application, this research contributes to a deeper understanding of the potential of satellite-based monitoring for improving resilience in urban areas. The findings demonstrate the feasibility of PSInSAR as a reliable tool for long-term deformation analysis in complex urban environments.

**Keywords:** PSInSAR, SAR, Skopje, Sentinel-1, deformation

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# Improvement of Material Transportation in Conveyor Systems Using the TRIZ Methodology

## *TRIZ Metodolojisi ile Konveyör Sistemlerde Malzeme Taşımının İyileştirilmesi*

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### ABSTRACT

Innovation is a powerful tool that enables businesses to achieve sustainable development in a competitive environment. Companies that fail to innovate lose their market advantage and are unable to survive in the long run. This study presents solution proposals for various problems encountered in industrial conveyor systems using the Creative Problem Solving Theory (TRIZ), which has not yet found widespread application in Turkey. TRIZ is a technology-based problem-solving technique that generates creative and innovative solutions, offering a systematic, repeatable approach and guiding one through a wide range of potential solutions.

The conveying process in conveyors involves contradictions between the need to increase speed and capacity while maintaining the stable transport of materials. In this context, the challenge of balancing increasing transport speeds with the safe and stable transportation of materials becomes a fundamental problem in conveyor systems. By using TRIZ's contradiction matrix, solution principles have been identified to resolve these conflicts. The study proposes innovative solutions that enhance speed and efficiency while maintaining stability and reliability. Using TRIZ principles such as dynamics, local quality, and changes in properties, methods like dynamically adjusting the transport speed and optimizing the conveyor belt surface for different material types have been developed. These solutions improve the transportation efficiency of the conveyor system while ensuring the materials are transported safely and stably without damage.

**Keywords:** TRIZ, conveyor systems, contradiction matrix, innovation

### ÖZET

İnovasyon, işletmelerin rekabet ortamında sürdürülebilir kalkınmalarını sağlamaları için güçlü bir araçtır. İnovasyon gerçekleştiremeyen işletmeler pazar avantajını kaybetmektedirler ve uzun vadede hayatlarına devam edememektedirler. Bu çalışmada, ülkemizde henüz çok fazla uygulama alanı bulamamış Yaratıcı Problem Çözme Teorisi (TRIZ) tekniği kullanılarak endüstriyel konveyör sistemlerinde karşılaşılan birtakım problemlere çözüm önerileri sunulmuştur. TRIZ, problemlere yaratıcı ve yenilikçi çözüm üreten, sistematik, tekrarlanabilir, geniş çözüm önerileri içinde çözüme giden yolda size rehberlik eden, teknoloji temelli bir problem çözme tekniğidir.

Konveyörlerde taşıma süreci, hız ve kapasitenin artırılması gerekliliği ile malzemelerin stabil taşınması arasındaki çelişkileri içerir. Bu bağlamda, artan taşıma hızının malzemelerin dengeli ve güvenli taşınmasını zorlaştırması, konveyör sistemlerinde temel bir problemdir.

TRIZ'in çelişkiler matrisi kullanılarak, bu çelişkiler arasında denge sağlanabilecek çözüm prensipleri belirlenmiştir. Çalışmada, hız ve verimliliğin artırılmasına yönelik iyileştirmeler yapılırken stabilite ve güvenilirliğin korunmasını sağlayan yenilikçi çözümler önerilmiştir. Çözüm sürecinde dinamiklik, yerel kalite, özelliklerin değişimi gibi TRIZ prensipleri kullanılarak, taşıma hızının dinamik ayarlanması, konveyör bant yüzeyinin farklı malzeme türlerine göre optimize edilmesi gibi yöntemler geliştirilmiştir. Bu çözümler, konveyör sisteminin taşıma verimliliğini artırırken, malzemelerin hasarsız ve dengeli taşınmasını mümkün kılmıştır.

**Anahtar Kelimeler:** TRIZ, konveyör sistemler, çelişkiler matrisi, inovasyon

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# The Role of Technoparks in Education

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## ABSTRACT

Technology parks, in addition to playing a key role in the education and innovation environment, have become a means of communication between scientific institutions, educational organizations and industry. Their importance is not limited only to the commercialization of scientific research, but also includes the formation of new educational models, the development of startups and the training of highly qualified personnel, which makes them an important tool for the formation of an innovative economy.

Technology parks, along with their main goal of supporting innovation, are organizations that create favorable conditions for the education and professional development of specialists. In many countries, technology parks actively cooperate with universities and scientific institutions, providing students and researchers with resources for the implementation of scientific projects, the creation of startups and the application of new technologies. Such cooperation allows students to be involved in research and development processes, which contributes to improving the quality of education.

Many technoparks actively cooperate with foreign scientific and educational institutions, which opens up new horizons for students and researchers. Such cooperation may include the exchange of knowledge and experience, joint research and development, and the creation of international educational programs. This contributes not only to improving the quality of education, but also to the integration of students and young scientists into the global innovation ecosystem.

The presence of the following in the technology park can play a positive role in improving the quality of education:

- Internet of Things (IoT);
- Cloud services;
- Modernization of Educational Programs;
- Increasing the Professionalism of Teachers;
- Active Interactivity of Students;
- Development of Learning Resources

**Keywords:** technopark, interactivity, education, cloudtechnology, internet of things

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# Typological Characteristics of Nakhchivan Mosques in XI-XIX Centuries

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## ABSTRACT

The territory of Nakhchivan is rich in irreplaceable works of art of Turkish-Islamic architecture. Researches suggest that the medieval mosques of Nakhchivan differ from each other in terms of their plan-volume structure and the solution and functional purpose of the architectural composition. Based on the research, it can be said that there have been certain changes in the plan-volume structure of religious architectural monuments over time, they have developed and acquired new features. The conducted research allows to follow the traditionality and succession in the development of mosques. The mosques with domes and double-layered lighting system typical for XI-XV centuries underwent certain changes in the later periods. Research shows that although the traditional architectural structure of XI-XV centuries continued with certain changes in XVII-XVIII centuries, it changed significantly in XIX century. Single-layer lighting systems appear mainly in mosques built in XIX century. The characteristics observed in the plan-volume structure of the mosques built in previous times, including their double-layer lighting system, have gradually changed. Over time, the architectural structure of the mosques built in our cities and villages has become even simpler. The gabled arched windows, characteristic of earlier periods, gradually disappeared and were replaced by flat-roofed constructions and square windows. The mosques built in this period differ in that their plan-volume structure is simpler. However, the architectural structure of mosques allows us to observe the traditionality, innovation and Turkish-Islamic architecture features in their construction.

**Keywords:** Nakhchivan, Mosque, Architecture, Turkish-Islamic architecture, Dome

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# Exploring $\alpha$ -Starobinsky Inflation: Observational Constraints

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## ABSTRACT

Inflation is a period of rapid exponential expansion in the early universe, introduced to address issues like the horizon and flatness problems in the standard Big Bang model. It also provides a mechanism for generating the primordial density perturbations that seed large-scale structure formation. In this work we explore a generalized version of the Starobinsky inflation model, incorporating an additional parameter  $\alpha$ , which adjusts the curvature of the inflaton potential. Using the latest cosmological datasets, including Planck-2018, BICEP/Keck 2018, and baryon acoustic oscillation (BAO) data, we have conducted a detailed analysis to constrain this parameter. The findings suggest that for  $\alpha > 1$ , the inflation model aligns closely with observational data, including the constraints on  $n_s$  and  $r$ . The analysis confirms that the  $\alpha$ -Starobinsky inflation model retains the robustness of the original Starobinsky model while accommodating additional flexibility to fit the data better.

The research framework focuses on calculating primordial power spectra for scalar and tensor perturbations and uses these to infer the scalar spectral index ( $n_s$ ) and tensor-to-scalar ratio ( $r$ )—key observables in inflationary cosmology. The  $\alpha$  parameter primarily impacts the shape of the inflaton potential and consequently, the predictions for  $n_s$  and  $r$ . The precise determination of the parameter  $\alpha$  will help us in connecting the models of particle physics phenomenology with inflation in the framework of supergravity and string theory.

**Keywords:** Cosmology, Inflation, Starobinsky inflation, CMB

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# **Forecasting Landslides with Regards to Rainfall Erosivity and Soil Erodibility**

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## **ABSTRACT**

Landslide is significantly a main hazard in Malaysia due to its geographical features besides all the factors governing landslide namely rainfall erosivity, soil erodibility, slope length, slope steepness, and conservation practices. Identifying areas prone to landslides is essential for immediate action to be taken by the local authorities in ensuring reliable mitigating measures. Therefore, this study uses the Universal Soil Loss Equation (USLE) to forecast landslides has been used by many developing countries including Malaysia. A Rainfall Erosivity calendar is developed based on historical rainfall data obtained from the Department of Irrigation and Drainage Malaysia. The stages of obtaining the rainfall erosivity includes assessment on the rainfall amount, duration, intensity, rainfall energy, and maximum 30-minutes rainfall interval within the rainfall event. This subsequently will lead to the five categories of landslide risks namely low, moderate, high, very high, and critical. Similarly, Soil Erodibility is classified using the 'ROM' scale having similar five categories as rainfall erosivity. Case studies from Fraser Hill and Genting Highlands reveal typical erosivity and erodibility patterns, providing an insight of potential landslide occurrences. These findings can be used as guidelines to the government authorities in planning future development and preventing untowards landslide incidents.

**Keywords:** Landslide, Rainfall Erosivity, 'ROM' Scale, Soil Erodibility, USLE



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## **Evaluation and Validation of Soil Loss Risk Level at Cameron Highlands Resort in Malaysia**

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### **ABSTRACT**

Soil erosion is commonly a natural event that causes land degradation and instability. Identify the erosion-prone areas at the Cameron Highlands Resort is a major concern due to series of landslide incidence annually. Thus, recent landslide damages at different areas of the resort leads to the requirement to develop a method of the erosion susceptibility map using Universal Soil Loss Equation (USLE). A landslide event map was developed by using actual data provided by the Ministry of Works Malaysia. A radius of 200-m was created from all the 75 cases of the reported landslide event and to overlay with the soil erosion risk level map produced by earlier research. Results from the study shows that 73.3 percent of soil loss risk level categorized from moderate-to-critical level were verified from the actual incident of landslide in Cameron Highlands. The soil erosion risk level map produced in earlier research have been validated and verified that can be used effectively in knowing the level of soil erosion risk in highland areas. Such evaluation and validation in this study is not only can be used regionally but also worldwide.

**Keywords:** erosion risk, landslide, soil erosion, soil loss, USLE

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# Vision Transformer for Automated Onychomycosis Detection: A Scalable Solution for Resource-Limited Settings

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## ABSTRACT

Onychomycosis, a prevalent fungal nail infection, presents diagnostic challenges, especially in resource-limited regions like Sudan, where access to specialized dermatologists and diagnostic tools is limited. This study evaluates the Vision Transformer (ViT) framework for automated onychomycosis detection, utilizing its self-attention mechanisms to analyze complex visual patterns. A dataset from Sudan was curated, and ViT was trained to classify nail images by treating patches as tokens that were sequenced into linear embeddings, without the use of convolutional layers. The model's performance was compared with pre-trained transfer learning architectures, including Inception-ResNet-v2, DenseNet121, and EfficientNetB0, paired with traditional classifiers such as SVM, Random Forest, and KNN. Results showed that ViT outperformed all other approaches, achieving a diagnostic accuracy of 97%, an AUC of 0.977, and a precision of 0.968, surpassing the diagnostic accuracy of dermatologists involved in the study. This demonstrates ViT's potential as a scalable and reliable tool for onychomycosis diagnosis in resource-constrained settings.

**Keyword:** Onychomycosis, Vision transformer (ViT), Support Vector Machines (SVM), Random Forest, K-nearest neighbors (KNN), and Ensemble Classifier

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# Development and Electrochemical Analysis of Boron-Doped Graphene/Iron (II, III) Oxide Based Nanocomposites for Supercapacitors

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## ABSTRACT

The rapid depletion of fossil fuels and the continuous increase in global energy demand have made energy storage technologies, alongside renewable energy sources, critically important. In this context, supercapacitors stood out in the energy storage application with their superior characteristics such as high power density, fast charging capacity, long cycle life, and environmental sustainability. This study aimed to synthesize a new nanocomposite material using boron-doped graphene (BG) and iron(II,III) oxide ( $\text{Fe}_3\text{O}_4$ ) as electrode materials for hybrid supercapacitors via a hydrothermal synthesis method, and to investigate its performance. Boron-doped graphene contributed to achieving high electrochemical performance by providing more active sites on the electrode surface, while  $\text{Fe}_3\text{O}_4$ , a transition metal oxide, was used to enhance the performance and efficiency of hybrid supercapacitors with its superior thermal and chemical stability and magnetic properties. The performance of the obtained BG/ $\text{Fe}_3\text{O}_4$  nanocomposite electrode material was comprehensively analyzed using electrochemical characterization methods such as Cyclic Voltammetry (CV), Galvanostatic Charge-Discharge (GCD), and Electrochemical Impedance Spectroscopy (EIS), with detailed analysis of changes in specific capacitance values. This study aimed to enhance the energy storage performance of hybrid supercapacitors by developing and optimizing BG/ $\text{Fe}_3\text{O}_4$  nanocomposite electrode materials. In this context, it was anticipated that nanocomposite electrodes containing  $\text{Fe}_3\text{O}_4$  would provide higher capacitance values, offering an innovative solution to the energy storage needs of the future.

**Keywords:** Boron doped graphene (BG),  $\text{Fe}_3\text{O}_4$  (Iron(II,III) Oxide), Hybrid supercapacitor, Electrochemical characterization, Energy storage

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# Multi-Modal Spatio-Temporal Fusion Classifier for Real-Time Flotation Process Monitoring and Optimization Using PCA and GRU

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## ABSTRACT

Froth Flotation is a critical process in the mining industry for separating valuable metal ores from gangue minerals, relying on the hydrophobic properties of minerals. However, real-time monitoring of flotation cells remains challenging due to the dynamic nature of the process, which is influenced by multiple variables and hysteresis. Traditional methods, such as visual froth observation, often lead to inaccuracies. This study introduces a Multi-Modal Spatio-Temporal Fusion Classifier for froth flotation sequence images, combining Principal Component Analysis (PCA) and Gated Recurrent Units (GRU) to enhance flotation monitoring. The model extracts spatial features using Inception and VGG-16 CNN architectures, followed by PCA for dimensionality reduction. Temporal dependencies in video frames are captured with GRUs. This method provides a more efficient solution than hypergraph-based approaches, which suffer from computational complexity. Additionally, Focal Loss is applied to address class imbalance, improving classification accuracy. The proposed method significantly enhances real-time flotation process classification, offering greater efficiency and accuracy for process optimization. The proposed work also demonstrates superior performance compared to existing works in metrics such as accuracy, precision, and F1-score.

**Keywords:** Flotation Process, Machine Learning, SpatioTemporal Analysis, PCA, GRU, CNN

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# Robust Frequency Regulation in Renewable Energy-Based Power Systems Using a Cascade Control Approach

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## ABSTRACT

In modern power systems, renewable energy sources (RES) are increasingly integrated into the grid due to the depletion of fossil fuels, global warming, and environmental pollution. However, high RES penetration introduces additional imbalances in the system, disrupting the balance between generation and consumption, which leads to issues such as frequency variations and power transmission fluctuations. To address these challenges, a controller design is needed to maintain system frequency and tie-line power within specified limits. This is achieved through Automatic Generation Control (AGC) or Load Frequency Control (LFC). This research introduces a novel cascade-loop PDDn-(1+I) controller to enhance LFC for multi-area power systems incorporating renewable energy sources like photovoltaic (PV) and wind energy. The proposed controller is optimally tuned using the recently developed Walrus Optimization Algorithm (WaOA), a metaheuristic technique that minimizes the Integral Time Absolute Error (ITAE) objective function. The performance of the proposed optimal PDDn-(1+I) controller is compared with other control strategies, including PIDn and PI-PI controllers, under varying load and RES conditions. Extensive MATLAB/Simulink simulations demonstrate that the PDDn-(1+I) controller improves ITAE values by approximately 96% and 88% compared to the PIDn and PI-PI controllers, respectively.

**Keywords:** Load frequency control (LFC), walrus optimization algorithm (WaOA), cascade PDDn-(1+I) controller, integral time absolute error (ITAE)

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# Seismic Risk Improvement for Irregular Building Structures by Incorporating Shear Walls

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## **ABSTRACT**

Reinforced concrete (RC) buildings with vertical geometric imperfections are commonly used in structural engineering due to their aesthetic appeal and functional benefits. Improving their reliability and seismic performance is a crucial priority, and is frequently seen as necessary. This study underlines the need of shear walls (SHW) as a reinforcement approach for such buildings. To investigate this, twenty mid-rise structure models with setback inconsistencies were examined. Fragility analyses were carried out using a nonlinear analysis to determine the efficiency of shear walls in strengthening the resilience of irregular buildings. The results clearly show that incorporating shear walls significantly enhances the dynamic behavior and overall response of these buildings. The fragility analysis indicates a noticeable reduction in damage probability in many cases, with differences exceeding 13% in most models. In some cases, this reduction is even more pronounced, ranging between 30% and 60%. These findings highlight the substantial benefits of integrating shear walls into the design process for irregular structures.

**Keywords:** RC buildings, Geometric irregularity, seismic risk, non-linear analysis

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# Exploring Cognitive Load and Behavioral Intention in Online Food Delivery Services: Insights from the Indian Market

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## ABSTRACT

The exponential development of Online Food Delivery Services (OFDS) in recent times has played a major role in shaping consumer behaviour, offering outstanding accessibility and ease in placing food orders. The psychological and decision-making factors shaping consumers' intentions to use OFDS in the Indian context remain largely underexplored, with existing research focusing primarily on technological and service quality aspects while overlooking the critical influence of cognitive load on consumer choices. This paper shows that integrating cognitive load theory with multiple-attribute decision-making (MADM) techniques provides new insights into the factors influencing Indian consumers' behavioural intentions towards OFDS. Using the Analytic Hierarchy Process (AHP), Complex Proportional Assessment (COPRAS), and modified VIKOR methods combined with cognitive experiments, we identify key internal factors like OFDS' app usefulness, trustworthiness, and the more dominant external attributes like time-saving and variety of food choices which drive continuous usage intentions. Furthermore, our findings highlight the impact of cognitive load on consumers' food choices in OFDS, offering immediate implications for OFDS operators, enabling them to design strategies that reduce cognitive load, prioritise efficient delivery, diversify food options and further enhance user satisfaction and retention, contributing to optimising the consumer experience in India's competitive online food delivery sector.

**Keywords:** Online Food Delivery Services (OFDS), Consumer Behaviour, Cognitive Load, Decision-Making, Indian Consumers.

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## Contribution to the Prospection of the Biodiversity of Microbial Symbiotic Bacteria of *Cicer arietinum* in some Areas of the Aurès Region, Algeria

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### ABSTRACT

The fixation of atmospheric nitrogen by symbiotic bacteria of leguminous plants is an important tool for increasing soil fertility and the sustainability of agricultural ecosystems. The aim of this work is to examine the diversity of nodular bacteria of *Cicer arietinum* in three regions of the Aurès in Algeria. Nodules were collected by trapping from soils in Batna, N'Gaous, and Marouana, and bacteria were obtained by sterile crushing of the nodules from a winter variety of *Cicer arietinum* L. The isolates were characterized by sequencing three DNA fragments (16S rDNA, recA, and IGS). The results revealed that four genera were identified (*Mesorhizobium*, *Sinorhizobium*, *Rhizobium*, and *Burkholderia*). The influence of local ecological conditions on this diversity was clearly evident. The Batna site showed the greatest diversity of rhizobial strains, dominated by *Sinorhizobium*, while Marouana revealed a predominance of *Rhizobium*. N'Gaous presented a more limited diversity, with only one strain of *Sinorhizobium*. This significant diversity found could guide the choice of the most suitable genus for soil inoculation in each region, contributing both to the conservation of bacterial biodiversity and the promotion of sustainable crops, adapted to the ecological specifics of the three regions in the Aurès.

**Keywords:** Biodiversity, *Cicer arietinum*, *Sinorhizobium*, DNA sequencing



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## Evaluation of The Anti-Fungal Potential of *Centaurea Omphalotricha*

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### **Abstract**

Crop yield in Algeria is heavily influenced by the pathogenic effects of fungi as well as the negative and harmful effects of chemical antifungals. In the quest for natural antifungal agents, *Centaurea omphalotricha* was tested for its antifungal potential against seven pathogenic fungi using its methanolic extract. The method employed was solid medium diffusion, and the inhibition percentage was calculated at several intervals based on the incubation time of the fungi in the presence of the extract. The results showed that the methanolic extract inhibited the growth of all the fungal strains tested, except for the *Fusarium solani* (PL2) strain. The highest inhibition percentage (85.11%) was observed against *Fusarium pseudograminearum*, known to cause crown rust of wheat and other cereals, followed by *Fusarium culmorum* (58%), which causes ear fusariosis and other pathologies. The antifungal activity detected in this study positions *Centaurea omphalotricha* as a promising alternative to chemical antifungals, which could help improve crop production, soil health, and preserve ecological balance.

**Keywords:** *Centaurea omphalotricha*, fungi, antifungal activity, natural antifungal

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# Parametric Impedance Matching in Coplanar Wavelength Transmission Lines for Radiofrequency Sensors

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## **ABSTRACT**

Radio-frequency (RF) sensors are increasingly utilized in object detection technologies and hold promise for identifying microorganisms in various media of interest. These media can be represented as additive harmonic oscillators whose interactions with electromagnetic (EM) fields are analysed using computational techniques such as finite element methods, exemplified by the High Frequency Simulation Software (HFSS). Impedance matching is a crucial design aspect for RF engineers, as it ensures optimal performance of RF sensors. This study introduces a parametric analysis tool for evaluating impedance in RF designs, exemplified through coplanar wavelength transmission lines (CPWTLs). The HFSS parametric port impedance analysis was applied to several CPWTL configurations, including air-gold-glass, distilled water-gold-glass, and silicon-gold-glass interfaces. Additionally, the effect of varying the air gap length on the impedance behaviour was explored. The findings highlight the comparative performance of different designs, showcasing the method's efficiency in simulating and optimizing CPWTLs and its broader applicability in potentially designing advanced RF sensors.

**Keywords:** Radiofrequency engineering, electromagnetics, high frequency simulation

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# Trigger Sound Signal Processing for Activating Automated Engineering Systems

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## **ABSTRACT**

An engineering system can be programmed to initiate operations automatically upon detecting a trigger sound signal, paving the way for more advanced and efficient robotic system control. This study introduces a straightforward example of such a solution, employing a simple signal processing method to activate a robotic system using a specific sound wave. A microphone, connected to a Raspberry Pi via wireless communication, was used for sound detection. The Raspberry Pi transformed the detected 5 kHz sound wave into a digital format. A Python script on the device converted the 4-bit digital signal into a 16-bit signal and saved the recorded audio to a designated file. Noise was then filtered out, and the Fast Fourier Transform (FFT) of the sound signal was calculated. If the maximum signal power occurred at 5 kHz, the activation signal was sent to the system's startup module; otherwise, the system remained inactive. This model was tested successfully using 5 and 10 kHz sound waves under both high and low signal-to-noise ratio (SNR) conditions. Only the 5 kHz signals, regardless of SNR, activated the robot successfully, demonstrating the robustness of the proposed solution.

**Keywords:** Electronics engineering, signal processing, robotics



# Health Sciences

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# The Importance of Therapeutic Monitoring of Tacrolimus in Kidney Transplant Recipients for the Prevention of Side Effects

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## **ABSTRACT**

Renal transplantation is the preferred treatment for chronic renal failure, improving patients' quality of life. However, therapeutic monitoring of anticalcineurins such as tacrolimus by measuring their blood concentrations in renal transplant patients enables precise adjustment of these doses, thereby reducing drug toxicity and the risk of graft rejection. To achieve this objective, a descriptive, comparative and prospective monocentric study was conducted on 210 kidney transplant recipients at the Batna University Hospital in Algeria from a living donor on tacrolimus, MMF and corticosteroids, monitored in the toxicology laboratory and the nephrology department. The mean age of patients was  $34.68 \pm 9.69$  years, with a sex ratio of 2.28. Adverse effects included neurological disorders (59 patients), skin problems (12 patients) and gastrointestinal problems (11 patients). Therapeutic equilibrium of TAC was achieved by the third month post-transplant, contributing to a significant improvement in renal function, with stable creatinine levels and an increase in glomerular filtration rate with increasing age of transplantation. This study highlights the essential role of immunosuppressant monitoring, particularly during the first year, in preventing complications and achieving optimal outcomes for kidney transplant recipients.

**Keywords:** Renal transplantation, tacrolimus, therapeutic monitoring, adverse effects

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# Considerations on Civil Liability in cases of Pharmaceutical Malpractice

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## **ABSTRACT**

The doctor-pharmacist-patient triad is currently determining a new approach to pharmaceutical practice, focused on optimizing the results of drug therapy. This development in the pharmacist's professional duties and obligations also has a downside, when it affects the health of patients, making pharmacists vulnerable to liability for pharmaceutical malpractice.

One of the current issues at national level is the lack of concrete standards in this field, along with a sparse legislative framework and limited judicial practice. On the other hand, if looking at the models of the other states, we can observe that at international level, research in this area reveals a trend toward improving regulatory standards by implementing new preventive measures.

This study aims to identify and analyse the conditions necessary to establish civil liability for pharmaceutical malpractice, the nature of the obligation to counsel patients on their treatment, and the types of medication errors that may qualify as „acts of malpractice.”

**Keywords:** civil liability, pharmaceutical malpractice, obligations, medication errors

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## Skin Rash Related to the Use of Wood Ash in Wound Healing, about a Case

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### ABSTRACT

The ash of wood plants is part of the ancestral remedies because of its physical and chemical properties. It has detergent, fertilizing, and antiseptic properties, which justifies its many uses.

**Case report:** We report the case of a woman aged 50 years who presented with a generalized rash all over the body with painful macules a burning sensation and a fever. Symptoms appeared after taking wood ash from plants, for three days. The reason for use was the healing of Zona's wound that she contracted and treated before admission. The patient's general condition was preserved, and the drug treatment allowed a quick healing.

Wood ash from plants with a high potassium hydroxyl content may be an irritant and partly explain the reaction observed. Traditional treatments should be used with great care to avoid adverse effects.

**Keywords:** wood ash, skin rash, fever, traditional medicine

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## Comparison of Greenness Profiles of Chromatographic Methods Used for the Determination of Macrolide Group Antibiotics in Environmental Waters

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### ABSTRACT

Macrolide group antibiotics have a wide range of uses and play an important role in terms of human health. However, the widespread use of these drugs has the potential to damage the ecosystem by causing their accumulation in environmental waters. Antibiotic residues have negative effects especially on aquatic life and cause the formation of antimicrobial resistance. In this context, monitoring the presence of drugs in environmental waters and developing reliable determination methods are of great importance in terms of both environmental sustainability and public health. In this study, various chromatographic methods used for the determination of macrolide group antibiotics in environmental waters were compared and the environmental sustainability levels of these methods were evaluated. In the analyses, RGBfast and AGREE methods were used to evaluate the environmental impact within the framework of green analytical chemistry principles. Parameters such as solvent consumption, energy use, analysis time and waste production of the methods were examined and an evaluation was made in terms of environmental impacts. The results emphasize the need to optimize analytical methods with environmentally friendly approaches from a green analytical chemistry perspective and draw attention to reliable drug analysis practices that allow sustainable and environmental impact reduction in addition to effective analytical methods.

**Keywords:** Macrolide group antibiotics, environmental waters, greenness profile, RGBfast, AGREE.



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# **The Role of Mindfulness as a Therapeutic Technique in the Treatment of Eating Disorders**

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## **ABSTRACT**

Eating disorders represent a significant societal issue, stemming from both a distorted self-image and abnormal responses to hunger and satiety. These phenomena lead to serious health, psychological, and social consequences. Particularly strong associations have been observed in the areas of binge eating, emotional eating, and body dissatisfaction. In recent years, mindfulness has gained increasing attention as a technique to support individuals struggling with eating disorders. Mindfulness, understood as the ability to consciously and non-judgmentally experience the present moment, plays a key role in improving the functioning of individuals with eating disorders. Core aspects of mindfulness, such as acting with awareness and non-judging, can effectively reduce symptoms of these disorders. Research indicates that mindfulness practice supports emotional regulation, reduces negative thinking patterns, and enhances body awareness. As a result, individuals affected by eating disorders learn to cope with negative emotions without resorting to destructive behaviors, such as binge eating or restrictive dieting. Current research highlights the need for further exploration of the mechanisms underlying the relationship between mindfulness and various types of eating disorders. Understanding these mechanisms could contribute to the development of more effective therapies, emphasizing the potential of mindfulness-based approaches in the treatment of these complex disorders.

**Keywords:** Mindfulness, eating disorders, habits, dietetician

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# Addressing Anxiety with EMDR Therapy: A Case Report

## *EMDR Terapisi ile Kaygının Ele Alınması: Bir Olgu Sunumu*

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### ABSTRACT

This study includes a case report using EMDR therapy. EMDR (Eye Movement Desensitization and Reprocessing) therapy is a therapy method used to process traumatic memories and help a person get rid of emotional distress associated with these memories. With EMDR therapy, the person's compelling memories are made less disturbing and the emotional reactions associated with these memories are tried to be reduced. While the therapist directs the person to remember their traumatic memories, he also allows them to focus on stimuli such as certain eye movements, sound or touch. These eye movements can help the brain process memories that have not been processed. In this study, the EMDR therapy process of a 30-year-old female client was discussed. The client applied to therapy due to intense anxiety. The difficult experiences she had during her childhood, the abortion she had in the recent past, and the pandemic period triggered her living with her family. The client stated that she had obsessive thoughts and anxiety attacks during this period. Fears that her family might learn about the abortion brought feelings of guilt and shame. The client succeeded in developing the belief that "I am a person without willpower" instead of the negative belief "I am a person who knows what she wants". The memories that triggered her negative belief were worked on. The process performed on these memories reduced the client's anxiety levels, relieved her physical discomfort and provided emotional balance. At the end of the therapy process, a significant decrease in the client's anxiety and obsessive thoughts was observed. This study shows that interventions on post-traumatic anxiety, guilt and shame feelings with EMDR therapy play an important role in the client's reaching inner peace and reducing anxiety levels.

**Keywords:** EMDR, Anxiety, Trauma, Guilt, Shame, Therapy

### ÖZET

Bu çalışmada EMDR terapisi ile ele alınan bir vaka sunumu bulunmaktadır. EMDR (Göz Hareketleriyle Duyarsızlaştırma ve Yeniden İşleme) terapisi, travmatik anıları işlemek ve kişinin bu anılarla ilişkili duygusal sıkıntılardan kurtulmasına yardımcı olmak için kullanılan bir terapi yöntemidir. EMDR terapisi ile kişinin zorlayıcı anılarını daha az rahatsız edici hale getirilir ve bu anılarla ilişkilendirilmiş duygusal tepkiler azaltılmaya çalışılır. Terapist, kişiyi travmatik anılarını

hatırlamaya yönlendirirken, aynı zamanda belirli göz hareketleri, ses veya dokunma gibi uyarıcılara odaklanmasını sağlar. Bu göz hareketleri, beyin tarafından işlenmemiş anıların işlenmesine yardımcı olabilir. Yapılmış olan bu çalışmada, 30 yaşında bir kadın danışanın EMDR terapi süreci ele alınmıştır. Danışan yaşadığı yoğun kaygı sebebiyle terapiye başvurmuştur. Çocukluk sürecinde yaşamış olduğu zor yaşantılar, yakın geçmişte yaşadığı kürtaj yaşantısı, pandemi döneminde ailesiyle yaşamaya başlamasıyla birlikte tetiklenmiştir. Danışan bu dönemde obsesif düşüncelerinin olduğunu ve kaygı atakları yaşadığını dile getirmiştir. Ailesinin kürtajı öğrenebileceğine dair korkuları beraberinde suçluluk ve utanç duygularını getirmiştir. Danışan, “ben iradesiz biriyim” olumsuz inancı çalışarak yerine “ben ne istediğini bilen biriyim” inancını geliştirmeyi başarmıştır. Olumsuz inancını tetikleyen anılar çalışılmıştır. Bu anılar üzerinde yapılan işlemle danışanın kaygı düzeylerinde azalma, bedensel rahatsızlıklarında rahatlama ve duygusal denge sağlanmıştır. Terapi sürecinin sonunda, danışanın kaygısı ve obsesif düşüncelerinde önemli bir azalma görülmüştür. Bu çalışma, EMDR terapisi ile travma sonrası kaygı, suçluluk ve utanç duyguları üzerine yapılan müdahalelerin, danışanın içsel barışa ulaşmasında ve kaygı düzeylerini düşürmesinde önemli bir rol oynadığını göstermektedir.

**Anahtar Kelimeler:** EMDR, Kaygı, Travma, Suçluluk, Utanç, Terapi

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## **Age-related Features of the Layered Structure and Microcirculation of the skin in Women with Different Morphotypes of Aging**

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### **ABSTRACT**

The analysis of ultrasound data on age-related features of structural changes in the layers and vessels of the skin was carried out. The soft tissues of the face were evaluated and ultrasound examinations of the skin layers and vessels of sixty female patients aged 45 to 55 years were characterized. A correlation has been revealed between changes in the mechanical properties of the skin layers and microcirculation features in different morphotypes of aging, which manifest themselves in different thicknesses, mechanical properties and microcirculation features. Signs of involution of the fine-wrinkled type of aging are caused by a violation of microcirculation of the first type, in which the intensity of blood flow correlates with the level of metabolic activity of the surrounding tissues. The deformational type of aging is characterized by blood deposition, venous stagnation and, as a result, destruction of capillaries, an increase in the size of the perivascular zone.

**Keywords:** skin, epidermis, dermis, subcutaneous tissue, morphotype of aging

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# Pre-Hospital Emergency Health Service Workers' Perception of Disaster Preparedness

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## ABSTRACT

**Introduction-Purpose:** Being prepared for disasters among prehospital emergency health care workers, who work on the front lines during disasters, is important in increasing survival and crisis management. This study aimed to examine the disaster preparedness perception level of healthcare workers working in prehospital emergency health care services.

**Material-Method:** Within the scope of the research, data were collected from 382 Paramedics and Emergency Medical Technicians working in prehospital emergency health care services in Turkey . Incollectingthedata, theSocio - Demographic Information Form preparedbytheresearcher in the light of literature and the Prehospital Emergency Services Healthcare Workers' Disaster Preparedness Perception Scale (HASPAHA) were used.

**Results:** It was found that 56.3% of the participants were female, 43.7% were male, 16% were 18-25 years of age, 53.1% were 26-34 years of age, 29.8% were 35-45 years of age, and 1% were over 46 years of age. Of the participants, 59.4% wereParamedics , 40.6% had thetitle of Emergency Medical Technician , 44.8% were National Medical Rescue Team volunteers, and 55.2% were not National Medical Rescue Team volunteers. The mean HASPAHA scale total score of healthcare professionals working in pre-hospital emergency healthcare services was found to be 117.73 ( Sd 17.480) ( $p<0.05$ ). A significant difference was found between gender and the HASPAHA scale total score, self-sufficiency, intervention skill sub-dimensions, and the self-sufficiency and intervention skill sub-dimension scores of male healthcare professionals were found to be statistically significantly higher than those of female healthcare professionals ( $p<0.05$ ). A significant difference was found between age and the sub-dimensions of desire and intervention skill ( $p<0.05$ ). A significant difference was found between marital status and having children and the HASPAHA scale total score, importance, self-sufficiency, intervention skill and benefit sub-dimensions ( $p<0.05$ ). A significant difference was found between the level of education and the desire and benefit sub-dimensions, between the duration of working in emergency health services and the intervention skill sub-dimensions, between being a National Medical Rescue volunteer and the HASPAHA scale total score, desire, importance, self-sufficiency, intervention skill and benefit sub-

dimensions ( $p<0.05$ ). A significant difference was found between the participants' status of losing a relative in any disaster and the benefit sub-dimension, between the status of participating in disaster response activities and receiving disaster awareness training and the HASPAHA scale total score, desire, importance, self-sufficiency, intervention skill and benefit sub-dimensions ( $p<0.05$ ).

**Conclusion:** Pre-hospital emergency health service workers should always be ready for disaster situations and should also be leaders in raising awareness of the society against disasters. Trainings and courses should be organized in order to strengthen the disaster preparedness perception of pre-hospital emergency health service workers. The preparedness of pre-hospital emergency health service workers against disasters is of great importance in ensuring the effective execution of health services before, during and after disasters, as well as in preventing mortality and morbidity.

**Keywords:** Emergency Health Services, Disaster, Preparedness

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# Efferent İşitsel Sistemin Değerlendirilmesinde Kontralateral Supresyon Testinin Kullanılması

## *Use of Contralateral Suppression Test in Evaluation of Efferent Auditory System*

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### **ABSTRACT**

The medial olivocochlear (MOC) tracts are associated with the medial olivocochlear bundle (MOCB), which consists of efferent auditory fibers. The MOC reflex regulates cochlear amplification by inhibiting the electromotility of the outer hair cell. The MOC reflex can be evaluated by giving otoacoustic emission stimuli to the ipsilateral ear and noise to the contralateral ear. This evaluation is performed using the otoacoustic emission (OAE) test and is known as contralateral suppression. In order to evaluate the MOC reflex in various clinical situations, the contralateral DPOAE or TEOAE suppression test can be used. In our study, studies between 2019-2024 in the Pubmed and Web of Science databases were examined using the keywords "otoacoustic emissions, OAE, contralateral suppression" and 11 studies suitable for the purpose of our study were included. In these studies, it was determined that the contralateral suppression test was applied in areas such as tinnitus, dance, autism, central auditory processing disorder, obstructive sleep apnea syndrome, specific learning disability, COVID-19, hyperbilirubinemia and understanding speech in noise. In this study, it is recommended to investigate the use of contralateral suppression in different clinical situations other than the specified clinical situations.

**Keywords:** Medial olivocochlear reflex, otoacoustic emission, contralateral suppression

### **ÖZET**

Medial olivokoklear (MOC) yolları efferent işitsel liflerden oluşan medial olivokoklear demet (MOCB) ile ilişkilidir. MOC refleksi, dış tüy hücresinin elektromotilitesini inhibe ederek koklear amplifikasyonu düzenler. MOC refleksi, ipsilateral kulağa otoakustik emisyon uyarını kontralateral kulağa gürültü verilerek değerlendirilebilir. Bu değerlendirme otoakustik emisyon (OAE) testi kullanılarak yapılmakta ve kontralateral supresyon olarak bilinmektedir. Çeşitli klinik durumlarda MOC refleksini değerlendirebilmek için kontralateral DPOAE ya da

TEOAE supresyon testi kullanılabilmektedir. Çalışmamızda Pubmed ve Web of Science veri tabanlarında 2019-2024 yılları arasındaki çalışmalar “otoacoustic emissions, OAE, contralateral suppression” anahtar kelimeleri kullanılarak incelendi ve çalışmamızın amacına uygun olan 11 çalışma dahil edildi. Bu çalışmalarda kontralateral supresyon testinin tinnitus, dans, otizm, santral işitsel işleme bozukluğu, obstrüktif uyku apnesi sendromu, özel öğrenim güçlüğü, COVID-19, hiperbilirubinemi ve gürültüde konuşmayı anlama gibi alanda uygulandığı belirlenmiştir. Bu çalışmada, belirlenen klinik durumların haricinde, kontralateral supresyonun farklı klinik durumlardaki kullanımının araştırılması önerilmektedir.

**Anahtar Kelimeler:** Medial olivokoklear refleks, otoakustik emisyon, kontralateral supresyon



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# Investigation of the Effects of Some Endoplasmic Reticulum Stress-Related Molecules in Combination with Cisplatin on Cisplatin-Resistant Lung Cancer

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## ABSTRACT

The development of resistance to cisplatin poses a significant challenge in cancer therapy. This study aimed to investigate the potential synergistic effects of cisplatin in combination with Bortezomib, Eeyarestatin 1, 4 $\mu$ 8c, and GSK2606414 and to explore the reversal of cisplatin resistance in A549 cells resistant to cisplatin (A549/CDDPr).

IC<sub>50</sub> values for each molecule were determined in A549 and A549/CDDPr cells. Combination treatments at multiples of IC<sub>50</sub> doses were applied, and synergistic effects were analyzed using the Combination Index (CI) via CompuSyn software. Western blotting was performed to evaluate the impact of cisplatin and GSK2606414 combinations on ER stress and apoptosis-related proteins, including Perk, Bip, p-Perk, Chop, Parp, and cleaved-Parp.

In A549/CDDPr cells, low-dose combinations failed to exhibit synergistic effects. Synergistic effects (CI<1) were observed only in A549 cells with the cisplatin and GSK2606414 combination at specific concentrations. Western blot analysis revealed that, compared to cisplatin alone, combinations containing cisplatin at 10  $\mu$ M resulted in increased expression of Perk, Bip, and cleaved-Parp, while p-Perk and Chop expression decreased.

While combinations lacked synergy in A549/CDDPr cells, the observed synergy between cisplatin and GSK2606414 in A549 cells suggests a promising approach for enhancing cisplatin efficacy in non-resistant cancer cells.

**Keywords:** Lung cancer, Cisplatin resistance, Bortezomib, Eeyarestatin 1, 4 $\mu$ 8c, GSK2606414

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# **Aromatherapy and Periodontal Diseases, A Systematic Review of Literature**

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## **ABSTRACT**

The World Health Organization (WHO) has reported that 90-95% of the population has signs of gingivitis in adults and children, and 5-15% are affected by severe periodontitis. Essential oils offer many benefits in treating oral infections, thanks to their anti-infectious, analgesic, and anti-inflammatory properties, they relieve pain and promote the healing of necrotic tissues.

The aim of this systematic review is to ensure rapid scientific access to the use of aromatherapy in the treatment of periodontitis and gingivitis.

It involved randomized controlled clinical trials from the databases Science Direct and PubMed. It was conducted using the PRISMA method and the PICO model. The methodological quality was evaluated by the CONSORT scores.

Nineteen articles were retained; 18 found aromatherapy to be effective in reducing clinical signs of gingivitis and bleeding. The essences of menthol, thymol, and eucalyptol were the most represented. The CONSORT evaluation showed that 22 items were above 80%.

Aromatherapy can be an effective and complementary means in the management of oral diseases.

**Keywords:** Aromatherapy, Gingivitis, Periodontitis, Algeria

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# Investigation of the Effects of Tribulus Terrestris (TT) and Its Compounds on Healthy Cells

## *Tribulus Terrestris (TT) ve Bileşiklerinin Sağlıklı Hücreler Üzerindeki Etkilerinin İncelenmesi*

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### **ABSTRACT**

**Objective:** Tribulus terrestris (TT), a plant that thrives in arid environments, has long been used in traditional medicine as a tonic and aphrodisiac. Its roots and leaves contain saponins, which may have beneficial effects on growth, sexual function, and erectile dysfunction, among other health issues. Moreover, TT has shown cytostatic effects on cancer cells. However, its potential carcinogenicity in humans remains under-researched. The aim of this study was to investigate the biological effects of TT on healthy cell lines, BEAS-2B and HUVEC, to determine whether TT poses a threat to healthy cells and to explore its therapeutic potential.

**Methods:** Tribulus terrestris plants were ground and extracted with methanol using a Soxhlet extraction method at 65°C for 4–6 hours. The solvent was then evaporated to obtain a dried extract, which was stored at +4°C. The BEAS-2B cell line was cultured in DMEM, and the HUVEC cell line was cultured in RPMI 1640. Cell viability was assessed using the MTT assay. Cells were incubated in 96-well plates, and after adding MTT dye, absorbance was measured to determine the IC50 value. The experiments were repeated three times.

**Results:** After a 4-hour incubation with MTT dye, solubilization was performed, and absorbance was measured at 570 nm to calculate the IC50 and selectivity index. Statistical analysis ( $P<0.05$ ) indicated significant differences in cell viability in both BEAS-2B and HUVEC cell lines. The results were statistically significant, showing the effects of Tribulus terrestris.

**Conclusion:** The data obtained from BEAS-2B cell lines demonstrated significant differences in cell viability between the control group and the first two doses of TT. In HUVEC cell lines, significant differences were observed between the control group and the first three doses of TT. These findings suggest that these doses

may be used in future studies investigating the therapeutic potential of Tribulus terrestris.

**Keywords:** Tribulus Terrestris, MTT, BEAS-2B, HUVEC

## ÖZET

**Giriş:** Tribulus terrestris (TT), özellikle kuru iklimlerde yetişen, geleneksel tıpta afrodizyak ve tonik olarak kullanılan bir bitkidir. Yaprakları ve köklerinden elde edilen saponinler, erektil disfonksiyon, cinsel işlev bozuklukları, hipertansiyon gibi sağlık sorunlarına faydalı olduğu öne sürülmektedir. Son araştırmalar, TT'nin kanser hücrelerine karşı sitostatik etkiler gösterdiğini ancak insanlardaki kanser karşıtı potansiyelinin yeterince araştırılmadığını ortaya koymuştur. Bu çalışmada, Tribulus terrestris'in (TT) biyolojik etkileri BEAS-2B ve HUVEC sağlıklı hücre hatlarında incelenmiştir. TT'nin toksik etkileri ve biyolojik aktivitesi değerlendirildi, ayrıca kanser hücre hatlarındaki potansiyel etkileri analiz edilerek, sağlıklı hücrelere zarar verip vermediği ve terapötik potansiyeli belirlenmiştir.

**Mateyal metot:** Bitkiler kurutulup öğütülerek metanolde çözüldü ve Soxhlet ekstraksiyon yöntemiyle 65°C'de 4-6 saat işleme tabi tutuldu. Elde edilen özüt evapratörle çözücüsü uzaklaştırılarak kurutuldu ve +4°C'de saklandı. Beas-2B hücre hattı DMEM, Huvec hücre hattı ise RPMI 1640 ile kültüre edildi. Hücre canlılığı MTT assay yöntemiyle değerlendirildi. Hücreler, 96 kuyucuklu plakada inkübe edilip MTT boyası eklenerek absorbans ölçüldü ve IC50 değeri belirlendi. Deneyler üç tekrar edildi.

**Sonuç:** MTT boyası eklenip 4 saat inkübe edildikten sonra çözünürleştirme yapıldı ve absorbans 570 nm'de ölçülerek IC50 ve seçicilik indeksi hesaplandı. Beas-2B ve Huvec hücre hatlarında elde edilen veriler, bileşiklerin etkisini gösteriyor. İstatistiksel analizler, anlamlı farklar için  $P < 0,05$  düzeyinde yapıldı, sonuçlar anlamlı bulundu.

**Tartışma:** BEAS-2B hücre hatlarından elde edilen veriler, kontrol grubu ile TT'nin ilk iki dozu arasında hücre canlılığında önemli farklılıklar olduğunu göstermiştir. HUVEC hücre hatlarında, kontrol grubu ile TT'nin ilk üç dozu arasında önemli farklılıklar gözlemlenmiştir. Bu bulgular, bu dozların Tribulus terrestris'in terapötik potansiyelini araştıran gelecekteki çalışmalarda kullanılabileceğini düşündürmektedir.

**Anahtar Kelimeler:** Tribulus Terrestris, MTT, BEAS-2B, HUVEC

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# Use of Virtual Reality in Benign Paroxysmal Positional Vertigo

## *Benign Paroksismal Pozisyonel Vertigoda Sanal Gerçekliğin Kullanımı*

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### **ABSTRACT**

Benign Paroxysmal Positional Vertigo (BPPV) is one of the most common causes of peripheral vertigo. Positional tests are frequently used in the diagnosis of BPPV and the evaluation of the effectiveness of treatment. Recently, virtual reality (VR) systems have begun to be used in the treatment of BPPV. VR increases the patient's compliance with the treatment by allowing the individual to perceive the environment they are in more realistically and immersively with simulated scenarios to challenge and improve the vestibular functions of individuals with BPPV. Since patient cooperation is required during positional tests, the use of VR by individuals with BPPV is advantageous for the individual. In our study, studies between 2018-2024 in Pubmed and Web of Science databases were examined using the keywords "benign paroxysmal positional vertigo, vestibular rehabilitation, virtual reality" and 4 studies that were suitable for the purpose of our study were included. In these studies, it was observed that treatment maneuvers and VR technology have similar therapeutic effects in patients with BPPV and that the healing effects of VR technology are similar to Brand-Daroff, Cawthorne-Cooksey exercises. Since the VR system can be a promising technology in patients with BPPV, it is recommended to be used in clinics.

**Keywords:** Benign paroxysmal positional vertigo, virtual reality, vertigo, vestibular

### **ÖZET**

Benign Paroksismal Pozisyonel Vertigo (BPPV), periferik vertigonun en yaygın nedenlerinden biridir. BPPV tanı ve tedavinin etkinliğinin

değerlendirilmesinde sıklıkla pozisyonel testler kullanılmaktadır. BPPV tedavisinde son dönemlerde sanal gerçeklik (VR) sistemi kullanılmaya başlanmıştır. VR BPPV'si olan bireylerin vestibüler fonksiyonlarını zorlamak ve iyileştirmek için simüle edilmiş senaryolarla bireyin içerisinde bulunduğu ortamın daha gerçekçi ve sürükleyici olarak algılamasına olanak sağlayarak hastanın tedaviye uyumunu arttırmaktadır. Pozisyonel testler sırasında hasta kooperasyonunun gerekmesi nedeniyle BPPV'li bireylerin VR'ı kullanılmasının birey için avantaj olmaktadır. Çalışmamızda Pubmed ve Web of Science veri tabanlarında 2018-2024 yılları arasındaki çalışmalar "benign paroxysmal positional vertigo, vestibular rehabilitation, virtualreality" anahtar kelimeleri kullanılarak incelendi ve çalışmamızın amacına uygun olan 4 çalışma dahil edildi. Bu çalışmalarda, BPPV'li hastalarda tedavi manevraları ile VR teknolojisinin benzer tedavi edici etkiye sahip olduğu ve Brand-Daroft, Cawthorne-Cooksey egzersizleri ile VR teknolojisinin iyileştirici etkisinin yakın olduğu görülmüştür. BPPV'li hastalarda VR sisteminin umut verici bir teknoloji olabileceği için kliniklerde kullanılması önerilmektedir.

**Anahtar Kelimeler:** Benign paroksizmal vertigo, sanal gerçeklik, baş dönmesi

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# The Use of Artificial Intelligence in Mental Health Care: Opportunities and Challenges

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## **ABSTRACT**

Artificial intelligence (AI) has gained great importance in recent years in terms of place, time, professional expertise and cost effectiveness. Technologies such as virtual reality, chatbots and smartphone applications are used in the diagnosis, treatment, follow-up and education areas of mental health services. Easy access to mental health services, less stigma, less workload, and personalization of treatment are shown as the advantages of AI. Inability to establish empathy and therapeutic bonds, prejudice and discrimination problems are among the disadvantages of AI applications. AI brings with it various ethical issues. The misuse of data collected by AI with unauthorized access is an important problem in terms of patient privacy and confidentiality. In addition, algorithms that are not configured correctly can lead to misdiagnosis and inappropriate treatments. The integration of AI into psychiatric nursing is quite promising. Although the technology is promising, it should be balanced with the irreplaceable human touch in nursing. The advantages of artificial intelligence such as common sense, honesty, benevolence and promoting justice can be utilized. Despite its potential, the fact that it has disadvantages and causes ethical problems raises concerns about the integration of AI into mental health services and its use in the treatment of patients.

**Keywords:** artificial intelligence, mental health care, nurses

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# Evaluation of Physical Workload in an Algerian Maternity: Risk Identification and Ergonomic Prevention Strategies

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## **ABSTRACT**

### **Introduction**

Physical workload is a significant challenge in maternity wards, where healthcare workers face intense demands such as patient handling, prolonged postures, and repetitive efforts. This study, conducted in an Algerian maternity ward, uses the INRS (National Institute for Research and Safety) method to evaluate physical workload, identify biomechanical, organizational, and environmental risks, and propose improvement strategies.

### **Methods**

This study followed a structured three-step approach. First, risks were identified and prioritized using ergonomic indicators to highlight critical situations. Second, a detailed evaluation of physical workload was conducted based on five dimensions : physical effort, staffing levels, temporal constraints, organizational factors, and environmental conditions. Risks were stratified into moderate and high levels to focus on key areas for intervention. Finally, preventive strategies were proposed to reduce constraints and improve working conditions for healthcare workers.

### **Results**

Out of 31 work situations analyzed, 47.2% exhibited moderate to high-risk levels. The gynecology, high-risk pregnancy, and neonatology units concentrated critical constraints, including prolonged postures and intense physical efforts.

### **Conclusion**

The study highlights key priorities such as improving ergonomic equipment and reorganizing workflows to reduce physical strain and preserve healthcare workers' health while ensuring quality patient care. This provides a foundation for targeted preventive strategies.

**Keywords:** Physical workload, Ergonomic assessment, Healthcare workers, Risk identification, Prevention strategies



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# Application of the WISN Method for Assessing Healthcare Staffing Needs in a Maternal and Child Health Facility in Algeria

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## **ABSTRACT**

### **Background**

Algeria faces significant challenges in ensuring equitable distribution of healthcare staff, as traditional staffing norms often fail to account for factors such as population density, mortality, and morbidity. The World Health Organization's (WHO) Workload Indicators of Staffing Needs (WISN) method provides an effective solution to assess staffing needs based on actual workload data.

### **Methods**

This study applied the WISN method in 10 departments of a maternal and child health facility between 2021 and 2023. Focus group discussions involving 31 healthcare workers were conducted to assess activities, and personnel records and workload data were analyzed to estimate available working time (AWT) and staffing requirements.

### **Results**

WISN ratios ranged from 0.23 to 0.98, indicating a shortage of 1 to 5 midwives in three departments, 1 to 6 nurses in six departments, and 5 pediatric nurses in two departments. The average annual AWT was 1528.81 hours (SD: 184.94). On average, 52.65% of the time was allocated to care activities, 42.38% to support activities, and 4.96% to additional tasks.

### **Conclusions**

The WISN method is a valuable tool for effective workforce planning. These findings encourage its broader implementation to optimize staffing in healthcare facilities and inform evidence-based policies for resource allocation.

**Keywords:** Human resources, WISN, workload, nursing, workforce planning.

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# Effects of Nano Styrene on the Midgut of Soil Invertebrate *Lithobiusforficatus* – Preliminary Studies

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## **ABSTRACT**

Micro- and nanoplastics are common in the aquatic and soil environment. In recent years, there has been an increasing number of studies indicating the harmful effects of nanoplastics on living organisms. According to literature data, the results of the studies confirm public concerns about the threats associated with plastic in soil ecosystems. *Lithobiusforficatus* is an invertebrate species used in studies as a bioindicator to assess and analyze environmental pollution. It is a well-known, widespread species in Europe, occurring under rocks, in the upper soil layers, in litter or under stones. The study aimed to check whether short-term exposure of soil animals to one of the nanoplastics - nanostyrene causes changes in the structure and ultrastructure of the epithelial cells of the midgut of the centipede. Using transmission electron microscopy, light microscopy, and histochemical staining, a negative effect of nanoplastics on the ultrastructure of the midgut epithelium of *L. forficatus* was demonstrated. The changes concerned digestive cells, regenerative cells, cell organelles, and activation of the autophagy process. The results of a month of exposure indicate that the midgut is a protective barrier against the stressor.

**Keywords:** Nanoplastic, *Lithobius forficatus*, midgut, ultrastructure

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# The Joint Health and Safety Commission and the challenges of workplace adjustments

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## ABSTRACT

**Introduction:** The Joint Health and Safety Commission (JHSC) plays a vital role in preventing occupational risks and improving working conditions in collaboration with occupational health services. In

**Objective:** The main objective of the JHSC is to adapt workplaces to the needs of employees, particularly those experiencing health-related issues.

**Materials and Methods:** Legal Framework: Ensuring compliance with safety regulations, regular meetings, and confidentiality of medical information.

Participatory Approach: Creating a trusting environment to encourage active participation from JHSC members.

**Case Analysis:** Reviewing cases of employees who require workplace adjustments due to health conditions.

**Results and Discussion:** The meetings involved key stakeholders, with the occupational physician as the central coordinator. The physician's tasks included:

- Encouraging active participation and fostering collective discussions.
- Explaining necessary workplace adjustments based on employees' health conditions.
- Turning negative feedback into constructive suggestions.
- Ensuring balanced speaking time to maintain a productive atmosphere.

**Case Studies:** Various roles, including midwives, laboratory technicians, physicians, nurses, and drivers, underwent workplace adjustments.

- Implemented Adjustments
- Technical: Equipment adaptations.
- Organizational: Task reduction or schedule reorganization.

**Conclusion:** Although establishing the JHSC is a legal requirement in Algeria, its effective implementation remains a challenge, requiring enhanced collaboration among stakeholders to ensure a safe and compliant working environment.

**Keywords:** Joint Health, Safety, Commission, Occupational health, Workplace adjustments

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## Effect of nickel on the midgut of freshwater shrimp *Neocaridina davidi*

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### ABSTRACT

Nickel is a heavy metal naturally occurring in soil and aquatic environments. An increasing concentration of this element has been observed for a few years, mainly because of anthropogenic factors. The aim of the study was to analyze the cytotoxicity of Ni in freshwater invertebrates at different levels of the animals body. A species of shrimp originating from Asia but widespread in Europe was selected for studies on Ni cytotoxicity in freshwater organisms. During the research, shrimps were exposed to Ni and recovered to clean water to check for reversible changes. After the exposition, the midgut was isolated and analyzed. Qualitative and quantitative analyses were performed. Exposition to nickel affected the midgut epithelium. Degenerative changes were observed at the ultrastructure level, including the structure and function of mitochondria. Moreover, exposure to Ni increased death cell processes and disrupted the cell cycle and proliferation. Recovering shrimps to water caused gradual regeneration of changes caused exposition, especially in a longer time in clean water. The National Science Centre, Poland, financed the study, grant no 2021/41/N/NZ8/01436 (PRELUDIUM 20).

**Keywords:** nickel, shrimps, histology, degeneration changes