12th NAYREC

National Young Researchers Conference 2025

Theme:

Voice of the Next Generation:
Research at the Intersection of Science, Technology, and Language through Education in Changing the World

PHYSICS

BIOLOGY

COMPUTER

MATHEMATICS

ENGLISH

ABSTRACT BOOK

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Abstract Book of NAYREC-2025

12th National Young Researchers Conference

(NAYREC-25)

May 29th, 2025

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FOREWORD

This abstract book contains the proceedings of the **National Annual Young Researchers' Conference (NAYREC 2025)**, organized at the Faculty of Education at **Tishk International University** by the Mathematics Education Department. As an annual academic gathering, NAYREC continues to serve as a dynamic platform for undergraduate and graduate students to present their research, share innovative ideas, and engage in scholarly dialogue across various fields of study.

NAYREC 2025 emphasizes interdisciplinary collaboration and showcases contributions in the areas of **Pure and Applied Mathematics and Statistics, English Language and Literature, Education and Science Education Studies, Pure and Applied Physics, Biology and Biomedical Sciences, Computer and Data Science, Chemistry and Chemical Sciences, and Environmental Sciences.** . The conference is designed to nurture academic growth, encourage critical thinking, and support the development of future researchers.

This year's event has attracted a remarkable level of interest, with **over 80 abstracts submitted** from students representing **more than seven departments and several regional and international universities.** The scientific committee thoroughly reviewed each submission to ensure academic integrity, originality, and relevance.

NAYREC plays a vital role in promoting a culture of research among young scholars in the **Kurdistan Region of Iraq** and beyond. By providing a forum for students to present their final year work in a professional and supportive environment, the conference helps to strengthen academic confidence and foster meaningful collaboration among participants.

We sincerely thank all contributing authors, peer reviewers, session chairs, organizing committee members, and supporting staff for their dedication and commitment to the success of **NAYREC 2025**. Your efforts are a reflection of the shared goal of advancing academic excellence and empowering the next generation of researchers.

We hope the research presented at NAYREC 2025 will serve as a catalyst for continued inquiry, innovation, and academic achievement.

Conference Chair
NAYREC 2025

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ABSTRACT

As artificial intelligence continues to shape modern life, the need for purposeful self-development among the next generation has become increasingly important. Generative AI, defined as technology that produces new content by analyzing large datasets and learning from user interactions, is already integrated into everyday platforms such as YouTube and Netflix. Although its capabilities are expanding, AI should not be mistaken for human intelligence. It operates through patterns and predictions, often producing errors or inaccurate information, and must be guided by human input and ethical oversight. It is not designed to replace people but to support and enhance human potential. By participating in educational opportunities, asking questions, and understanding how AI functions, young people can position themselves as active contributors in an AI-driven world. The rise of prompt engineering has also highlighted the importance of language and linguistics in communicating effectively with AI, showing that the way we frame our inputs deeply shapes the outcomes. AI is now being used to assist doctors in diagnosing rare diseases more accurately, allowing lawyers to spend less time on paperwork and more time with clients, and helping teachers personalize learning and manage classroom tasks more efficiently. For the younger generation, AI offers the chance to explore new fields, increase financial independence, and build meaningful careers in emerging industries. Whether in tech, education, healthcare, or creative sectors, those who understand and work with AI will unlock greater opportunities. A future shaped by AI does not require young people to compete with machines but to work alongside them. With the right knowledge and mindset, greater opportunities can be created and lead by this generation. The aim of this speech is to explore how young people can develop themselves, stay grounded and find meaningful opportunities in a world increasingly influenced by AI.

Keywords: Artificial Intelligence, Next Generation, Youth, Self Development, Future.

EVALUATION OF THE IN VITRO ANTIOXIDANT AND ANTIDIABETIC POTENTIALS OF STEM BARK METHANOLIC EXTRACT OF BORASSUS AETHIOPUM

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ABSTRACT

Borassus aethiopum locally known as Giginya is a palm tree of Araceceae family. It is not cultivated like other known crops but grow in the wild, mostly in the Northern part of Nigeria. The fruit was previously identified as a potent hypolipedemic, antidiabetic, and antioxidant. However, the antidiabetic and antioxidant activities of the stem bark have not been scientifically validated and authenticated. The present study aimed to investigate the in vitro anti-diabetic and antioxidant potential of stem bark crude extract and solvent fractions. The total phenol content (TPC), total flavonoid content (TFC) and total tannins were investigated. The antioxidant activity of the leaf as assessed employing three assays (2-diphenyl-1-picrylhydrazil (DPPH) free radical scavenging assay, reducing power assay and metal chelating assay). Antidiabetic activity was investigated by in vitro Î±-amylase and Î±-glucosidase inhibitory activity assay. The chemical composition of most active antidiabetic subfraction was determined by Liquid Chromatography-Mass Spectrometry (LC-MS). Methanol stem bark fraction (MSTF) exhibited higher scavenging activity, than methanol crude stem bark (MCSB) and ethylacetate stembark fraction (EASF). The metal chelating capacity of MSTF showed the highest degree of electron donation (reducing power). EASF exhibited effective inhibition of Î±-amylase and Î±-glucosidase. Fractionation and purification of the ethyl acetate fraction using column chromatography and thin layer chromatography gave six ethyl acetate subfractions. SF2 had the lowest IC50 for Î±-glucosidase activity, there was significant difference almost amongst all subfractions in the enzyme activity. SF2 was selected and profiled by LC/MS, as it had the best DPPH and Î±-glucosidase inhibitory activity. The compounds identified among others are vanillic acid, 2- furoic acid and citreoisocoumarin. Potential antidiabetic activity of methanol extracts could be from the identified compounds.

Keywords: *Borassus aethiopum, antidiabetic, antioxidant, Î±-amylase, Î±-glucosidase*

MICROSCOPIC AND MACROSCOPIC EXAMINATION OF FUNGI ASSOCIATED WITH CITRUS SINENSIS IN ERBIL, KURDISTAN REGION IRAQ

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ABSTRACT

Fungal pathogens linked to Citrus sinensis (Sweet orange) cause major problems which reduce both fruit quality and yield quantities in agriculture. Diverse fungal pathogens found in citrus require combined macroscopic alongside microscopic analysis to correctly identify and characterize them. Mycological species affecting. Aside from grapes with superior quality and shelf life, sweet oranges are a valuable export fruit crop. Unfortunately, it is one of the fruits that is known to be afflicted with a variety of pathogens that lower the fruitâ€™s quality. Over 50% of the produced fruit may be lost during storage and transit in impoverished countries, where handling and protection of fresh fruit are adequate measures. The study aimed to isolates and identify the fungal species responsible for the spoilage of sweet oranges sold in Erbil, Iraq. The study employed ager well method to examine the fungal responsible for the spoilage. This study carefully isolated and identified five fungal species associated with the spoilage of sweet oranges sold in Erbil, Iraq. A. niger, Candida spp, A. flavus, A. terreus, and R. stolonifer. Among these fungal species, A. niger was the most predominant, accounting for 48.15% of the total isolates, followed by Candida spp. (29.63%). A. flavus, A. terreus, and R. stolonifer occurred less frequently. The findings affirm the global predominance of A. niger as a major postharvest spoilage agent in citrus fruits, and also highlight the notable presence of Candida spp. The collected data will create more effective disease management methods which protect citrus farming in this particular region.

Keywords: *Citrus sinensis, pathogens, fungal, sweet orange*

ETHNOBOTANY, EFFECT OF STORAGE CONDITION ON THE CHEMICAL COMPOSITION OF FICUS CARICA

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ABSTRACT

Ficus carica (fig) is an evergreen tree and belongs to the Moraceae family, and this tree is originated from the Eastern Mediterranean and Western Asia region. It has been on record that the fruits, leaves and the bark of this plant have been used in traditional medicine cure, food preparation as well as in ethnopharmacological uses. Unfortunately, notwithstanding its crucial historical relevance and economic activity, there is insufficient detailed knowledge about economically significant Ethnobotanical uses. Ethnobotanical surveys were carried out. Different storage conditions were utilised to see the effect on the chemical composition. GCMS was carried out to see the effect on storage conditions. Number of diseases were treated with Ficus carica. Different compounds were identified and are known for their biological properties. O-ethyltoluene,, Hexanal, Benzyl acetate, Î±-Terpineol, o-cymene, Furfural, o-xylene, Isodurene, Linoleic acid, carbolic acid, Mequinol, 3-octa, Pyridine and Toluene. More studies should be carried out in the future to explain the pharmacological effects of the compounds and how it can be efficiently used to meet the demands of present-day uses.

Keywords: *Ficus carica, GCMS, food, Ethnobotanical.*

OMPREHENSIVE REVIEW ON THE BIOLOGICAL AND PHARMACOLOGICAL PROPERTY OF HIBISCUS SABDARIFFA

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ABSTRACT

Hibiscus sabdariffa L., commonly referred to as Roselle, is a medicinal plant that is extensively cultivated and recognized for its rich phytochemical composition and extensive health benefits. This review present the biological and pharmacological characteristics of various parts of the H. sabdariffa plant-including the calyx, leaves, roots, stems, seeds, and flowers-each contributing uniquely to human health. Hibiscus sabdariffa cultivated in the tropic and subtropical region such as Africa, Asia, and the Caribbean. It has also been used as a medicinal plant for centuries by traditional practices for the management of several diseases. This review reports the ethnomedical use of Hibiscus sabdariffa according to recent studies and emphasizes the pharmacological and health effect of the plant. Article published in PubMed, ScienceDirect, Scopus, and Google Scholar were searched using related keywords. The keywords were Hibiscus sabdariffa, traditional use, distribution, and pharmacological activity. Various parts of the plant like calyx, leaves, roots, seeds, and stems have been explored for their potential in the therapy of diseases such as hypertension, liver disease, diabetes, cancer, microbial infection, obesity, and oxidative stress. The result showed that Hibiscus sabdariffa is due to presence of anthocyanin, flavonoid, phenolic acid, organic acid, and vitamin C content. Therefore, Hibiscus sabdariffa has been found to be potential herbal medicine for human health. However, additional research must be undertaken to establish its optimal dosage, safety profile, and clinical effect to make it a viable complementary medicine.

Keywords: *biological, pharmacological, antioxidant, antihypertensive, roselle*

CLITORIA TERNATEA

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ABSTRACT

Clitoria ternatea L. (CT) (Family: Fabaceae) commonly known as â€˜butterfly peaâ€™, is a traditional Ayurvedic, perennial, herbal medicine especial in India ,native to tropical Asia, long used as an anxiolytic and memory enhancer. They are often used as food coloring in Nasi Kirabu. This review presents the traditional uses of C. ternatea supported by contemporary research and emphasizes the pharmacology and, biological characteristics. Articles published in Elsevier, Google Scholar, Scopus, PubMed, and, Science direct databases were analyzed using relevant keywords. The key words were blue butterfliesâ€™ taxonomy, description, distribution and traditional uses. In addition, the biological and pharmacological properties of C. ternatea plant parts such as stems, flowers, roots and leaves are discussed. In addition treatment of medical conditions or diseases such as diabetes, cancer, infections, microbial infections, memory enhance, asthma, and antioxidant activity. The results showed that C. ternatea has strong efficacy in the treatment of widespread diseases including , breast cancer, depression, anxiety. C. ternatea enhancing memory and has antibacterial, antimicrobial, anti-hyperglycemic, cytotoxic, antioxidant, and antifungal properties. In addition, the flower has antibacterial, antioxidant, antimicrobial, antifungal, antidepressant, anti-inflammatory, and analgesic properties that help the human body. The plant roots contain antioxidants with some other properties such as antimicrobial, antibacterial, cytotoxicity, anti-cancer, anti-inflammatory, and antidepressant. Additionally, because the roots carry the toxin, they have the fewest publication among C. ternatea components, whereas the floral portion has the most. The activities of C. ternatea are due to its collective presence amount of vitamin C, flavonoids, alkaloids, tannins. Thus, C. ternatea has been identified as a therapeutic natural remedy with adaptive potential for human health. Nevertheless, further research is needed to determine the optimal dose and investigate its benefits in clinical trials before it can be considered a viable alternative drug.

Keywords: *Keywords: Clitoria ternate, Butterfly pea, Photo chemistry, Pharmacology, Therapeutic properties, Bioactive compounds*

EPIDEMIOLOGICAL AND THERAPEUTIC PROFILE OF ULCERATIVE COLITIS PATIENTS IN ERBIL PROVINCE

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ABSTRACT

The ulcerative colitis (UC) is a chronic inflammatory disorder of the large intestine start in the rectum and spread to other parts of the colon. Furthermore, its symptoms can vary depending on the extent and the severity of the disease, and it can be a lethal disease as through time it might lead to colorectal cancer if it remains untreated. The incidence of UC increases due to variable reasons in both developing and developed countries. Understanding the local epidemiological trends and treatment approaches is essential for improving disease management and patient outcomes. Thus, this study aims to evaluate the epidemiological characteristics and therapeutic management of ulcerative colitis patients in Erbil, Kurdistan region of Iraq. A retrospective study was conducted on 164 UC patients who visited and were diagnosed at Rzgary hospital from January 2022 to December 2024. The data collected from the medical records included demographic variables, clinical classification, and the medications used. Then, the collected data subjected to statistical analyses, using both frequency and correlation analysis. Among the patients 54.9 % were male and 45.1% where female patients, and the age ranged between 12 to 70 with the mean age 36 years old patients. The most prevalent type of UC was ulcerative proctitis as its prevalence was 52.4%, and the least common was proctosigmoiditis 5.4%. Commonly prescribed treatments included 5-aminosalicylic acid (5-ASA), corticosteroids, and immunosuppressive agents. The correlation analysis has shown a non-significant association between types of disease with age group and gender (P value = 0.09, 0.33) respectively. In conclusion, our study provides a critical insight into the epidemiological and therapeutic landscape of UC in Erbil. Further research is recommended to evaluate long-term outcomes and optimize management protocols in the region.

Keywords: *Ulcerative Colitis, Demographic status, Disease classification, Medication patterns, Erbil*

GENDER-BASED CORRELATION AND REGRESSION ANALYSIS OF RENAL, THYROID, AND HEMATOLOGICAL PARAMETERS WITH SERUM CREATININE IN END-STAGE KIDNEY DISEASE PRIOR TO KIDNEY TRANSPLANTATION IN THE KURDISTAN REGION OF IRAQ.

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ABSTRACT

Chronic Kidney Disease (CKD), a major global health issue, often progresses to End-Stage Kidney Disease (ESKD), necessitating kidney replacement therapy (KRT), with kidney transplantation (KT) being the most effective option. However, gender disparities persist in KT access and outcomes. This retrospective study analyzed clinical records of 200 ESKD patients aged 18â€“65 years who were evaluated for transplantation between 2018 and 2024 in three hospitals in Kurdistan. Data on demographics, kidney function, electrolytes, and complete blood count (CBC) were examined to assess gender-based differences. Most biochemical and hematological parameters showed no significant gender differences, though mean corpuscular hemoglobin (MCH) and triiodothyronine (T3) levels differed significantly ($p = 0.037$ and $p = 0.038$, respectively). Regression analysis identified urea, plateletcrit (PCT), mean platelet volume (MPV), and platelet count (PLT) as significant predictors of serum creatinine. The findings indicate limited but relevant gender-related physiological variations in ESKD patients and underscore the need for more equitable, gender-sensitive approaches in pre-transplant evaluation and care planning.

Keywords: *Biochemical markers, chronic kidney disease (CKD), End-Stage Kidney Disease (ESKD), Gender disparities, Hematological parameters, Hemodialysis, Kidney Transplantation (KT), Serum creatinine*

PREVALENCE AND SOCIO-DEMOGRAPHIC FEATURES OF HEPATITIS B VIRUS INFECTION IN THE RAPARIN DISTRICT

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ABSTRACT

Hepatitis B virus (HBV) remains a pressing public health challenge globally, with significant regional disparities in prevalence, vaccination coverage, and disease outcomes. This cross-sectional study evaluated 130 confirmed HBV-positive individuals in Raparin District, Kurdistan Region of Iraq, between January and April 2025. Data was obtained via structured questionnaires and clinical records, and analyzed using IBM SPSS v22 through descriptive statistics, chi-square tests, t-tests, and logistic regression. The mean age of participants was 32.6 Â± 11.2 years, with a male predominance (56.9%). Rural residency was slightly higher (53.1%), and the most affected occupational groups were the unemployed (33.8%) and farmers (18.5%). Hepatocellular carcinoma (36.9%) and cirrhosis (32.3%) were the most common complications. Multivariate logistic regression identified chronic liver disease (OR = 3.12; 95% CI: 1.57â€“6.21), age >40 (OR = 2.34; 95% CI: 1.25â€“4.38), and male gender (OR = 1.86; 95% CI: 1.08â€“3.21) as significant predictors of liver cancer. Vaccination coverage was suboptimal at 44.6%, with rural residents significantly under-vaccinated compared to urban counterparts (37.7% vs. 52.4%, p = 0.038). Significant associations were also observed between education and occupation (p = 0.008), and between family history and liver complications (p = 0.007). These findings indicate a high burden of HBV-related complications in vulnerable populations and underscore the urgent need for targeted vaccination programs, early screening, and public health interventions tailored to socio-demographically at-risk groups in rural Iraqi communities.

Keywords: *Hepatitis B Virus, Liver Cancer, Epidemiology, Risk Factors.*

DEMOGRAPHICS, CANCER STAGING, AND HORMONE RECEPTOR STATUS IN BREAST CANCER PATIENTS

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ABSTRACT

Breast Cancer is the most common type of cancer in women, and it is the first cause of death in developing countries. Various factors including demographic status of patients, cancer staging, and hormone receptor status are crucial for improving early detection, treatment planning, and patient outcomes of breast cancer. Accordingly, this study aims to comprehensively evaluate the demographic characteristics, cancer staging, and hormone receptor status of Breast Cancer patients in Erbil, Kurdistan region of Iraq. The records of 502 patients from the Oncology Department of Rzgari Hospital between January 2017 and December 2023 who visited the hospital for the purpose of diagnosis and treatment were the subject for this retrospective descriptive analysis. Among the patients there were 486 females and only 16 males, with the age ranged between 23 to 90 and the mean of age was 51.01 years old. Moreover, most of the cases were unemployed (381 patients), and patients were mostly diagnosed in stage II (66.7%). It was found that the two most common types of breast cancer were Invasive Ductal Carcinoma-IDC 85.85% and Invasive Lobular Carcinoma-ILC 6.79%. In addition, the correlation analysis demonstrated that there is a significant correlation between Hormone Receptor Status (ER, PR and HER 2) and Cancer Staging (P-value<0.0001). In conclusion, the most common type of the cancer is found to be Invasive Ductal Carcinoma-IDC, and the most common stage of diagnosis was stage II. The Hormone Receptor Status will change in correlation with cancer stages.

Keywords: *: Breast Cancer, Demographic Factors, Cancer staging, Estrogen Receptor, Progesterone Receptor, HER2*

PREVALENCE AND RISK FACTORS OF HELICOBACTER PYLORI INFECTION IN RAPARIN DISTRICT, KURDISTAN

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ABSTRACT

Helicobacter pylori (H. pylori) is a Gram-negative bacterium linked to chronic gastritis, peptic ulcers, and gastric cancer. Despite its global prevalence, localized data on infection rates and risk factors in Kurdistan remain limited. This study aimed to determine the prevalence of H. pylori infection and identify associated demographic, behavioral, and clinical risk factors among residents of Raparin District, Kurdistan Region, Iraq. A cross-sectional study was conducted using structured questionnaires administered to individuals diagnosed with H. pylori. Data on demographics, lifestyle, and medical history were collected. Statistical analyses included descriptive statistics, chi-square tests, and odds ratio calculations with 95% confidence intervals. Among the variables analyzed, lack of handwashing before meals (OR = 25.29, 95% CI: 2.31â€“277.33, p = 0.0082) and smoking consumption (OR = 12.20, 95% CI: 1.40â€“105.96, p = 0.0233) were significantly associated with increased odds of infection. Other factors, including untreated water consumption, and frequent gastrointestinal symptoms, did not show statistically significant associations. Notably, individuals with only primary education exhibited a potentially protective effect, approaching statistical significance (p = 0.0817). The findings highlight poor hand hygiene and alcohol intake as significant risk factors for H. pylori infection in the Raparin District. These results emphasize the importance of targeted public health interventions focused on hygiene promotion and behavioral awareness. Further research with larger sample sizes and multivariate analysis is warranted to validate these associations and inform preventive strategies.

Keywords: *Helicobacter pylori, Prevalence, Risk Factors, Hand Hygiene, Raparin District.*

STRATEGIES TO OVERCOME CHALLENGES IN USING STEM CELLS FOR TREATING HEART FAILURE

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ABSTRACT

Heart failure (HF) remains a leading cause of morbidity and mortality worldwide, with current therapies unable to reverse the fundamental loss of functional myocardium. In recent years, stem cell therapy has emerged as a promising strategy for cardiac regeneration; however, its clinical application has been limited by numerous challenges. This systematic review explores the diverse obstacles associated with stem cell therapy in heart failure and critically evaluates the strategies proposed to overcome them. A comprehensive literature search was conducted across major databases for studies published between 2014 and 2024. Key challenges identified include poor cell survival and retention, suboptimal delivery methods, immunogenicity, tumorigenicity, limited differentiation and integration capacity, safety concerns, and heterogeneity in clinical outcomes. The review highlights strategies such as genetic and pharmacological preconditioning, biomaterial-assisted delivery, improved cell selection and purification, immune modulation, and protocol standardization. Despite encouraging preclinical results and early-phase clinical trials, variability in outcomes and a lack of long-term data continue to hinder translation into routine practice. This review provides a synthesized overview of current efforts and knowledge gaps, serving as a resource to guide future research and clinical applications aimed at optimizing the therapeutic potential of stem cell-based interventions for heart failure.

Keywords: *Cardiac regeneration, Cell survival, Challenges and strategies, Clinical translation, Delivery methods,*

THE STUDENTS' CHRONIC STRESS AND MEMORY CHALLENGES IN 12TH GRADE IN ERBIL PRIVATE HIGH SCHOOLS CASE STUDY, IRAQ

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ABSTRACT

Today, many students face stress in their daily lives from school deadlines and exams because of the pressure from their families and social challenges. When this stress doesnâ€™t go away and lasts for a long time, it becomes chronic stress, which can damage studentsâ€™ minds and bodies. This paper explores how chronic stress affects studentsâ€™ memory and learning. Randomly selected students from two private high schools in Erbil, Iraq, were chosen for this research project. 100 students, 50 girls and 50 boys, aged between 16 to 18, conducted 3 weeks of studies on this subject in the 2024-2025 academic year. Mixed methods (Both Qualitative and Quantitative Methods) have been used to carry on this study. It explains how stress hormones (Cortisol, for example) can impact the brain, making it harder to focus, remember information, and perform well in school. The paper also shares real examples of how stress shows up in studentsâ€™ lives and how it can lead to struggles with studying, low grades, and even anxiety or depression. But there is still hope for correction. The paper also offers simple and practical strategies to help students manage stress better, for instance, staying organized, exercising, practicing relaxation, and seeking support from peers, family, or counselors. By understanding the link between stress and memory, the Learning Triangle (students, teachers, and parents) can work together to create a healthier and more supportive learning environment for the students. This can help students not only do better in their academic lives but also feel better in their daily lives.

Keywords: *Chronic stress, Stress hormones (Cortisol), Memory Challenges, Supportive learning environment, Learning Triangle*

EFFECTIVENESS OF HANDS-ON BIOLOGY EXPERIMENTS IN HIGH SCHOOL CLASSROOMS

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ABSTRACT

This study investigates whether hands-on biology experiments might improve high school students' emotional experience, learning, and participation in the classroom. With an emphasis on how experiential learning impacts students' motivation, self-esteem, and enjoyment, it contrasts interactive, activity-based teaching approaches with conventional lecture-based training. 95 students' surveys and 15 biology teachers' interviews were used to gather data. Mixed methods (Both Qualitative and Quantitative Methods) have been used to carry on this study. While the study covers high school education in general, the results particularly capture the experiences of students in the tenth grade. The findings indicate that students were more intrigued, self-assured, and emotionally linked to the subject matter, in addition to finding practical exercises more interesting and understandable. During experiments, many reported feeling excited and satisfied, which increased the significance of learning. Instructors attested to these results, noting that the employment of interactive techniques enhanced students' motivation, focus, and academic performance. Notwithstanding encouraging findings, the study also noted difficulties in handling big class sizes, time restraints, and a lack of lab resources. To sum up, experiential learning enhances academic performance while simultaneously producing a more emotionally fulfilling educational experience. To promote more engaging biology instruction, the study suggests adaptable, student-centered curricula, improved resource allocation, and increased institutional support.

Keywords: *Hands-on experiments, Student engagement, Emotional experience, Academic performance, ABT(Activity-based teaching*

GENE BEHAVIOR: UNDERSTANDING THE GENETIC INFLUENCE ON HUMAN BEHAVIOR

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ABSTRACT

Human behavior is influenced by a dynamic interplay between genetic makeup and environmental factors. While genes provide the biological foundation, experiences and surroundings shape how these genetic traits are expressed. This study explores the foundational principles of behavioral genetics, examining how genes can impact various behavioral traits without fully determining them. Contrary to the notion of a single â€œbehavior geneâ€• research in this field emphasizes the complex interaction of multiple genes with environmental stimuli, such as upbringing, social context, and life experiences. Key areas discussed include the nature versus nurture debate, epigenetics, and the role of neuroscience in mapping brain activity to behavioral outcomes. Epigenetic mechanisms, which involve changes in gene expression without altering the DNA sequence, further illustrate how external conditions shape behavior through genetic pathways. Modern applications of behavioral genetics are also highlighted, particularly in the diagnosis and treatment of psychological disorders such as autism, schizophrenia, and depression. By integrating insights from genetic psychology, neuroscience, and behavioral research, this seminar emphasizes that while our genes provide the blueprint for potential behaviors, environmental influences and personal experiences are crucial in shaping the final outcome. The findings underscore the importance of a multidisciplinary approach in understanding the origins and variability of human behavior.

Keywords: *Behavior Genetics, Epigenetics, Genetic Psychology, Human Behavior, Mental Health, Neuroscience*

STRATEGIES TO OVERCOME CHALLENGES IN USING STEM CELLS FOR TREATING HEART FAILURE

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ABSTRACT

Heart failure (HF) remains a leading cause of morbidity and mortality worldwide, with current therapies unable to reverse the fundamental loss of functional myocardium. In recent years, stem cell therapy has emerged as a promising strategy for cardiac regeneration; however, its clinical application has been limited by numerous challenges. This systematic review explores the diverse obstacles associated with stem cell therapy in heart failure and critically evaluates the strategies proposed to overcome them. A comprehensive literature search was conducted across major databases for studies published between 2014 and 2024. Key challenges identified include poor cell survival and retention, suboptimal delivery methods, immunogenicity, tumorigenicity, limited differentiation and integration capacity, safety concerns, and heterogeneity in clinical outcomes. The review highlights strategies such as genetic and pharmacological preconditioning, biomaterial-assisted delivery, improved cell selection and purification, immune modulation, and protocol standardization. Despite encouraging preclinical results and early-phase clinical trials, variability in outcomes and a lack of long-term data continue to hinder translation into routine practice. This review provides a synthesized overview of current efforts and knowledge gaps, serving as a resource to guide future research and clinical applications aimed at optimizing the therapeutic potential of stem cell-based interventions for heart failure.

Keywords: *Cardiac regeneration, Cell survival, Challenges and strategies, Clinical translation, Delivery methods, Heart failure, Immunogenicity, Paracrine signaling, Stem cell therapy, Tumorigenicity*

PHYTOCHEMICAL PROFILE AND THERAPEUTIC EFFECTS OF NASTURTIUM OFFICINALE: A PROMISING MEDICINAL PLANT

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ABSTRACT

Nasturtium officinale (watercress), a medicinal plant belonging to the Brassicaceae family has been extensively used in the traditional medicine and especially in the southeastern Iran. Phytochemical analysis has revealed the following phytochemicals: it has alkaloids, flavonoids, saponins, terpenoids, steroids, essential oils, glycosides, tannins, folic acid, vitamins and minerals. Pharmacological investigations have revealed the wide pharmacological activities of N. officinale such as antioxidant, hypolipidemic, anti-inflammatory, hepatoprotective, renoprotective, antidiabetic, anticancer, antimicrobial, dermatological, antigenotoxic and anti in the animal models, treatment with N. officinale extract showed significant decrease in total cholesterol, triglyceride and LDL-C, but increased in HDL-C. These actions were associated with enhanced activity of antioxidant enzymes and the decrease in oxidative stress of liver tissue. In this review, the chemical constituents and the range of pharmacological properties of N officinale have been brought out thus contributing to its application in conventional medicine.

Keywords: *Nasturtium officinale, watercress, phytochemicals, antioxidant, hypolipidemic, pharmacological properties, traditional medicine, therapeutic effects.*

LUNG CANCER: UNDERSTANDING THE COMPLEX INTERPLAY OF GENETICS AND ENVIRONMENT

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ABSTRACT

A subtle balance between inherited genetic attributes and environmental exposures determines the development of lung cancer. Although genetic mutations supply the biological underpinnings, specific exposures and lifestyle patterns influence the elaboration of those genetic traits. Here, we investigate essential principles of lung cancer onset, looking at how specific genes can raise the chances of developing lung cancer while not necessarily causing it directly. Contrary to the commonly held belief in a single lung cancer-causing gene, this field of research acknowledges that the development of lung cancer is shaped by the interaction of many genes with environmental elements, such as tobacco smoke, pollutants, and workplace hazards. Emphasis is given to the actions of particular gene mutations (such as EGFR, KRAS, and TP53), carcinogens encountered in the environment, and the ways the tumor microenvironment contributes to lung cancer development. Epigenetic mechanisms demonstrate that exposure to their environments can modify the function of genes in lung cancer development. Emphasis is given to recent trends in lung cancer research, most notably using personalized medicine in both diagnosis and treatment. Combining perspectives from genetics, oncology, pathology, and environmental health, this seminar demonstrates that while genes give the risk framework, our surroundings and personal behaviors are key determinants of the outcome. These studies make it clear that understanding the causes and variability of lung cancer depends on having input from many specialties.

Keywords: *Carcinogens, EGFR,Epigenetics, Genetic mutations,Lung cancer*

INDUCED PLURIPOTENT STEM CELLS: A POWERFUL TOOL FOR DISEASE MODELING, DRUG DISCOVERY, AND REGENERATIVE MEDICINE

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ABSTRACT

The technology of inducing the pluripotent stem cells (iPSCs) has revolutionized the biomedical sciences and the practice of regenerative medicine because it allows the reprogramming of somatic cells into pluripotent cells using essential transcription factors. The iPSCs can self-replicate, replicate indefinitely, and become genetically They can be applied in simple cell cultures and complex 3D organoids to provide information about the mechanism of diseases and personalized medicine. iPSCs are also involved in the drug screening, toxicity testing, and cell therapy. Spite of these advances, there are still a few issues on improving the reprogramming efficiency, differentiation accuracy and clinical translation. It is important to continue researching on pluripotency and cell lineage in order to explore the complete healing potential of these entities.

Keywords: *: iPSCs, reprogramming, regenerative medicine, organoids, cell therapy, pluripotency, personalized medicine*

FAMILIAL POLYPOSIS: A HEREDITARY RISK FACTOR FOR COLON CANCER

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ABSTRACT

Familial Adenomatous Polyposis (FAP) is a hereditary syndrome of colon cancer that carries a high lifetime risk of developing colorectal cancer. Although it represents a small percentage of overall colorectal cancer cases, it is more aggressive and tends to manifest at an earlier age. The aim of this presentation is to highlight the importance of early diagnosis and long-term management strategies for individuals with FAP, with a particular focus on genetic testing, surveillance, and preventive interventions. Genetic screening plays a crucial role in identifying at-risk individuals and initiating timely monitoring. Once diagnosed, patients require lifelong colonoscopic surveillance, and a significant number will ultimately undergo prophylactic colectomy to reduce the risk of malignancy. Additionally, chemoprevention and surveillance for extra-colonic manifestations are essential components of comprehensive care. Timely intervention and structured management of familial cancer risk can significantly improve patient outcomes and enhance quality of life.

Keywords: *Hereditary Familial Adenomatous Polyposis; Risk factors; Premalignant lesion; Colon cancer; Genetic testing; Colectomy; Surveillance.*

SYNTHESIS AND CHARACTERIZATION OF HYBRID NANOCOMPOSITE CORE (POLYMER)-SHELL (METAL-ORGANIC FRAME-WORKS) BASED ON SAN COPOLYMER, ZNO AND AL NANOPARTICLES

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ABSTRACT

In recent decades, metal-organic framework (MOF) nanostructures based on porous materials have garnered attention in both applied and scientific research due to their diverse structural morphology, functionality and efficiency in the preparation of sensors, catalysts, separators, adsorbents and more. The synthetic approach and starting materials for these hybrid nanostructures are commercially available and production is carried out on a large scale. Radical copolymerization was utilized to produce spherical polymer nanoparticles (NPs) with a narrow size distribution. To create the copolymer@Zn-MOF-74 and MIL-53(Al) core-shell hybrid nanocomposites, an in-situ hydrothermal synthetic approach followed by calcination was employed. The resulting structures were analyzed using scanning electron microscopy (SEM), thermogravimetric analysis (TGA), x-ray diffraction (XRD) and flourier transform infrared spectroscopy (FT-IR) techniques. The incorporation of ZnO NPs into styrene-acrylonitrile (SAN) has shown potential benefits, particularly in enhancing thermal stability without compromising the chemical structure or crystalline properties of the polymer. These findings suggest that SAN composites with ZnO NPs could be developed for applications that require improved thermal performance while maintaining mechanical integrity. Future research could focus on optimizing nanoparticle loading, exploring other types of NPs, and investigating their effects on additional physical properties such as tensile strength and impact resistance.

Keywords: *Zn-MOF-74, MIL-53(Al), ZnO nanoparticles*

DARWAZA: A WEB SOLUTION FOR HIGH SCHOOL GRADUATES

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ABSTRACT

Generally, graduates from high schools within the Kurdistan Region face difficulties finding accurate and comprehensive information about the universities and their programs with admission requirements. The current project is developing Darwaza a friendly website where students can make better decisions regarding their higher education. This research is significant because it fills a critical gap in educational resources for students in Kurdistan. Darwaza acts as a general center of information for students and helps them make informed choices, as well as ensures that they will have a smoother life in university. Also, this project benefits the education sector because it increases transparency and accessibility for students.

Keywords: *Web Solution, Grade Calculation System, Higher Education, Student Decision-Making, Kurdistan Region*

PERSEVERING KURDISH LEGACY: A DIGITAL MOBILE APP SOLUTION FOR CULTURAL HERITAGE

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ABSTRACT

This research focuses on protecting, showcasing, and promoting the cultural heritage of the Kurdistan region by creating a mobile application. Cultural heritage plays an important role in shaping the identity and history of a nation. However, many valuable cultural sites and artifacts in the Kurdistan region are at risk due to factors such as neglect, modernization, and conflict. This project presents a mobile application designed to help preserve and promote Kurdish tangible cultural heritage using modern digital technologies. The app allows users to explore 3D models of historical artifacts and sites, supported by maps, site descriptions, and educational blogs. It is designed to be easy to use, visually appealing, and informative, offering a smooth and interactive experience. The main users of the application include tourists, researchers, students, and individuals interested in Kurdish history. By creating a digital space to store and showcase cultural artifacts, the project helps reduce the risk of loss and damage to physical heritage ite It also increases access to this information for people across the world. This initiative supports cultural education and contributes to global efforts to protect heritage through technology. The project is not only a technical solution but also a step towards raising awareness about the value of Kurdish heritage and making it available for future generations.

Keywords: *Cultural Heritage, Kurdish History, Mobile Application, 3D Visualization, Preservation*

TRADITIONAL KURDISH RECIPE WEBSITE

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ABSTRACT

This project aims the creation of a natural website for displaying Kurdish recipes with an interactive approach for users in guidance for traditional Kurdish cooking delights which are inherent in the culture. There are very few online sites given to talking and sharing Kurdish foods, So the rest of the very delicious meals remain quite. The planned website is step in this gap with an easy to use design that enable users look up food instructions by ingredient or cooking. The website is designed to be developed using HTML, CSS and JavaScript, with flexibility and clear design being among the main objectives. The intention of this project is to contribute towards the protection of the Kurdish cooking, Refine the appreciation of the culture, and provide practical cooking methods to reduce food wastage to users. The creation process is including of research, design, development, testing and re-development to guarantee that the final product works and can be used.

Keywords: *Kurdish Cuisine, Interactive Recipes, Cultural Preservation, User Friendly Design, Food Sustainability*

THE EFFECT OF PROGRAMMING ANXIETY ON THE BEGINNER STUDENTS

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ABSTRACT

This study looks at the learning programming especially within the students and the fear and stress associated with it that might affect their academic performance and interest in other computer-related fields. This Analysis, outlines programming anxiety and why students experience it, i.e. fear of failing, difficulty of different theories, putting in wrong codes, other students, or the teaching process. Other effects that this anxiety develops include poor performance in the classroom leading to high dropout rates, mental illness, and very low interest in STEM careers. The researcher makes surveys and interviews to evaluate the student's perspective and makes statistical analysis to draw out such values that will compare the levels of anxiety and the college grades. It recommends various measures for the educators, such as Introduction of concepts over a period, group work, quick assessment, encouraging positive attitude, making learning more of a game, variety in teaching learning practices, teaching relaxation skills and less emphasis on fast track grades. The goal of this study is to help the educators develop as program designers and make practical recommendations on how to create a learning atmosphere which is not only anxiety-free but works towards building the studentsâ€™ confidence and success in programming education.

Keywords: *Programming Anxiety, Student Performance, STEME education, Learning Strategies, Mental Well being.*

A PLATFORM FOR ENVIRONMENTAL ENGAGEMENT: INTEGRATING EDUCATION AND ACTION THROUGH A MOBILE APP

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ABSTRACT

Climate change is an urgent worldwide crisis, and for regions such as Kurdistan and Iraq, the concerns get aggravated due to low public awareness and poor infrastructure for civic engagement. This study investigates the design and development of a user-friendly mobile app intended to connect individuals with environmental organizations. To cultivate a culture of environmental responsibility and acting together, the proposed platform will permit functionalities like secure donations, giving-out volunteer opportunities, educational blogs, and a directory of international and local environment-related organizations. A gap analysis carried out through comparison with existing platforms explains areas considered for enhancing design pertaining to usability, engagement, and scalability. The app stands developed using React Native and Firebase, focusing on transparency, ease of use, and sustainability. The project hopes to open up simple digital avenues for users to support environmental causes and encourage community engagement in Kurdistan, as well as elsewhere.

Keywords: *Climate Change ,Environmental Awareness ,Mobile Application ,Volunteering ,Donations ,Sustainability*

REBUY: SECOND-HAND ITEM SALES AND RENTAL APPLICATION

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ABSTRACT

The ReBuy project touches upon the immediately important issue of the unsustainable consumption, which means that it causes pollution, produces too much waste, and burns up natural resources. In most cases, people dispose off functional items – like clothes, electronics and household items not because they are useless, but because newer ones or more trendy ones are available. This behavior results in un-necessary waste and limits potential of reuse. Most of the second-hand platforms that exist don't provide flexible options when it comes to buying and renting, thus limiting the users' access to cheaper and sustainable options. The purpose of this project is the creation of ReBuy mobile app, which gives the opportunity for people to buy, sell, and rent used things in categories such as electronics, furniture, clothes, and property. ReBuy encourages environmental consciousness and sustainable spending as it becomes easier for users to reuse as opposed to buying new stuff. The website guarantees trust by implementing such functions as verification of products, direct contact with users, etc. It also boosts user confidence through quality assurance and flexible return policy. ReBuy is consistent with the theory of the circular economy, as it lengthens the life cycle of products, decreases waste, and behaves proactively in the consumption sense.

Keywords: *Rebuy, re-rent, circuler economy, peer to peer marketplace, mobail application*

STUDENTS' PERSPECTIVE ON HOW SOCIAL MEDIA IMPACTS STUDYING AMONG HIGH SCHOOL STUDENTS: A CASE STUDY AT RISE INTERNATIONAL SCHOOL

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ABSTRACT

This research investigates the impact of social media on high school students' studying habits and academic performance. With social media playing a significant role in the daily lives of students, there is growing concern about its potential distractions. This study aims to explore how social media use affects students' ability to focus on their studies, the quality of their academic work, and their overall mental health. Using surveys, interviews, and academic performance data, the study will examine both the positive and negative effects of social media. The goal is to identify strategies for managing social media use to support better study habits and academic success.

Keywords: *Social Media, Academic Performance, High School Students, Study Habits and Student Perspective*

STUDENTS' PERSPECTIVES ON THE ADOPTION AND USE OF AI TUTORING SYSTEMS IN HIGHER EDUCATION USING UTAUT2

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ABSTRACT

The integration of AI in education has led to the emergence of AI tutoring syste These systems aim to create personalized learning experiences through the utilization of machine feedback. Despite their increasing prevalence, doubts remain regarding the efficacy, adaptability, and student receptiveness of AI tutoring syste This necessitates further investigation into AI tutoring systems from the learner's perspective. Moreover, there is insufficient study regarding students' perceptions and responses to AI tutoring syste This study aimed to quantitatively examine students' perceptions and experiences about AI tutoring systems utilizing UTAUT2. After collecting survey responses from 220 undergraduates, we analyzed the data using SPSS statistical software. The results indicated the presence of favorable correlations among the elements included in the framework. The PE, FC, HT, and HM exert a considerable influence on the BI, as indicated by multiple linear regression analysis. Behavioral Intention (BI) has a big effect on AI tutoring systems' Use Behavior (UB), but Effort Expectancy (EE), Social Influence (SI), and Price Value (PV) have almost no effect on BI. Academic professionals and learners might anticipate the study's findings to be useful for future research.

Keywords: *UTAUT2, Studentsâ€™ Perspectives, AI Tutoring Systems*

TIUADVISOR BOT: AN AI-POWERED CHATBOT FOR ACADEMIC GUIDANCE AND STUDENT SUPPORT AT TISHK INTERNATIONAL UNIVERSITY

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ABSTRACT

In todayâ€™s rapidly evolving educational landscape, students often face uncertainty and confusion when selecting a suitable academic department. At Tishk International University (TIU), the lack of AI-driven tools to support students in making informed academic decisions can lead to mismatched expectations or even dropout. This project presents TIUAdvisor Bot, an English-language AI-powered chatbot designed to enhance student support by offering two core services: answering queries about university policies using the official Student Handbook and acting as a smart academic advisor by recommending the most appropriate department based on a student's background, interests, and goals. The chatbot employs advanced natural language processing (NLP), semantic search, and sentence embedding to understand user inputs and deliver accurate, human-like responses. By providing personalized and accessible guidance, TIUAdvisor Bot aims to improve decision-making, reduce application confusion, and modernize communication between the university and its students. While the current version supports English only, future developments will include bilingual functionality (English and Kurdish) and potential integration with university systems such as the Student Information System (SIS). This initiative represents a significant step toward adopting AI in higher education within the Kurdistan Region.

Keywords: *AI Chatbot, Academic Advising, Natural Language Processing (NLP), Semantic Search, Higher Education Technology.*

MEMORYMATE AI - INTELLIGENT PERSONAL REMINDER ASSISTANT FOR ALZHEIMER'S PATIENTS

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ABSTRACT

Alzheimerâ€™s disease truly damages memory, such as the ability to complete daily tasks and, decision-making, generally leading to reduced independence, emotional anxiety, and safety risks for patients. MemoryMate AI is a smart mobile application developed to help Alzheimer's patients in handling their everyday lives by offering caregiver real-time observing and peace of mind. This research presents a paired-interface system: a user-friendly Patient Application and an extensive Caregiver (caretaker) App. The Patient App applies face recognition, conversational AI, and voice-enabled reminders for kindly mentor patients with planned tasks like personal care, medication intake, and appointments. For ensuring that the patients are notified clearly with both visual and audio reminders. Along with the support of face recognition to help with recognizing similar individuals, improving emotional security. The Caregiver App permit distant data entry and scheduling, with real-time synchronization to the patientâ€™s device. Main features contain live location tracking for well-being monitoring, activity following those logs accomplished or missed tasks, and an auto-generated weekly report recording patient actions, task amenability, and location history. This configuration allows caregivers to reply rapidly to misdeeds and adjust care practices consequently. By integrating several AI mechanisms and a user-cantered strategy, MemoryMate AI addresses the serious requirement for each individuality, wellbeing, and emotional support in Alzheimerâ€™s care. The solution decreases caregiver anxiety while refining patient quality of life, proposing a valuable step toward technology-assisted dementia organization.

Keywords: *Alzheimerâ€™s disease, mobile health, artificial intelligence, conversational AI, face recognition, voice-assisted reminders, real-time monitoring.*

DESIGN AND DEVELOPMENT OF A WEB-BASED PLATFORM FOR ACCESSING RADIOLOGY SERVICE INFORMATION

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ABSTRACT

Radiology services play a vital role in modern healthcare, yet patients often face difficulties in finding accurate and up-to-date information about available Radiology centers in Erbil in term of cost, availability and location. This research aims to design and develop a web-based platform that provides comprehensive information about radiology services, including their locations, available imaging technologies (such as X-ray, MRI, and CT scans), contact details, working hours, and patient feedback. The platform is designed to be user-friendly and accessible across devices, ensuring ease of navigation for a diverse user base. The development process follows a structured approach involving requirement analysis, user interface design, database integration, and usability testing. The platform offering patient centralized and organized access to radiology service information in Erbil, as well as support patients in making informed healthcare decisions and facilitate smoother communication between medical imaging providers and the patients. Future enhancements may include appointment scheduling, real-time service availability, and multilingual support.

Keywords: *Radiology, Healthcare, Patient, Web-based platform, Digital health*

LIBRARY MANAGEMENT SYSTEM

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ABSTRACT

This study is about creating a Library Management System using SQL programming. Many libraries have problems with keeping track of books, borrowed books, return dates, and member records. The project built a system with three main tables: Books, Members, and BorrowedBooks. This system helps make it easy to add, update, and find information. It can show which books are available, who borrowed them, and which books are overdue. This makes library work faster and more organized.

Keywords: *Library Management, SQL Programming, Database System, Book Tracking, BorrowedBook.*

DESIGN AND IMPLEMENTATION OF A VISUAL DASHBOARD FOR SMALL BUSINESS INVENTORY MANAGEMENT

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ABSTRACT

This research project proposes the development of a web-based visual dashboard designed to improve inventory management for small businesses. Despite the critical role inventory plays in business operations, many small enterprises still rely on outdated, manual systems such as spreadsheets, which lead to inaccuracy, decision delays, and operational inefficiencies. The lack of affordable, easy-to-use, and interactive inventory tools leaves small businesses at a disadvantage compared to larger enterprises with access to advanced software. To address this issue, the proposed system integrates a backend SQL database with front-end and back-end built using HTML, CSS, PHP, and SQL Workbench. The dashboard allows users to manage inventory through a browser, visualize stock levels through real-time charts, and receive automated low-stock alerts. The results demonstrate that a lightweight, custom-built dashboard can significantly enhance inventory visibility, reduce error, and improve decision-making speed for non-technical users. It is recommended that small businesses adopt such solutions to reduce manual tracking burdens and improve operational control. Future development could extend the system with mobile compatibility, multi-user access roles, and predictive analytics for stock forecasting.

Keywords: *Inventory management, dashboard design, small business systems, data visualization*

DESIGN AND DEVELOPMENT OF A WEB-BASED KURDISH JOB BOARD FOR FREELANCERS AND LOCAL BUSINESSES

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ABSTRACT

In recent years, the Kurdistan Region has witnessed a notable rise in freelance work and small-scale entrepreneurship, especially among youth. However, the absence of a structured digital platform to connect freelancers with local businesses has created a gap in the employment ecosystem. This study presents the design and development of a user-friendly, web-based job board tailored for the Kurdish context. The platform facilitates interaction between service providers and employers by enabling job postings, skill-based filtering, user registration, and profile management. Developed using HTML, CSS, and PHP, with MySQL for backend data storage, the system supports separate interfaces for freelancers and businesses, allowing for job applications, communication, and project tracking. The expected outcomes include increased visibility for freelancers, improved hiring efficiency for small businesses, and encouragement of digital literacy through the use of localized online tools. The proposed solution aims to strengthen regional employment infrastructure while offering practical learning opportunities for beginner web developers. This initiative addresses a critical need in the Kurdistan Region by promoting structured freelance engagement and digital inclusion.

Keywords: *Kurdish Job Board, Freelancing, Local Businesses, Web Development, PHP MySQL, Employment Platform*

THE UNIVERSITY LIBRARY SYSTEM

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ABSTRACT

This research aims to shed light on an often-overlooked yet essential topic â€“ how university library systems can be improved to better support students and academic staff. The study investigates the common challenges faced by users when accessing library resources and explores effective strategies to enhance library services. Findings indicate that regular feedback from users, integration of digital tools, and improved communication between library staff and students can significantly improve user satisfaction and system efficiency. This research is valuable for university administrators, librarians, and policymakers who are seeking to understand user needs and implement practical improvements. Additionally, the study focuses on identifying the reasons behind low engagement with library resources and how library staff can take proactive steps to encourage usage, such as offering training sessions, promoting digital literacy, and creating a more welcoming environment. The importance of this research lies in emphasizing that library systems must evolve continuously to meet the academic demands of their users. Therefore, this literature review is suitable for anyone interested in enhancing university library services, understanding user behavior, and identifying obstacles within the current system.

Keywords: *University Library, Library System Improvement, Student Engagement, Digital Resources, Academic Support*

DEVELOPING A LOCAL GUIDE DIRECTORY FOR KURDISTAN: A COMMUNITY-DRIVEN PLATFORM FOR BUSINESS DISCOVERY AND ENGAGEMENT.

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ABSTRACT

The Kurdistan region, known for its rich culture and diverse range of local businesses, lacks a centralized platform to discover, compare, and rate local services such as restaurants, gyms, and clinics. Current resources are often inconsistent or outdated, posing challenges for both residents and visitors seeking reliable information. This study proposes the development of a Local Guide Directory, similar to yelp, specifically designed for the Kurdistan region. By utilizing data collected from local residents and business owners, as well as insights from existing platforms like Yelp and Google Maps, the project aims to build a comprehensive, user-friendly directory. The directory will feature user reviews, business profiles, and ratings to enhance accessibility and support customer decision-making, ultimately fostering stronger connections between local businesses and the community.

Keywords: Local Guide Directory, Kurdistan, Business Discovary, User Reviews, Rating System, Web Application, Customer Feedback, Rating System.

BEHAVIORAL PASSWORD STRENGTH CHECKER

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ABSTRACT

This project presents a simplified Behavioral Password Strength Checker that evaluates both the structural strength of a password and the behavioral pattern of the user during password entry. Unlike traditional strength meters that only assess password length and complexity, this system adds a behavioral layer by measuring the time it takes a user to type the password. Implemented purely with PHP and HTML/CSSâ€”without the use of JavaScriptâ€”it captures the time from page load to form submission to estimate user typing speed. This approach aims to identify potential anomalies, such as unusually fast or slow typing, which may indicate suspicious or unfamiliar behavior. While basic in nature, this model lays the groundwork for integrating behavioral biometrics into authentication systems in a lightweight and privacy-conscious way.

Keywords: *Behavioral biometrics, password strength, PHP security, typing time analysis, keystroke dynamics, user behavior, authentication*

AN INTEGRATED PLATFORM FOR THE DIGITAL DOCUMENTATION OF GEOSPATIAL CULTURAL HERITAGE

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ABSTRACT

This research project aims to design and implement a robust digital infrastructure for the systematic preservation and dissemination of georeferenced three-dimensional models of cultural heritage artifacts originating from the Kurdistan Region of Iraq. The platform incorporates secure data storage mechanisms, metadata-rich indexing, and advanced retrieval functionalities, alongside real-time, high-resolution 3D rendering environments to facilitate in-depth analysis and interactive engagement. The development process was successfully completed, resulting in a fully functional system that allows users to explore, analyze, and retrieve 3D representations of heritage artifacts and architectural structures. This initiative addresses the urgent need for digital preservation in a region where cultural heritage remains under persistent threat from conflict, environmental degradation, and neglect. By digitally capturing and archiving these artifacts, the platform provides an essential safeguard against potential loss, enabling future generations to study and appreciate these cultural assets even if the physical originals are damaged or destroyed. Furthermore, the detailed 3D models and associated metadata can play a critical role in restoration and reconstruction efforts by offering precise visual and spatial references. Initially centering on the city of Erbil as a pilot region, the project was structured for scalable extension and can be readily adapted to encompass a broader range of heritage sites across the Kurdish geographic and cultural landscape.

Keywords: *Cultural Heritage Documentation, 3D Modeling, Web Application, Georeferenced Data, Erbil Heritage, Cultural Heritage Preservation.*

THE IMPACT OF LITERARY TEXTS ON ENGLISH LANGUAGE SKILLS DEVELOPMENT: A REVIEW OF THEORETICAL AND EMPIRICAL STUDIES

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ABSTRACT

Literature has long been recognized as a powerful resource in language education, and this study investigates how integrating authentic literary texts into ESL/EFL classrooms can enhance learnersâ€™ English-language proficiency. Through a systematic review and synthesis of empirical and theoretical studies-each paraphrased and summarized according to clear inclusion criteria-this research reveals that literature not only promotes the four core skills of listening, speaking, reading, and writing but also provides an indispensable gateway to cultural awareness and intercultural competence. The findings underscore the pedagogical value of carefully selected texts and offer practical guidelines for educators seeking to enrich their curriculum, as well as directions for future research on optimizing literature-based instruction.

Keywords: *Keywords: Literature, Literary Texts, Language Skills, Theoretical and Empirical Studies*

DYSLEXIA: EFL TEACHERS AWARENESSES AND PRACTICES

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ABSTRACT

Dyslexia is a neurodevelopmental condition that affects studentsâ€™ education in general and language learning in particular. This is why it is especially important for language teachers to recognize the symptoms and take necessary actions accordingly. The current study aimed to find out to what extent the EFL teachers and EFL student-teachers are aware of dyslexia and what methods and techniques they should apply to deal with dyslexic students and help them process, understand and learn. To do so, a quantitative method with an element of qualitative research was used. A Google questionnaire was distributed between EFL teachers and students-teachers in Kurdistan, Iraq. The results showed that most of the EFL teachers and students-teachers were aware of dyslexia and could recognize some common signs. Furthermore, they shared their desire to learn more about dyslexia through training programs and courses. This study is believed to be useful for EFL teachers, curriculum developers, and school administrators in creating dyslexia-students-friendly curriculum, organizing trainings for EFL teachers and teacher candidates, and choosing suitable instructional methodologies.

Keywords: *Dyslexia, Dyslexic Students, English Language Teaching, English as a Foreign Language*

TINY HANDS, BIG IDEAS: CULTIVATING DEMOCRATIC SPIRIT IN SCHOOLS THROUGH ART

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ABSTRACT

This capstone project involves guiding school children and young adults in selected schools in Erbil city through a series of collaborative drawing and design activities to foster teamwork, creativity, and a democratic spirit. Through collaboratively working on art projects, students will learn to communicate, share ideas, and respect each otherâ€™s contributions. The entire process is filmed, culminating in a short documentary that shows the studentsâ€™ journey. The documentary also features interviews with the students themselves and their teachers, reflecting on the impact of the project. This project also includes a detailed report on the planning, organization, and execution of the art projects. There is also references to selected literature that highlight the relationship between art education and the growth of democratic spirit. This project is a tangible example of how citizenship education can take place in our schools in Kurdistan Region of Iraq.

Keywords: *Democratic Spirit; Art Education; Student Engagement; Teamwork; Collaboration*

MICRO-TEACHING AS A BRIDGE BETWEEN THEORY AND PRACTICE IN TEACHER EDUCATION: STUDENT INTERNS' PERSPECTIVES

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ABSTRACT

This study investigates the role of micro-teaching in linking theoretical knowledge with practical classroom experience in teacher education. Using a quantitative approach, data were collected through a 28-item questionnaire from 63 fourth-year university students (42 female, 21 male) in the Faculty of Education who were completing their internship. A purposive sampling method was employed to target participants meeting the criterion of being student interns. The questionnaire covered four themes: Bridging Theory and Practice, Instructional and Classroom Management Skills, Reflective Teaching and Professional Growth, and Technology-Enhanced Teaching. The collected data were analyzed using Microsoft Excell by extracting the percentages and taking the average. Results showed overall positive responses across all domains. Participants reported that micro-teaching helped them apply theoretical knowledge in practical settings, improved their classroom management and instructional skills, encouraged reflective practices, and supported the integration of technology into teaching. The findings highlight the value of micro-teaching as a key component in teacher preparation programs and recommend its continued integration into teacher education curricula.

Keywords: *Micro-teaching, Teacher education, Student interns, Theory and practice*

AN EXPLORATORY STUDY OF TEACHERS FEEDBACK ON SPEAKING TASKS: PERCEPTIONS, PEDAGOGICAL STRATEGIES, AND CONTEXTUAL CHALLENGES

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ABSTRACT

Providing effective feedback plays a vital role in language education. A considerable number of factors influence how feedback is conducted. Feedback on speaking tasks can be more challenging compared to other skills due to their uniqueness and characteristics. Understanding the factors can help better plan and develop mechanisms to best deliver feedback. This study endeavored to explore teachersâ€™ perceptions of providing feedback on speaking errors, a focus on the strategies they use, and the challenges they may face during speaking tasks. To do so, an empirical research design was used in which data were collected quantitatively through a 22-item questionnaire. The data were analyzed using MS Excel and GraphPad Prism 8 to generate descriptive statistics. 78 EFL teachers from universities, schools, and language centers participated. The results unveiled various perceptions held by EFL teachers that need to be considered. The participants listed different challenges encountered when providing feedback, urging the stakeholders to step in to alleviate the challenges. Teachers' preferences vary in employing techniques when providing feedback based on the learner and context needs.

Keywords: *EFL Teachers, Feedback, Speaking Tasks, Strategies, Challenges*

DESIGNING AN EFFECTIVE ORIENTATION BOOKLET FOR TIU FACULTY OF EDUCATION: ADDRESSING THE NEEDS OF FRESHMEN STUDENTS

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ABSTRACT

Starting university is a big challenge for most of the freshman students. They feel stressed and unprepared during their first weeks. By designing an orientation booklet, we aim to help them to solve problems and become more confident and ready to start university. We used information from the universityâ€™s website and collected data from relevant scientific articles. We also used QR codes in the booklet for easy navigation inside the university. Some of the challenges we faced were the lack of scientific relevant articles and designing the booklet by using different tools. But in the end, however, we managed the problems and worked as a team. The result was a useful booklet for freshman students that they learn more about the university which answers all the questions that they have and they become ready to start university life.

Keywords: *Keywords: orientation booklet, needs of freshman, collage life, designing booklet*

A SILENT INVASION: THE PREVALENCE OF ENGLISH LOANWORDS IN KURDISH MEDIA AND SOCIAL MEDIA PLATFORMS

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ABSTRACT

This study investigates the dominance of English loanwords in Kurdish media and social media, focusing on their frequency and usage even when equivalent Kurdish terms exist. Utilizing a quantitative content analysis research design, it examines miscellaneous genres, including politics, technology, business, entertainment, sports, health, advertisements, cultural content, and mixed social media topics. The findings show substantial incorporation of English loanwords across all platforms and genres, with social media posts and advertisements exhibiting the highest frequencies. This trend highlights the influence of globalization and linguistic imperialism, where English is increasingly seen as the language of modernity and progress. Framed within post-colonialism, nation-building, language endangerment, and linguistic imperialism theories, the study emphasizes how this linguistic shift undermines efforts to standardize and preserve Kurdish. The results also highlight the risk of eroding cultural identity and cohesion as English terms replace native vocabulary in key domains. The study necessitates for urgent preservation measures to mitigate the challenges posed by this silent invasion of English loanwords into Kurdish media in a globalized context.

Keywords: *Keywords: Loanwords, Borrowing, Kurdish Media and Social Media*

NAVIGATING LANGUAGE AND CULTURE: ASSESSING COURSE BOOKS FOR KURDISH EFL LEARNERS

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ABSTRACT

This study investigates the cultural representation and pedagogical relevance of widely adopted English as a Foreign Language (EFL) coursebooks in the Kurdistan Region of Iraq. Using a mixed-methods approach, the research integrates quantitative data from rubric-based evaluations with qualitative data drawn from thematic analysis of evaluator comments and parent focus groups. Quantitative findings, analyzed using GraphPad Prism 8, indicate that the majority of the evaluated coursebooks scored below 60% in cultural appropriateness. These materials disproportionately emphasize â€œBig-Câ€• cultural elementsâ€”such as Western historical and institutional contentâ€”while â€œlittle-câ€• aspects, including everyday practices and values, often fail to align with local Kurdish nor Qualitative results further reveal that this cultural disconnect negatively affects learnersâ€™ engagement and comprehension, and raises concerns among parents regarding the erosion of cultural identity. The study highlights the need for publishers and educators to conduct context-sensitive evaluations prior to implementation. It also recommends the integration of culturally responsive content and the development of supplementary materials tailored to the sociocultural background of Kurdish EFL learners. These findings contribute to a growing body of literature advocating for culturally inclusive pedagogy in EFL contexts.

Keywords: *EFL, coursebook evaluation, cultural content, Kurdish learners, mixed-methods research*

SMARTPHONES VS. LAPTOPS: EXPLORING PREFERENCES, INFLUENCES, AND CHALLENGES IN COLLEGE STUDENTSÂ€™ DEVICE CHOICES FOR ACADEMIC TASKS

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ABSTRACT

This research explores university studentsâ€™ preferences between smartphones and laptops for completing academic tasks. It investigates which device students use most, the factors influencing their choices, and the main challenges they face. The study was conducted with 113 participants from the English Language Teaching Department at Tishk International University using a structured questionnaire. Results showed that smartphones are the most preferred device for academic communication and quick tasks due to their portability and accessibility, while laptops are favored for writing assignments, presentations, and research. Factors such as portability, affordability, battery life, and typing comfort significantly affect students' preferences. The findings also highlight key challenges: smartphones suffer from small screen size and multitasking limits, while laptops face issues like bulkiness and high cost. The study suggests that both devices play essential but different roles in studentsâ€™ academic lives and recommends that educators match tasks with appropriate technologies to enhance learning outcomes.

Keywords: *Smartphones, laptops, device preference, academic tasks, digital learning, student challenges*

BRIDGING EMOTIONS AND ACADEMICS: A COMPARATIVE REVIEW OF SOCIAL AND EMOTIONAL LEARNING (SEL) ACROSS EDUCATIONAL STAGES

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ABSTRACT

This research examines how Social and Emotional Learning (SEL) is implemented and experienced across different educational stages, primary, secondary, and college, and how it impacts studentsâ€™ emotional well-being and academic engagement. The study critically reviews relevant literature, integrating frameworks such as CASEL to understand SELâ€™s role in developing emotional intelligence. Key findings reveal that SEL is most structured and embedded at the primary level through storytelling, role-play, and teacher-guided emotional check-ins. In secondary education, SEL shifts toward identity-building and social reflection, while at the college level, it supports stress management, resilience, and academic persistence through wellness programs and self-regulation strategies. Despite varying practices, the research shows that SEL, when tailored to the developmental needs of each stage, contributes positively to both emotional and academic outcomes. This review highlights the need for educator training, institutional support, and age-appropriate SEL strategies to ensure consistent and effective implementation across all educational levels.

Keywords: *: SEL, emotional well-being, academic engagement, primary education, secondary education, higher education, CASEL framework*

EXPLORING DOMINANT EFL TEACHING METHODS AND RELUCTANCE TO EMERGING PRACTICE

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ABSTRACT

With the era of continuous innovations and advancements posing new challenges that affect every sector, education is no exception. Researchers attempt to find solutions for problems that appear in educational environments to cope with changes. One of the major aspects of education is how learning and teaching are conducted; teaching methods that ultimately affect students' and teachers' efficiency and success. In the context of language education, Teaching methods are fundamentally developed based on students' needs, cognitive skills, and their environment. By using well-chosen and well-tailored teaching methods, teachers can help students develop their academic skills. The right method can help students to love and engage in learning. Adapting and tailoring new teaching methods can be a turning point in EFL classes. However, the tendency to only employ a few methods can undermine the effectiveness of teaching, causing unexpected outcomes. Inevitably, schools in Kurdistan Region-Iraq (KRI) embrace initiatives to develop. Understanding the current status of language education can pave ways to the way for stakeholders and decision makers to promote innovative and newly emerging methods. This study aimed to determine the most used language teaching methods in schools and explore the reasons and constraints faced by EFL teachers to adopt and use the newly emerging teaching methods. 80 EFL teachers participated in a questionnaire, with 10 involved in interviews. The research findings reveal that the participants hold different beliefs about teaching methods. More importantly, the study highlighted the most influential constraints and reasons that limit teachers' ability to adopt varied and innovative methods. The study recommends new initiatives in the direction of tackling existing challenges and promoting newly emerging methods in the context of language education.

Keywords: *Teaching Methods, EFL Teacher, Constraints, Beliefs*

CAPSTONE PROJECTS IN ELT: BRIDGING THEORY AND PRACTICE.

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ABSTRACT

This study looks into how capstone projects affect English Language Teaching (ELT) programs, focusing on perceptions of teachers and students, what both teachers and students think about the benefits and challenges of capstone projects. The purpose of this topic is to gather insights, surveys were conducted with teachers and interviews were held with students. The researches show that most teachers see capstone projects as valuable for student learning and preparing them for their future career, though many are still unsure if capstone projects are more effective than traditional research projects. Teachers also noted that supervising these projects can be demanding. From the studentsâ€™ sight, the capstone experience helped them develop a wide range of skills, even though they struggled with time management and occasionally faced difficulties with their supervisors. Despite these challenges, students agreed that the capstone project helped them feel more prepared for their future careers as teachers. In conclusion, it was noticed that, while capstone projects clearly offer educational value, the process could benefit from improved planning and stronger support syste

Keywords: *Captone project, Research, ELT*

THE CONNECTION OF SHYNESS AND SELF-PERCEPTION IN ENGLISH LANGUAGE COMMUNICATION: AFFECTS AND STRATEGIES

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ABSTRACT

Shyness is an aspect within language that causes learners to avoid communicative situations or stay silent. University students are expected to learn and communicate in the English within classroo Most of the pupils facing shyness are afraid to verbally communicate and participate. They may encounter doubt in ability or lack proficiency that leads to avoiding interactive situations. This study investigates learning about the communication shyness that university students face and their self-view of their language abilities. Moreover, its purpose was to identify shyness and self-perceptionâ€™s potential effects on communicating in English. Strategies available to overcome English-speaking apprehension were explored to aid in increasing confidence. A quantitative design was applied to amass responses from pupils. Tishk International University- Erbil, Catholic University in Erbil, and Cihan University were the settings used obtain data from 185 pupils using a survey. The findings displayed that most of the surveyed students sometimes felt nervous and self-conscious verbally interacting. Fascinatingly, many encountered the psychological factor of mistake making and overthinking. Practicing was the helpful strategy greatly chosen and then followed by listening to English media. Although some participants did feel shy speaking, the majority keep a neutral perspective towards their English communication. Regardless, this study has shown that participants were aware of their struggles, perceptions, and psychological factors that require further efforts and strategies to overcome.

Keywords: *Shyness, Self-Perception, Students, English, Speaking*

UNIVERSITY STUDENTS' PERCEPTIONS OF DIGITAL DISTRACTIONS: INSIGHTS AND STRATEGIES

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ABSTRACT

Digital devices are popular among learners due to their ease of accessing information and help keep in contact. This leads to frequent usage of digital devices that can lead to distraction or a shift in attention by possible notifications, videos, messages, and so on. University students specifically may struggle with keeping focus and continuing tasks because their devices draw attention away. This research presents learners awareness regarding their device usage and the effects they experience. It works to gain comprehension of digital device distractions impact on learners focus and functionality. Also, it aims to find strategies to reduce digital distractions to improve learning. The quantitative method chosen to gain insight into the digital distractions of learners. Data was received through a questionnaire from 170 learners attending Tishk International University- Erbil or Catholic University in Erbil. Through findings, it was found that digital distractions did present an issue for focus and grades of the participants. Most participants shared that audio alerts and text messages were the device features that were the most distracting. Common strategies to help manage these distractions were explored. Silencing sounds and keeping the device in another area were the most helpful strategies to maintain productivity. Overall, digital distractions were present among learners of these universities. These distractions did not overly harm their educational efforts, but did cause hinderances in productivity.

Keywords: *Device, Distractions, Students, Perceptions, Universities*

THE ROLE OF FAMILY BILINGUALISM IN ENHANCING COGNITIVE DEVELOPMENT AND LEARNING ABILITIES: A LITERATURE REVIEW

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ABSTRACT

The number of bilingual people is increasing and they have become more than monolingual people in the world. Nowadays, the rate of people that are interested in learning languages is increasing. Thatâ€™s way being bilingual is an essential skill in todayâ€™s society because, it has benefits on cognitive flexibility, especially for childrenâ€™s life and their academic achievement. Also, it has benefits on adultâ€™s life in different aspects of life. This study aims to prove that being bilingual is essential nowadays because it has a significant impact on cognitive development and learning performances. It also compares monolingualâ€™ performance with bilingualsâ€™ performance in the cognitive flexibility ter This study demonstrates how society distinguishes bilingual people from monolingual people. To do so, a literature review had been conducted that reviewed more than 25 articles and sources that showed the advantages of bilingualism and compared them with monolinguals. In addition, the researcher reviewed the experiments that done on bilingual adults and children to show the differences between monolingual and bilingual people. The findings of the study showed that bilingual people have higher cognitive flexibility with strong attention compared with monolingual, also bilingual students are better than monolingual students in some tasks like these tasks that need longer attention spans and to get it done quickly and it showed how bilinguals are great in multitasking. In general, bilingualism has many advantages that its owners benefits from in such various areas of their life, especially in the academic and social aspect.

Keywords: *Bilingualism, Monolingualism, Cognitive, Exposure to Languages, Metalinguistic, Cultural awareness*

THE INFLUENCE OF LARGE CLASSROOM CHALLENGES ON PRESERVICE TEACHERS' ATTITUDES AND CAREER DEVELOPMENT: PERCEPTION EVALUATION

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ABSTRACT

This study examined how large classroom challenges shape preservice teachersâ€™ attitudes and intentions regarding their future careers. Employing a quantitative, survey-descriptive design, data were collected from 107 preservice teachers at two institutionsâ€”one public and one privateâ€”within the Faculty of Education who had completed their school-based practicum. A structured questionnaire, developed to assess perceptions of large class management difficulties, teaching attitudes toward high-enrollment settings, and career development intentions, was administered online. Descriptive statistics characterized participantsâ€™ demographic profiles and response patterns, while inferential analyses (including t-tests and Pearson correlation) explored differences by institution type and relationships among variables. Findings revealed that the majority of respondents perceived large classes as posing significant pedagogical and classroom-management obstacles, which correlated negatively with confidence in instructional effectiveness ($r = â€“.42$, $p < .01$) and positively with career shift considerations ($r = .36$, $p < .01$). Notably, private-university preservice teachers reported slightly higher self-efficacy in coping strategies than their public-university counterparts ($p = .04$). These results underscore the need for targeted support and training modules in teacher-education programs to bolster resilience and professional commitment when facing large-class environments. Implications for curriculum development and future longitudinal research are discussed.

Keywords: *Large Classroom Challenges, Classroom Management, Preservice Teacher*

STUDENT CHOICES IN STUDY MATERIALS: NAVIGATING UNDERGRADUATE PREFERENCES AND LEARNING CHALLENGES

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ABSTRACT

This study examines the factors that drive undergraduates to choose between traditional textbooks and digital resources, such as e-books and lecture notes, and the challenges they encounter with each format. As technology becomes increasingly integrated into higher education, todayâ€™s students demand study materials that are rapid to navigate, readily accessible, and concise in content. To explore these preferences and obstacles, a survey was administered to 237 students enrolled in both public and private universities within the Kurdistan Region of Iraq. Responses were analyzed and visualized using an AI-assisted tool. Findings reveal that the majority of undergraduates prioritize materials that offer speed, ease of use, and constant availability. However, preferences are tempered by distinct drawbacks: textbooks are often perceived as time-consuming and complex to comprehend, whereas e-books may suffer from shallow coverage, access restrictions, and cost barriers. This research underscores the importance of aligning study resources with learnersâ€™ cognitive requirements and individual learning styles. To foster a more effective and inclusive educational experience, the study recommends a blended approachâ€”integrating the depth of textbooks with the flexibility of digital formatsâ€”to accommodate diverse student needs and optimize academic outcomes.

Keywords: *Student study material preferences, E-books vs. textbooks, Digital learning resources*

ENGLISH TEACHING METHODS AND CRITICAL THINKING: STUDENTS AND INSTRUCTORS PERSPECTIVES AT TISHK INTERNATIONAL UNIVERSITY.

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ABSTRACT

This study explores the impact of teaching methods on students' critical thinking at Tishk International University, Erbil, KRG, and how they have a positive impact on studentsâ€™ academic performance. In total, 33 students from Tishk International University were involved and shared a Google Forms survey questionnaire with multiple types of questions about the university education system at TIU. The results showed that more than 80% of the respondents believe that the education system should focus more on the language proficiency level of students. Also, the participants suggested that incorporating more interactive and engaging methods focused on critical thinking development in the classroom would help them master the English language more effectively than merely relying on textbooks. The research focused heavily on the teaching methods and studentsâ€™ critical thinking development. This research contributes to understanding the TIU education system from the perspective of students. Also, it may serve as a quick proposal for the university policy makers when considering modifications in the education system at TIU.

Keywords: *Critical Thinking, Teaching Methodology, EFL, Undergraduate EFL Students*

THE IMPACT OF TECHNOLOGY ON EFL TEACHING AND LEARNING: A LITERATURE REVIEW

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ABSTRACT

The integration of technology in English as a Foreign Language (EFL) teaching and learning has transformed traditional classrooms by offering versatile digital tools. This literature study reviews and evaluates recent studies on the integration of technology in English as a Foreign Language (EFL) teaching and learning. It aims to explore the benefits, challenges, and overall impact of digital tools on language acquisition. A total of 15 peer-reviewed articles published between 2008 and 2024 were selected from JSTOR, ProQuest, ScienceDirect, and Google Scholar by using keywords such as â€œEFL,â€• â€œtechnology integration,â€• â€œdigital tools,â€• and â€œlanguage learningâ€• . Based on an analysis of peer-reviewed articles, the review revealed that technological tools such as interactive whiteboards, mobile apps, and online platforms enhance studentsâ€™ motivation, engagement, and language skills. However, challenges such as a lack of teacher training, limited access to resources, and technical issues persist. The review concludes that while technology has a positive effect on English as a Foreign Language learning process, effective implementation requires pedagogical and infrastructural support.

Keywords: *EFL Teaching, Technology Integration, Pedagogical Support, Infrastructure Challenges*

REIMAGINING LEARNING SPACES: TRANSFORMING A TRADITIONAL CLASSROOM INTO A VIBRANT EDUCATIONAL ENVIRONMENT

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ABSTRACT

This capstone project studies how converting a traditional classroom into a modern, lively setting might enhance students' motivation and learning. Many classrooms are outdated and lack sufficient technology and educational resources, particularly in public institutions. Students frequently get disinterested and less engaged in class in these classroo The researchers redesigned one typical classroom at Shilan International Basic School. Kurdistan region schools use contemporary equipment such as a projector, fresh lighting, posters, vibrant walls, and comfortable chairs. The aim was to create an environment where pupils feel more eager and prepared to learn. This study used a mixed methods approach, combining both quantitative and qualitative methods. The research observed the classroom before and after the changes and collected feedback from students and teachers. They aso looked at how students behaved and participated during English lesson the result showed that students were more focused, more interested in learning and started enjoying their English classes more after the classroom was redesigned. Some students who were not active before started reading English books and doing group activities. The research also found that a better classroom design helped students feel happier, more creative, and more connected to school. This project shows that transforming learning spaces can make a big difference in studentsâ€™ academic performance and emotional well-being. It is recommended that more

Keywords: *Traditional Classroom, Modern Classroom, public, engagement, educational, technologies, tools*

DESIGNING AN ENGAGING LEARNING ENVIRONMENT: CLASSROOM DECORATION, INSTRUCTIONAL GAMES, AND MOTIVATIONAL SPACES FOR ENGLISH LANGUAGE EDUCATION

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ABSTRACT

This capstone project aims to focus on how classroom decoration, instructional games, and motivational space can improve English language learning for elementary school students. The aim is to show how a fun, colorful, and supportive learning environment can help students feel more excited and confident while learning English. The project was implemented in Erbil at the CODO public primary school. By using different engaging learning environment decorations, such as classroom door decorations, a small library inside the English class, a Trashketball grammar game, and motivational quotes on the stairs of the school. These decorations and game designs create a positive environment, which enables students to be more active in the classroom and enjoy their English lessons. Activities done in a designed learning environment showed that students responded positively to these changes. They were happier, more focused and active, and felt better about learning English. This capstone project revealed that even simple, low-cost changes can make a positive difference in the English language learning process. Teachers can use these ideas to make the classroom more fun and helpful, especially in schools with fewer resources.

Keywords: *Classroom decoration, learning through game, english learners, fun learning space*

OUR VOCABULARY ADVENTURES A JOURNEY INTO THE ENGLISH VOCABULARY

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ABSTRACT

A lot of kids in elementary school have trouble remembering and using new English words, especially when they learn them by repeating them over and over again. For this capstone project, the goal was to make a vocabulary notebook for third-graders that would make learning language more fun, interesting, and useful. The words in the notebook came from each unit of the Sunrise third-grade English workbook. It also had different kinds of activities like matching, fill-in-the-blanks, multiple choice, true or false, and video links with QR codes. To help all kinds of learners, these tasks were designed to appeal to different senses of learning, such as hearing, seeing, and touching. Third-graders used and tried the notebook at home and at school, and students, teachers, and parents were asked for their feedback. The notebook was fun for the students to use, and they often eagerly finished the activities, sometimes even before their normal homework was due. Teachers liked how useful the notebook was for teaching in the classroom, and parents noticed that their kids were more interested in and confident in using English. The project showed that vocabulary notebooks can help students remember words and use language better if they are well-designed and linked to the school program. Overall, the project shows how research-based design, creative thinking, and testing in school can make vocabulary acquisition both successful and enjoyable.

Keywords: *Keywords: Vocabulary notebook, Third-grade student, English language learning, Sunrise curriculum*

THE ROLE OF AI IN LANGUAGE LEARNING OPPORTUNITIES AND CHALLENGES

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ABSTRACT

The usage of AI in many aspects of students life is rapidly increasing, and language learning is no exception of this rapid increase. Therefore, the main aim of this research is to explore how Al is used in language learning. The study focused on the opportunities and challenges that AI is providing for the students language learning. Hence, AI has the potential to improve language learning by providing personalized and interactive learning experiences, but its benefit is limited by challenges such as limited accessibility and lack teacher training.This study is important due to the fact that it provides significant insights for educators to incorporate Al into their classroo In addition, This study used a qualitative approach, and data was collected by using surveys with university students who use Al for language learning to understand their perspectives and experiences about AI. Then the data was carefully analyzed to identify opportunities and challenges of using Al in language learning.The results showed that a large number of respondents viewed Al tools as beneficial for improving their language skills, especially for grammar and writing feedback and conversation practice.However, some respondents expressed concerns about complexity of AI tools and internet access.

Keywords: *Keywords: The role of AI, Language Learning, Opportunities, Challenges*

REVIEWING THE ROLE OF INCLUSIVE EDUCATION IN EFL CONTEXT: A SYNTHESIS OF CHALLENGES AND EFFECTIVENESS

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ABSTRACT

This literature review analyzes the role of Inclusive Education, focusing on EFL (English as a Foreign Language) context. Inclusive education assures that all children, regardless of aptitude, background, or learning requirements, have equal access to learning in classroo It attempts to remove barriers to effective education by keeping ideals of fairness and social justice. This review papersâ€™ aim is to see how inclusive education works in EFL classroo The study examined 15 peer-reviewed articles, which were published from 2010 to 2024. The study used Thematic analysis to identify major challenges and effectiveness. These keywords were used to find out related articles like inclusive education, challenges in implementation of inclusive educations, and effectiveness. The study intentionally excluded curriculum and material adaptation in inclusive education setting. The studyâ€™s findings indicate that inclusive education increases students' academic engagement, social skills, and confidence, while also encouraging empathy and cooperation. However, the essential challenges of inclusive education are lack of teacher training, a lack of resources, needs more institutional support, and ineffective policy implementationâ€”particularly in EFL settings where tailoring lessons for mixed learners is complex. This comprehensive paper is a kind of resource for further research to look on culturally sensitive, practical ways to inclusive EFL teaching, and for educators, teachers and policymakers.

Keywords: *Keywords: Inclusive Education, Challenges, Effectiveness, EFL classes*

APPLICATION OF DIFFERENTIAL EQUATIONS IN POPULATION GROWTH ESTIMATION OF ERBIL CITY AS THE IMPLEMENTATION OF THE 2030 SDGS TARGET

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ABSTRACT

This study examines the application of differential equations in modeling population growth within the Kurdistan Region of Iraq, with a specific focus on Erbil City. Utilizing the logistic growth model, the research aims to forecast population trends for the period spanning 2021 to 2030. Adopting a literature-based methodology, the study relies on secondary data obtained from the official records of the Kurdistan Regionâ€™s statistical authority, covering the years 2005 to 2020. To evaluate the accuracy of the logistic model's projections, comparisons were made with official census data. A key component of the analysis includes estimating Erbil City's population carrying capacity, which is projected to reach approximately 295,672 individuals by 2030. The results reveal a notable upward trend in population growth, governed by a distinct growth rate. To further assess the modelâ€™s reliability, the Mean Absolute Percentage Error (MAPE) technique was employed, yielding an error rate that falls within a highly accurate range. These findings support the logistic growth model as an effective and dependable tool for predicting demographic trends in Erbil City.

Keywords: *1. Differential Equations in Population Modeling; 2.Separable Method of First-Order Differential Equations; 3.Logistics Model; 4.Exponential Growth Model;*

A COMPARATIVE STUDY OF CONVERGENCE TYPES IN CLASSICAL SEQUENCE SPACES: FOUNDATIONS AND FUNCTIONAL IMPLICATIONS

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ABSTRACT

This review paper conducts a particular comparative analysis of convergence types in classical sequence spaces, focusing on their fundamental and functional aspects. The spaces under examination include l_(1),bv,â€–bvâ€—_0,c_0,c and l_âˆž . Each space is shown sequentially, followed by an examination of its structure as a metric space, complete metric space, normed space, and Banach space. We are going to explain these definitions of classical sequence spaces one by one to introduce what they are, these spaces are useful for understanding how sequences behave, particularly when dealing with convergence, limits, and infinite series. Metric spaces and normed spaces have four conditions, we should implement all four conditions for each space. A representative example from each space is provided to demonstrate convergence behavior and functional properties. Finally. We concluded the review paper work with a comparative analysis of the spaces' similarities and differences in terms of convergence, completeness, and normability. This review aims to provide to a better recognition of classical sequence spaces and to present as a constructed reference for future research in sequence space theory and functional analysis.

Keywords: *Comparative, Classical Sequence Space, Matric space, Complete matric space, Norm space, Banach space*

WEIGHTED SEQUENCE SPACES AND SUMMABILITY: AN INVESTIGATION INTO HAHN AND CESÃ RO SPACES AND THEIR CONVERGENCE PROPERTIES

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ABSTRACT

This paper deals with an overview of classical sequence spaces under a number of matrix domains, specifically the Norlund matrix domain, Difference matrix domain, and CesÃ ro matrix domain. The research details the properties and functioning of sequence spaces in these domains, focusing on their structure and importance in functional analysis. Also, we study these sequence spaces in relation to metric spaces, complete metric spaces, and normed spaces, detailing their relationships and implications in broader scope of analysis. To stress completeness, topological properties, and relevance in various mathematical and applied disciplines, the paper highlights Banach spaces in the analysis. With this, we attempt to illustrate the significance of classical sequence spaces in modern mathematical analysis.

Keywords: *classical sequence spaces , Norlund matrix domain , Difference matrix domain , CesÃ ro matrix domain , metric spaces, complete metric spaces*

GENDER DIFFERENCES IN MATHEMATICS ANXIETY: AN INVESTIGATION INTO STEREOTYPES AND SELF-ESTEEM AMONG STUDENTS IN THE FACULTY OF EDUCATION AT TISHK INTERNATIONAL UNIVERSITY

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ABSTRACT

Math anxiety is a prevalent state that can produce a negative impact on students of all ages and backgrounds on mathematics performance and mathematics attitude. This study aims to investigate gender differences in math anxiety among students enrolled in the Faculty of Education, Tishk International University, by investigating students' stereotypes and self-esteem role. Math anxiety is increasingly found to be implicated in academic underachievement. The method used here is a quantitative research design involving a Likert-Scale though Google Form questionnaire based on previous works conducted by Rosenberg Self-Esteem Scale (Rosenberg,1965), Mathematics Anxiety Rating Scale by (Richardson & Suinn972), and certain items in the questionnaire were taken from Gender Stereotypes in Mathematics study conducted by (Ganley & Lubienski, 2016). The questionnaire was given to 100 students of different departments of faculty of Education at Tishk International University. The questionnaire is divided into three sections that assess mathematics anxiety, gender stereotypes for mathematics, and self-esteem levels. The findings of the study reveal that female students have greater mathematics anxiety than male students. The difference could be due to the effect of gender stereotypes, social expectations, and less confidence in their own mathematical capabilities. In addition, the results try to explain the social and psychological processes underlying students' attitudes towards mathematics. This research has important implications for the design of some interventions to decrease math anxiety as well as gender equity in schools. Furthermore, this study adds to the expanding literature on math anxiety among the Kurds and provides important data for policymakers and educators.

Keywords: *Mathematics Anxiety, Gender Differences, Stereotypes, Self Esteem,*

FROM FEAR TO FUN: TRANSFORMING MATHEMATICS EDUCATION THROUGH STUDENT-CENTERED APPROACHES

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ABSTRACT

The follow-up reflective manuscript describes the author's process of rethinking the pedagogical methods in teaching mathematics with a movement towards shifting away from classical didactical methods towards more student-oriented approaches. Based on personal experience and teaching expertise, the author emphasizes the weakness of classical methods of rote memorization and passive attendance in math lessons. Instead of using these methods, the manuscript underlines the importance of Project-Based Learning, the Flipped Classroom approach, the inclusion of gamification, and playful learning as productive methods of encouraging deeper math learning and interest in math as well as active participation. The author ends with an obligation to create participatory and open learning spaces in which learners not only learn math but also find math meaningful and enjoyable.

Keywords: *Key Words: Gamification, Physical manipulatives, Student-Centered learning, Active learning*

THE IMPORTANCE OF GEOMETRY IN EVERYDAY LIFE

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ABSTRACT

Geometry is a basic area of mathematics that studies shapes, sizes, and the space around us. This paper discusses how geometry is not just a school subject, but also an important part of our daily activities. We use geometry when building houses, designing clothes, drawing, and even playing sports. The paper explains simple geometric ideas, such as points, lines, angles, and shapes, and shows how they help us solve real-life proble Through easy examples and clear explanations, the aim is to show teachers and students how learning geometry can make daily life easier and more interesting. This paper also highlights the need for teaching geometry in simple ways so everyone can understand and use it. Geometry is not only important for math lessons, but also for developing logical thinking and problem-solving skills that are useful in many jobs and situations.

Keywords: *Geometric, plan geometry, mathematics*

EXPLORING LATTICE BASED KEY EXCHANGE PROTOCOL

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ABSTRACT

This study examines two quantum-resistant cryptographic method for safe key exchange based on lattices. Lattice cryptography is based on challenging mathematical issues involving structured grids in high-dimensional spaces, as opposed to traditional techniques (such as RSA and ECC), which are susceptible to quantum computer attacks. We concentrate on Learning with Errors (LWE) and its effective variations, which strike a balance between security and usability (Ring-LWE and Module-LWE). We study two schemes that were proposed to the NIST competition in 2017, NewHope and KYBER, in which NewHope was dropped in the second round and KYBER was standardized in 2022. Our aim is to examine the structure of the two schemes, efficiency and the rationale behind the standardization of KYBER.

Keywords: *key encapsulation, lattice cryptography, post-quantum cryptography, RLWE*

APPLICATION OF DIFFERENTIAL EQUATIONS IN POPULATION GROWTH ESTIMATION OF ERBIL CITY AS THE IMPLEMENTATION OF THE 2030 SDGS TARGET

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ABSTRACT

This study examines the application of differential equations in modeling population growth within the Kurdistan Region of Iraq, with a specific focus on Erbil City. Utilizing the logistic growth model, the research aims to forecast population trends for the period spanning 2021 to 2030. Adopting a literature-based methodology, the study relies on secondary data obtained from the official records of the Kurdistan Regionâ€™s statistical authority, covering the years 2005 to 2020. To evaluate the accuracy of the logistic model's projections, comparisons were made with official census data. A key component of the analysis includes estimating Erbil City's population carrying capacity, which is projected to reach approximately 295,672 individuals by 2030. The results reveal a notable upward trend in population growth, governed by a distinct growth rate. To further assess the modelâ€™s reliability, the Mean Absolute Percentage Error (MAPE) technique was employed, yielding an error rate that falls within a highly accurate range. These findings support the logistic growth model as an effective and dependable tool for predicting demographic trends in Erbil City.

Keywords: *Differential Equations in Population Modeling; Separable Method of First-Order Differential Equations; Logistics Model; Exponential Growth Model*

NEURAL NETWORK METHODS FOR SOLVING ORDINARY DIFFERENTIAL EQUATIONS: A NOVEL APPROACH TO COMPUTATIONAL SOLUTIONS

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ABSTRACT

This research presents a novel computational approach to solving Ordinary Differential Equations (ODEs) using Legendre Neural Networks (LeNNs). While traditional numerical methods such as Eulerâ€™s and Runge-Kutta remain widely used, they often encounter limitations when applied to stiff equations, nonlinear systems, and high-dimensional proble LeNNs minimize residual errors and provide mesh-free, generalizable solutions with reduced computational complexity. This study applies LeNNs to various types of first- and second-order ODEs and performs a comparative analysis against conventional numerical methods. The results demonstrate that neural network-based methods not only achieve high accuracy and superior generalization but also offer enhanced scalability and efficiency.

Keywords: *LeNN ,NNS ,ODE*

REDESIGNING SCHOOL MATHEMATICS

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ABSTRACT

Traditional mathematics education often adopts a "one-size-fits-all" approach, contributing to widespread math anxiety and disengagement among students. This paper argues for a comprehensive redesign of math classrooms to address these challenges by leveraging technology, gamification, and student-centered pedagogies. By shifting toward inclusive, real-world applicationsâ€"such as project-based learning and culturally responsive instructionâ€"we can reduce anxiety and foster deeper conceptual understanding. Case studies demonstrate how innovative strategies, including digital tools and game-based learning, improve motivation and outcomes. However, implementation barriers such as resource limitations and teacher training must be addressed. The paper concludes with a call to action for educators in creating equitable, adaptive, and engaging math learning environments that prepare students for future demands.

Keywords: *Math Anxiety, Math in Real World, Challenges in Implementation*

THE ROLE NANOMATERIALS IN THE PRODUCTION OF HYDROGEN GAS

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ABSTRACT

Hydrogen is increasingly recognized as a key element in the global transition to clean and sustainable energy syste Its high energy content, abundance, and zero-emission nature upon combustion make it an ideal alternative to fossil fuels. This project explores the importance of hydrogen as a future energy carrier, examining its production methods, applications, and in particular, the photoelectrochemical (PEC) water splitting technique-a promising and eco-friendly approach to generate hydrogen directly from sunlight and water. A special focus is placed on the role of nanomaterials in enhancing the efficiency and stability of PEC syste Nanostructured semiconductors such as titanium dioxide (TiOâ‚‚), tungsten trioxide (WOâ‚ƒ), and hematite (Î±-Feâ‚‚Oâ‚ƒ) are discussed for their unique optical and electronic properties that improve light absorption and charge separation. Additionally, the integration of co-catalysts like platinum nanoparticles and surface modifications using graphene-based materials are analyzed for their impact on reaction kinetics. Through a detailed review and analysis, this project highlights how advances in nanomaterials can overcome key challenges in PEC water splitting, paving the way for efficient, scalable, and sustainable hydrogen production.

Keywords: *Nanomatrial ,hydrogen gas titanium dioxide*

MODELING IONOSPHERIC TOTAL ELECTRON CONTENT USING AUTOREGRESSIVE INTEGRATED MOVING AVERAGE

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ABSTRACT

This research aims to study and model the Total Electron Content (TEC) values in ionosphere which is of extreme importance for high-frequency communication and satellite-based navigation systems, Earthquake forecasting. Precise modeling and forecasting of TEC are crucial in reducing the ionospheric disturbances and improving satellite navigation with Global Navigation Satellite Systems (GNSS). This research examines the use of Autoregressive Integrated Moving Average (ARIMA) model to predict the ionospheric TEC variation data. Past observations of TEC, obtained from dual-frequency GNSS receivers from the platform of IONOLAB, are used to establish and test ARIMA models for the purpose of short-term prediction. Stationarity testing, parameter identification, using auto correlation (ACF) and partial auto correlation functions (PACF), validation through Akaike Information Criterion (AIC) and Bayesian information criterion (BIC) are all part of the model selection process. The analysis proves that the well-tuned ARIMA models are capable of modeling temporal patterns in TEC data which later can be used for predictions over short term. This approach presents a computationally affordable tool for ionospheric monitoring particularly in dwelling regions where real time space weather observations are required.

Keywords: *Total electron content, Ionosphere, ARIMA model, Akaike information criterion, Bayesian information criterion*

INVESTIGATING THE SIGNIFICANCE OF PANCK SCALE: FUNDAMENTAL LIMIT OF NATURE

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ABSTRACT

The Planck scale, proposed by Max Planck in 1899, represents the fundamental limits of physical quantitiesâ€"length, time, and massâ€"below which the known laws of physics cease to operate meaningfully. These units are derived using three universal constants: the speed of light (c), Planckâ€™s constant (h), and the gravitational constant (G). The Planck scale serves as a boundary where the effects of both quantum mechanics and general relativity become equally significant, indicating a need for a unified theory of quantum gravity. Its interpretations suggest that space and time may be discrete rather than continuous, providing a potential solution to singularities in black holes and the early universe. Its interpretation can have many applications in physics, that can serve as indirect evidence of the Planck scale, they include modeling the early cosmos, black hole physics and holographic principle, and the fundamental building blocks of theoretical frameworks such as string theory and loop quantum gravity. Finally, this study explores an intriguing intersection between the Planck scale and classical Islamic thought, particularly the Mutakalimin concept of Jawhar al-fardâ€"an indivisible unit of matter and time. This notion mirrors modern ideas of physical limits, suggesting a historical anticipation of quantum discreteness in the metaphysical discourse of Islamic theology.

Keywords: *Planck scales, discrete space and time, quantum gravity*

A REVIEW ON THE EFFECT OF THERMAL BW TREATMENT TECHNIQUES ON SHAPE MEMORY ALLOYS

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ABSTRACT

Shape memory alloys (SMAs) are a class of metals that can alter their crystal structure when subjected to stress or temperature changes. They are able to "remember" and regain their previous shape following deformation thanks to this transition. SMAs are useful in applications such as medical devices, actuators, and aircraft components because of this special capability. Copper-based shape memory alloys exist as top choices because they combine high electrical and thermal conductivity with a remarkable shape-memory effect, excellent mechanical properties, good corrosion resistance, ease of processing, and cost-effective manufacturing characteristics, making them highly suitable for a wide range of industrial, aerospace, medical, and technological applications. Heat treatment involves heating materials chiefly metals through controlled temperature changes which lead to modifications of their physical and possible chemical characteristics. The primary application of heat treatment exists to strengthen materials while adding durability and increasing their strength and making them resistant to internal stresses. The major heat treatment techniques for metals consist of annealing together with quenching followed by tempering. Three essential processes are combined in effective heat treatment of copper alloys: The review examined how annealing and quenching and ageing treatment influences the behavior of copper-based shape memory alloys (SMAs). The annealing process both softens the material and relieves internal stresses and improves ductility which stabilizes the martensitic structure of the material. The quick cooling process of quenching prevents the alloy's formation of the low-temperature martensitic phase while maintaining the high-temperature austenitic phase along with a supersaturated element solution which leads to increased material hardness. Material ageing requires a specific controlled heating process which forms fine precipitates that simultaneously enhances material strength and thermal properties and optimizes memory properties. The combination of these treatment methods results in substantial improvements to the mechanical features and operational trustworthiness of copper-based SMAs.

Keywords: *Shape memory alloy , Heat treatment , Shape memory effect*

THE IMPACT OF FLIPPED CLASSROOM ON STUDENTSÂ€™ ENGAGEMENT AND PERFORMANCE IN SCIENCE CLASSES: A LITERATURE REVIEW

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ABSTRACT

Flipped class is a modern method which learning can happen at home and activities can be done in the classroo It means that it is vice versa to the traditional method. This review paperâ€™s aim is to explore the impact of flipped classroom on studentsâ€™ engagement and academic performance, with the scope of the science classes. The study used Thematic analysis to syntheses fifteen papers which were conducted in science classes at school and university. These keywords were used to find related articles like studentsâ€™ engagements. flipped classroom, studentsâ€™ academic performance, physic classes. The study intentionally excluded non-science courses. The papersâ€™ results showed that the flipped classroom has an impact on student academic performance and engagement. It also showed that students improved their self-confidence to their knowledge in the class and out of the class. Flipped classrooms had given students a chance to be self- learners, decision-makers. The results also found that students could improve their skills like working individually, cooperation, and collaboration, and problem-solving if it applied effectively in the science classes. This paper is a great insight for teachers, curriculum designers, educators and decision-makers.

Keywords: *Students engagement, Academic performance, Science class, flipped classroom.*

MULTIPLE MIXING RATIOS FOR GAMMA-TRANSITION USING CONSTANT STATISTICAL TENSOR METHOD FOR ND(N,N, GAMMA) REACTION.

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ABSTRACT

The S-mixing ratio of y-transitions from levels of (1424446) 60Nd populated in the (1424446) 60Nd (n.n â€˜Y) reactions are calculated in the present work using the a2-ratio, constant statistical tensor (CST) and least squares fitting (LSF) methods. The results obtained are, in general, in good agreement or consistent, within the associated uncertainties, with those reported previously. The discrepancies that occur are due to inaccuracy existing in the experimental data. The results obtained in the present work conform transitions and their capabilities in predicting any in accuracies in the experimental data. The weighted averages of the S-values calculated for mixed y-transitions from levels of (1424446) 60Nd are presented as adopted 8-values.

Keywords: *(1424446) 60Nd, Gamma- mixing ratio, Gamma transitions, (CST) Constant Statistical tensor, and (LSF) Least squares fitting.*

EXPLORING THE PROPERTIES AND MODERN APPLICATIONS OF NANOMATERIALS

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ABSTRACT

Nanomaterials are materials with at least one dimension falling in the range of 1-100 nanometers which display very different physical, chemical, optical and electrical properties from ordinary bulk materials. This unique behavior is brought because of large surface area as compared to the volume, and the occurrence of quantum effects at the nanoscale. This investigation explores the all smaller sized nanomaterials by defining them based on their size, composition, and source, and also explores synthesis methods, which come in top-down and bottom-up approaches. As we consider the history of nanomaterials from its initial applications to the present through successes like graphene and quantum dots, we may better understand the current state of the field. This study examines nanomaterials and thir size-dependent optical properties, electronic properties, and catalytic properties vary with size and studies the diverse applications of nanomaterials in the field of medicine, electronics, energy, environmental remediation, and defense. It highlights developments in drug delivery systems, the application of nanomaterial for detecting cancer, increasing the use of solar power technologies, and decontaminating pollutants. Hearing the significant development these technologies bring, nevertheless, the paper expresses concerns on toxicity and the safety in terms of environment, highlighting the need for responsible development and regulation as soon as possible. Using a literature-centered approach that draws upon theoretical-court but also practical points of view, this work exemplifies the huge potential for nanotechnology and promotes the need for a sustainable and ethical innovation in the future.

Keywords: *nanomaterial, nanotechnology , application of nanomaterial*

THE POWER OF PATTERNS IN MATHEMATICS

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ABSTRACT

Pattrns are everywhere in mathematics and in our daily lives. This paper explores how recognizing and understanding patterns can help students learn math more easily and enjoyably. We show that patterns can be found in numbers, shapes, and even in nature, like flowers or the way animals move. By studying patterns, students can make predictions, solve problems faster, and think more logically. The paper gives simple examples of patterns in arithmetic, geometry, and real life. It also suggests fun classroom activities to help students discover patterns on their own. Understanding patterns not only makes math easier, but also helps students become better problem solvers in school and in life.

Keywords*: Pattern, Mathematics, Problem Solving, Real-Life Applications.*

HIKMA: A WEB-BASED LEARNING MANAGEMENT SYSTEM FOR THE SARUCHAWA BRANCH OF NURY HIKMA

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ABSTRACT

This paper presents the design and implementation of Nury Hikma, a web-based learning management system developed specifically for the Saruchawa branch of Nury Hikma, a community-focused educational organization in Kurdistan. The primary aim of the project was to streamline administrative tasks and improve the overall management of students, teachers, and academic activities within a localized educational setting. The system offers role-based access for administrators, teachers, and students, providing each user group with relevant tools such as class management, subject grading, attendance tracking, and progress monitoring. Emphasis was placed on creating a simple, culturally adapted interface to ensure accessibility and ease of use by the local staff. Through this solution, the Saruchawa branch of Nury Hikma has been able to reduce manual recordkeeping, improve communication between stakeholders, and enhance data accuracy in student evaluations. The project demonstrates how targeted digital solutions can significantly support the operational needs of small educational centers and promote effective learning management in regional communities.

Keywords: *Educational Management, Learning Management System, Student Information System, Web-Based Application, Nury Hikma, Community Education*

WHY MATHEMATICIANS ARE BAD AT SHOPPING: A FUNNY LOOK AT REAL-LIFE MATH FAILS

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ABSTRACT

This paper humorously investigates the cognitive and behavioral patterns that explain why mathematicians may struggle with everyday shopping decisions. Grounded in real-life examples and behavioral insights, it explores how an overreliance on mathematical optimization and analytical thinking can hinder practical decision-making. Mathematicians often seek ideal solutions under clear constraints, yet shopping involves incomplete information, qualitative judgments, and numerous unknowns. The abundance of choices in modern markets can cause decision paralysis, as analyzing every option becomes overwhelming. Furthermore, mathematicians tend to prioritize quantitative factors such as price and size, often at the expense of taste, brand preference, or emotional satisfaction. Their aversion to heuristics—the mental shortcuts commonly used by efficient shoppers—leads to over analysis and inefficient use of time. The tendency to track spending through elaborate spreadsheets or to justify sunk costs further complicates simple purchases. Ultimately, this work suggests that embracing imperfection, intuition, and qualitative factors may lead to better outcomes. It advocates for a balanced approach that combines mathematical rigor with practical wisdom, showing that effective shopping requires more than just equations—it's also an art of judgment.

Keywords: *Decision Making, Shopping Behavior, Optimization, Heuristics, Behavioral Economics, Mathematicians*

ENGLISH LANGUAGE TEACHING METHODOLOGIES: APPROACHES AND STRATEGIES IMPLEMENTED IN THE CONTEXT OF UNIVERSITIES IN KRG

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ABSTRACT

Education has been a long-standing practice in the history of mankind. There exist countless teaching methodologies varying from one geographical and educational setting to another. In KRG, universities have implemented several different teaching methodologies in the context of English language teaching. This research investigated the effectiveness of the implemented teaching methodologies in KRG universities. The aim of the study was to thoroughly examine the effectiveness of the implemented EFL teaching methodologies in the context of the KRG universities. Two research questionnaires were conducted, with one of them being shared with teachers and the other one being shared with students. The results have shown that although teachers believe that they have implemented communicative language teaching methodologies and based their teaching methodologies around students' academic needs, the students' responses showed otherwise. Therefore, it can be concluded that there is still a need for effective student-centered English language teaching training courses to be provided for teachers. Research findings of this paper can provide a profound understanding for teachers to know what is the most effective language teaching methodology for their students, depending on several factors. Additionally, it can be useful for policymakers to help them decide what is the most effective English language teaching methodology to implement that will promote students' growth, improve their academic performance, and will provide them with their academic needs.

Keywords: *EFL, Student-Centered Approach, English Language Teaching Methodologies, Teacher Training Courses*

TEST ANXIETY AND PERFORMANCE PRESSURE AMONG UNIVERSITY STUDENTS IN KRG

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ABSTRACT

In recent years, there has been a rising interest in investigating anxiety and academic performance and test scores among students all over the world. KRG university students are not an exception, and anxiety has impacted their academic performance and test scores. The study aimed to determine the major factors that led to test anxiety and academic pressure, and what outcomes were caused by anxiety in undergraduate students in KRG universities. A survey questionnaire was conducted to get the viewpoints of the KRG undergraduates on the topic. The results of the research showed that more than 80% of the participants have experienced a high level of text anxiety in their educational journey, and that the majority of the participants stated that they had even skipped exams due to high levels of text anxiety. Therefore, it can be concluded that there is an urgent need to find a way to combat this ongoing problem. The research findings of this research can be helpful for KRG undergraduate students to overcome their test anxiety. Additionally, it can be beneficial for teachers to have a more holistic understanding of the severity of this problem among undergraduates.

Keywords: *Academic Pressure, Academic Performance, Test Anxiety, Test Scores, Undergraduate KRG Students.*

STLM LEARNING PLATFORM FOR KIDS

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ABSTRACT

This project delineates the development of an interactive web-based learning system for kids aged 4 to 12. The system is specialized in four broad subjects: Science, Technology, Language, and Mathematics. It integrates educational content with interactive multimedia components such as animated videos, games, and hands-on exercises tailored for three different age groups. The main goal of the platform is to teach young pupils in an active, accessible, and effective way by matching fun interfaces with age-appropriate education content. There is well-organized content on every topic page that is divided into categories, allowing children to learn subjects in various forms of interaction. The interface is highly colorful, intuitive, and visually consistent with the interests of young users, employing child-friendly icons, adaptive menu, and a home page background video to achieve high appeal. The site also includes easy user login and registration functionality to facilitate progress tracking and individualized access. The significance of this research work lies in the potential for facilitating early childhood foundational learning through an interactive and accessible platform. Through the use of web technologies and creative design, this project attempts to erase the distinction between education and fun, stimulating children to learn academic subjects with interest. The system can be further expanded with other subjects, multilingual support, and teacher consoles for schools.

Keywords: *Learning Platform, Kids Education, Web Design, Interactive Learning, Science and Technology, Fun Learning.*

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