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*Operational Strategies and Performance Measurement Systems:
University Business Incubators in Malaysia*

Researcher: *Omer Ajdini and Baskaran Angathevar*
Research Focus: *Entrepreneurship; Sustainability; Business Incubators.*
School: *University of Malaya, Malaysia*

Abstract

As countries head towards creating innovation-based economies, the role of innovative start-ups and spinoffs becomes increasingly important which in turn require the necessary infrastructure and support to incentivise their establishment, ensure their sustainability and facilitate their growth. Among other things, Malaysia-where this study is based- has lately invested large amounts of money in establishing business incubators which are held to be an important component of the entrepreneurship ecosystem and a crucially supportive mechanism of innovative start-ups. In this context, this study is set out to investigate the following research objectives: identify and analyze the operational strategies and practices of Malaysian university-linked business incubators; map out and analyze the performance measurement criteria of Malaysian university-linked business incubators; compare the operational strategies and performance measurement systems among the Malaysian university-linked business incubators; identify the major challenges that the university linked incubators are facing in Malaysia. In this attempt, this study deploys a case study approach by taking three university-linked incubators as case studies and interviewing the managers (or senior members) of the incubators. Our findings show that to a large extent the operational strategies as well as performance measurement strategies of university-linked incubators are in the consolidation phase given that the incubators are relatively new. However, there is considerable difference between the incubators in terms of their operational strategies which our findings indicate to be by and large the result of the professional background of the management members. Also, an important finding this study came to is the shortage of skilled manpower that these incubators are experiencing. As the sustainability of Malaysia's economy is contingent upon the creation of an innovation-based economy, our findings become particularly important for policymaking as they pave the way towards evidence-based future policymaking and intervention in the area of university-linked business incubators in Malaysia.

*Architectural challenges for Next Generation Emergency and Mission Critical
Wireless Sensor Networks*

Simon Bojadjevski

Natasha Anastasova Bojadjevska

Stojan Kitanov

Abstract

Wireless networks are the main enabler of connected Internet of Things (IoT), working with an environment of heterogeneous devices and networks with a variety of data types, used in various applications, such as Emergency services, eHealth, related vehicles, Industrial IoT and media. Wireless sensors network are not short-range small ad-hoc networks anymore, but a part of a wider ecosystem called IoT. IoT is a system that includes various types of sensing devices that communicate with smart devices, which continue to confidently and securely transfer data to the appropriate Cloud platforms where data for the respective application are stored and archived. Emergency services, important for the safety of society and citizens, reveal multiple challenges for the adoption of applications based on the capabilities of smart devices and the interoperability among heterogeneous platforms. 5G networks, being the center of the heterogeneous network environments, define the mission-critical data coping with this challenge that need reliable communication. A novel approach of using heterogeneous IoT devices and networks is a necessity and, in our papers, we propose a draft architectural model and a basic algorithm to cope with these challenges for enabling reliable transfer of emergency and mission critical data communication.

*AN ANALYZE OF REWARDING PROGRAMS AND ITS IMPACTS TO THE
LEVEL OF SATISFACTION OF EMPLOYEES AT FOOD INDUSTRY
ORGANIZATIONS*

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Abstract

The need for effective management of rewarding programs has always been the subject of discussion for both side's employees and employers. The turbulent environment is imposing companies to compete for attracting the high quality staff and providing long term retention. Satisfied employee leads the company towards growth, development and prosperity, preserving its vitality, flexibility and profitability. Therefore, the dynamics of today's business environment impose a constantly changing environment in which companies must adapt and maintain strong competitive advantage to ensure survival, growth and development. Nowadays running a business is more dynamic and complex, and is followed by many risks, constraints, pressures and various other requirements imposed by environment. That is why today's companies need to put in more effort to exploit a variety of different knowledge and experience to build fair and equity rewarding systems. The processes of hiring, motivating and maintaining a quality workforce is imperative for a competitive enterprise. Therefore, our aim in this paper, through empirical research and various theoretical and practical approaches is to consider the main dimensions of rewarding system and how it will functioning as integrated reward system for employees of food industry. Also, through the information received, we propose ideas, suggestions and criteria for successful development and implementation of an integrated reward system that will influence to improve satisfaction of employees and the success of the organizations in food industry.

Key Words: *Rewarding management, Payment and work motivation, integrated reward system, recognition*

The Importance of Intellectual Property for Small and Medium-sized Enterprises (SMEs)

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Abstract

Sustainable economic development requires the existence of highly competitive small and medium-sized enterprises (SMEs) operating within highly developed technological and global standards. Global standards in the 21st century are constantly pushing intellectual property to the forefront. The increasing need for intellectual property to develop competitive advantage undoubtedly imposes the need for active involvement of SMEs in this area. The purpose of this research is therefore to emphasize the need for active involvement of intellectual property in SMEs development strategies. This need is a result of the increasing participation of intellectual property in the capital of highly competitive enterprises. Diagnosing the current state of SMEs in the field of intellectual property and their competitive position with respect to large enterprises is the starting point of the research. The positive aspects of intellectual property rights and the need to include them in the SME portfolios are analyzed to enable SMEs to make a serious innovative breakthrough in the industry in which they operate. The activity of the European Union (EU) aimed at increasing the percentage of intellectual property rights exploitation by SMEs is also analyzed. In the research EU SME activity is a substitute for the direction in which SMEs from EU candidate countries should develop their own intellectual property strategy. Analyzing the general situation of the use of intellectual property rights by SMEs, the research attempts to emphasize the need to incorporate these rights into the development strategy of the enterprises and to provide guidance on how SMEs should position themselves in the field of intellectual property in the future conditions of global trade competition.

Key words: *Intellectual property, Small and Medium-sized Enterprises, European Union*

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Abstract:

The transition period in The Republic of North Macedonia alongside with the other Balkan countries was very prolonged and impregnated with numerous problems in the functioning of the rule of law. The judiciary has been the 'Gordian knot', for which it has often received objections from the international community. With constant and direct political interference, blatant nepotism, various compromising cases of corruption, and almost endless delays in cases, the judiciary has recorded successive violations of law and infringement of justice.

There are perception that the predominance of the only one political party: the presidency, parliament, municipalities and then all other state institutions, that reflected in the hostage seizure of the state.

The wiretapped conversations that began to be published since February 9, 2015 proved that the judiciary had been the target of political and party calculations. It was also seen that politicians appoint and dismiss judges and prosecutors, interfere with litigation, assemble cases and proceedings, instrumentalizing all judicial instances. Following the publication of the so-called political 'bombs', with the mediation of the international community among the main political parties the (Skopje) Przhino Agreement was reached and finally the political product of which was the establishment of the Special Public Prosecutor's Office on September 15, 2015.

However that hope did not last. At the top the paradox, the Special Public Prosecutor's Office was trapped in a large corruption, so its ending was disappointing and depressing for citizens. From the public statements of Euro diplomats this confusing judiciary situation is expected to have its impact on the road of the country towards European integration.

Keywords: Absolute power, EU, Judiciary, Special Public Prosecution, justice, judge, prosecutor.

Design and Prototyping of a parametric bamboo structure. Designing with non-standard geometries to be used in a parametric design.

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Abstract

The digital shift happened in both computational design and digital fabrication tools has provided a new resource for designers to explore and tap into. Although spatial possibilities that these models provide can be endless, there are still difficulties when working with nonstandard geometries due to the precise nature of the computer. This study's main aim is to explore a methodology of introducing a natural nonstandard material in a parametric design and prototyping process. In order to define possible design solutions that use components that are similar in form, but change in precise dimensions, some constant parameters need to be identified and input into a parametric model. This research explores a research by design approach, showcasing a parametric approach during the design phase in order to assess different design solutions and to test the ease of assembly in the process. Both the design and final prototype are results of this parametric exploration. With the design being explored in different iterations and a prototype being assembled after following the instruction generated in the parametric software. The final prototype is achievable at the end by following the design process and built in 12 hours of manual work with prior knowledge to the design itself, not being necessary. Going forward, finding more ways to incorporate nonstandard materials into parametric design processes would open a range of new possible materials to be used, from natural materials to even 're-using' waste or left overs as possible building components and combining them with computational design tools we can generate a sea of possibilities.

Keywords: *parametric design, prototyping, bamboo structures, nonstandard*

*IMPLEMENTATION OF ABC METHODS IN SMALL BUSINESS IN
REPUBLIC OF NORTH MACEDONIA*

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Abstract

Any enterprise to carry out its economic activity must hire inputs or factors of production (labor, capital, land, entrepreneurs). The engagement of the factors of production is related to the cash expenses or payments that the company must make. Cash expenses or payments that the company provides to the involved factors of production in the economy is called costs. In order to monitor the cost in practice most frequently used model of traditional cost management model and management costs based on activities (Activity Based Costing-ABC).

The paper deals with exploring the possibilities of applying ABC method as the most applied method of managerial and cost accounting in contemporary economies, which enables planning of financial inputs, control of expenses and profit for management at all levels.

In this paper through the method of analysis, induction and deduction we will try to explain the benefits that small businesses will have from applying the ABC method in enhancing their performance.

Key word: *ABC, managerial accounting, costs, profit, cost accounting.*

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Abstract

The term “brain drain” stands for the migration of highly skilled people from one country to another seeking for better life conditions. Actually, this phenomenon has been broadened over too many transition economies countries, including Kosovo. As a country in its initial stages of development, Kosovo is facing the migration of capable people from the country towards developed countries. Some areas are more pronounced, while some are less.

This research aims to analyze the effect of brain drain in Kosovo, the effect of this phenomenon on the country’s economic growth. Furthermore, will be investigated gender and job significant differences in regards to brain drain. Hereby, which gender is more likely to migrate due to better life conditions, or even more, which professional area or employment sector is the most concerned by this occurrence? The overall results will be concluded by using quantitative methodology, where the data will be gathered through distributing questionnaires to different employees in Medical sector, Computer Engineering and Law sector. Also, through SPSS analysis will be pointed out the significant differences between those variables indicated above.

Additionally, some similar studies related to brain drain have been conducted in Kosovo, highlighting some gaps, either from the samples they have taken or from the research methodology, thus expecting these gaps to be filled by further researches. Subsequently, the main purpose of this investigation is to provide detailed results on the brain drain trend, and its correlation with the other factors. Academic and practical contribution will be notable, as gaps in prior investigations will be filled and companies will be aware of this happening statistics, thereby resulting in improved working conditions in order to maintain skilled people in house.

Keywords: *brain drain, Kosovo, gender, job, significant differences, economic growth*

*Sustainability of mono-ethnic advertising in the multiethnic state in Western
Balkan's /case study Macedonia*

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Abstract

Advertising is very important element for the media, which derives its main benefits from advertising itself, and may have some benefits for the consumer as well, whom is informed about the different products. However, advertising in multiethnic states has ethical problems in its display, problems which are rarely considered by media and consumers as well. If the Western Balkans countries aim to join multicultural EU as functioning multicultural societies than this is in sharp contradiction with media approach to the issue and in particular with advertising. If the other problems of these societies reflect in the functioning of states of Western Balkans than ethical problems in media advertising are hidden and not tackled as such by researchers. This paper aims to analyze and highlight the problems of mono ethnic advertising broadcast in multiethnic state such as Macedonia, by focusing on some concrete cases of how advertising bypasses some important parts of social elements and making it in long term unsustainable.

Key words: *Media, multiethnic states, mono ethnic advertising, unsustainability of mono ethnic advertising.*

*The status on the implementation of the right to address public authorities in
Northern Macedonia*

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Abstract

The right of the citizens to address authorities for redress of grievances without fear of punishment or reprisals lies at the cornerstone of modern democratic states, tracing back its origins as far as the “Magna Carta Libertatum” from the XIII century. This right is recognized in the basic treaties and the Charter of Fundamental Rights of the European Union, further advanced through the work of the Committee on Petitions in the European Parliament.

The right of the citizens of Republic of North Macedonia to address and elicit action from public authorities is guaranteed by the Constitution and the Law on Acting Upon Complaints and Proposals. An inquiry on the implementation of the Law has revealed many shortcomings ranging from inexistence of several crucial bylaws, lack of the envisaged network of officers responsible for processing the addressing from the citizens on behalf of every state and other public entities, absence of record of the addresses from the citizens referred to the state and other public entities or the Office of the Ombudsman, as an instance of appeal.

Taking into consideration the legal framework for exercising the right to address the institutions of the European Union and the experience of the Committee on Petitions in scrutinizing and advocating on behalf of individual cases in conjunction with the legal framework and practice in implementation of the right to address in Republic of North Macedonia, the authors of this paper in the concluding section are offering a set of suggestions as a way forward toward revitalization and consistent implementation of the legislation pertinent to unimpeded practicing of the right to address the state and other public entities by citizens of Republic of North Macedonia.

Key words: *right to address, participatory democracy, democratic practice.*

***MEASURES AND LAW FOR THE PROTECTION OF DENOUNCED
RIGHTS***

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Abstract:

Very strict measures and by law regulate the denunciation protected the rights of the denouncers as well as actions and duties of the institutions respectively legal persons regarding the protected denouncement and the subject of the protection of defendants.

Protected denunciation is the denunciation by which reasonable suspicion are the sense that it is committed is carried out in accordance with the law on the protection of the denouncers is punishable or any illegal or unlawful act violating or affecting the public interest.

The protected denunciation is carried out as a protected internal denunciation of a protected external denunciation, public protected denunciation in accordance with the law with good intent and with reasonable doubt on the accuracy of the information on the content the denunciation at the time of denunciation. Denunciator is provided with protection in accordance with the law and is guaranteed anonymity and credibility until he or she so request.

The denominator and his immediate person shall provide protection of any kind of violation of the right or if any harmful action or risk from the harmful acts, because of the conduct of the external and internal detention or of the public held name.

Keywords: Measures, law, protection, rights, denouncer.

*INFLUENCE OF THE COAL QUALITY ON ABRASION OF THE BOILER
ELEMENTS*

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Abstract

Depletion of the coal reserve in the mine Suvoldol, which is the main fuel source for providing continuous operation of the Thermal Power Plant (TPP) Bitola, impose the necessity of providing certain coal quantities from the mine Brod-Gneotino. Since the two coal deposits have different coal quality, the processes of mixing of and inter-changing between coals from both mines, influences the system for coal preparation, in particular mills and their wheels, ducts for air-mixture, convective heat surfaces etc. Regular reports the coal technical analysis (2005 to 2018), continuously provide an insight of these changes in the coal quality.

In this paper calculated is the Index of abrasion of the coals in accordance with an empirical expression developed by Raask, where influential variables are the relative weight contents of quartz, pyrites and ash found in the coal sample. In accordance to the results, classification of the coals is performed, as well as diagrams which indicates the impact of coal ash content on the coal abrasiveness and its repercussion concerning the mills, associated system components and convective heat surfaces. Further, pointed out are several recommendations regarding improving protection of the systems from coal abrasion.

Keywords: *ash, abrasion, coal, thermal power plant*

Knowledge, Attitude and Practice towards Occupational Safety among Dentists in University Dental Clinic “St. Pantelejmon” and Dentists in Private Clinics in city of Skopje, North Macedonia

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Abstract

The present study aimed to assess knowledge, attitude and practice (KAP) on Universal/ Standard Precautions among dentists in the University Dental Clinic “St. Pantelejmon” and Dentists in private clinics in city of Skopje, North Macedonia, using cross-sectional survey. Data was collected through a self-administered questionnaire with 97 variables, and were analysed with SPSS-Version. The p-value was set at 0.05.

Out of 188 participants, 46 % were faculty and 54 % were private practitioners.

The majority of participants in the two groups were female (61 % to 62 %). 91 % of private and 100% of faculty dentists ($p < 0.005$) were aware of the risk of transmission of bloodborne pathogens in the dental settings and most participants recognized the need for mandatory training on infection control. However, only 20 % had attended continuing education on this subject. The majority of participants reported use of exam gloves and facemasks, 41 % to 43 % indicated exposure to sharp injuries, whereas more than 70 % reported exposure to splash / spatter. The postexposure protocol was followed by 57 % of faculty and 48 % of private dentists. Immunization rate against HBV was low (17 % to 29 %) and not significantly different between the two groups.

Results indicate that dental Standard Precautions among participants were far behind measures implemented in developed countries and similar to those reported in developing countries. Results can be utilized for development of national standards and dental safety curriculum in dental schools in North Macedonia.

Key words: *Knowledge, Attitude, Practice, Dental Occupational Safety, North Macedonia.*

*Welding as a technological process and its impact in environment,
health and safety at work*

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Abstract

Welding as a process of permanent joining metal parts is a practice in many industries. Application of the heat of an electric arc or flame to the metals results in appearance of fumes, very small metallic particles, usually in the range between 0.4 and 1.0 μm . With respiration, they can cause illnesses and/or permanent lungs damage. In addition, welding carries many other direct and indirect harm not only to the health and safety of the workers, but to the environment as well. The most common hazards accompanying operations in welding are: fires and explosions, burns, fumes, electric shocks, compressed gases, hazardous substances, toxic gasses, suffocation, radiation, heat stress, dust, noise and vibration, manual handling, etc. Different welding processes need diverse arrangements of equipment, operations, workers' skills and thus, different safety and environmental requirements. Taking into consideration the importance of the environmental protection and the safety and health at work, the application of an appropriate code of practice and measures of precautions, lead to the increase of employee awareness of the health and safety at work, reduced number of injuries, but also, to the decrease of the adverse effects on the production. Moreover, the responsibility of any employer is to make clean, safe and comfortable working environment through the assessment of the safety hazards and the application of the hierarchy of control, employees' training and communication. This study will be focused on summarizing the most frequent hazards occurred in welding processes, their environmental impact, the effects on human health, as well as identification of potential measures of protection.

Key words: *Welding, Occupational health and safety, environmental protection*

Transformation of border towns in the R. of North Macedonia into sustainable urban centers through development of strategic and action plans

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Abstract

The cities in Republic of North Macedonia are facing a number of problems and challenges. The most drastic changes, in this period have the small border towns in the country, where there is a decline in population, economic downturn, population migration, urban stagnation and more.

The subject of this paper is the study and analysis of border towns and settlements with their areas and the identification of current situations in which urban stagnation is caused. The purpose of this paper is to propose solutions for sustainable urban transformation that will allow adaptation and gradual development of border cities to contemporary flows of urban functioning, through previously performed analyzes and methodological approaches.

This topic involves finding and offering solutions in the short term, but as cities are urban and social communities, strategic planning in the medium term should also be offered.

The application of integral urbanism can identify the problems of the city and identify the means and capacities for solving those problems. Integral urbanism addresses the shortcomings and opportunities for urban renewal.

An important part of elaborating on the topic is the relationship between the border towns of the Republic of North Macedonia with the border towns of the neighboring countries, and their cooperation. One of the objectives of the paper is to define and present the values of the different European regions, their diversity and the apparent interstate borders between the Member States and the candidate countries of the European Union.

Keywords: *Border towns, urban transformation, sustainable development, strategic and action planning*

SUSTAINABLE DEVELOPMENT OF ARCHITECTURE IN CONTINUITY

PhD. Prof. VangjelDunovski

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Abstract:

Generally speaking, the task of architecture is to create suitable atmosphere for performing a certain function of the human being.

Though today the interior and exterior space are shaped with equal responsibility and seriousness, the interior ambient is the one in which a man spends most of his time. The building as a closed space provides protection from outside climate and weather changes and provides necessary conditions for working and living no matter the outside weather and climate conditions, sounds and noises. The outside walls with windows are the vital shell under whose protection many useful human activities take place.

Analyzing the inherited values and the relation of contemporary architecture towards them through concrete examples, many important messages on architecture development and urbanism can be drawn. These messages serve the purpose of finding the basic principles on which a continuity made with positive contacts between the contemporary and the heritage can be built. Finding those basic principles is a prerequisite for creating the culture of space whose most important part is the architecture. It can be created only in cultural ground where healthy architectonic critics exist and the criteria for evaluating the architecture are clear.

Keywords: *Architecture, Contemporary architecture, Sustainability.*

*ECO-STRATEGY AS AN ALTERNATIVE APPROACH FOR REGENERATION
OF POSTINDUSTRIAL LANDSCAPE*

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Abstract

Ecological misbalance of cities is one of the key problems of the 21st century. The impacts and pressures of urbanization, climate change, industrialization, as many of the key factors of modern life, together with the growing awareness of environmental issues, contributes ecology to become very important. Marginalized and abandoned postindustrial landscapes are the part of contemporary matrix of city texture. The urban landscape in the contemporary metropolis it unimaginable without brownfield, residual areas, waste spaces, that are stuck in the middle of a dispersed urban fabric, like landscapes left out of development. The question that prompted this research is: *Do they need to be incorporated in the matrix of the contemporary city in order to become active parts of the city spaces? If so how to activate new life cycles in postindustrial landscape, in order to revive places and to regain the lost balance between environmental resources and human actions.*

In an attempt to deal with the nowadays environmental problems, the aim of this research is to show the possibilities of implementing the "Ecology" (fragments of nature incorporated into abandoned landscape) as "alternative" urban development strategy. In order to recognize the importance and the benefits of the revival and recycling of postindustrial landscape, the methodological framework of the paper is based on a description and analysis of good practices examples through the offer of ecological landscape urban design as a potential strategy for creating new territories that reflect cultural and natural processes.

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Abstract

Energy management strategies are instrumental in the performance and economy of smart homes integrating renewable energy and energy storage. Home energy management system (HEMS) in the smart home allows the customer to control, optimize and monitor the energy consumption and the energy conservation. In this paper, a brief overview on the architecture and functional modules of smart HEMS is presented. Then, the advanced HEMS infrastructures and home appliances in smart houses are thoroughly analyzed and reviewed. For management and monitoring the energy consumption and generations of home appliances and lights is used ZigBee based energy measurement modules while for renewable energy is used a Power Line Communication (PLC) based renewable energy gateway. The home server monitors and controls the energy consumption and generation and controls the home energy use to reduce the energy cost. The remote energy management server aggregates the energy information from the home servers, compares them and creates statistical analysis information. The proposed HEMS architecture is expected to optimize home energy use and result in home energy cost saving.

Keywords: *Home Energy Management System, Home Server, Renewable Energy.*

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Abstract

Today, the main fuels for generating electricity worldwide are coal and natural gases. It is unfortunate to know, however, that they severely damage the global climate conditions and are the main reason for the global warming phenomenon and air pollution. Many scientists and global organizations continuously alarm us that continuation of this trend for couple of more decades would have irreversible devastating effects for all mankind and all other living species of the Earth.

Our continuously increasing energy needs makes the issue of environmental pollution and global warming more complex and seemingly impossible to tackle. In order to prevent this imminent ecological catastrophe, mankind must seriously and urgently focus on developing new technologies that would allow utilization of renewable energy sources in a smarter and more effective way for generating cleanelectrical energyfor all our needs.

Today, there are numerous technological solutions developed for wind power generation (generating electricity by harnessing the kinetic energy of winds);each succumbing to their limitations in terms of energy conversion efficiency. This paper proposes the so called ‘Whirlwind Tower’ structure, that would facilitate the harnessing of wind kinetic energy with increased efficiency and operability to a wider range of wind speeds. These structures could be designed for small scale uses (enough electricity to power residential buildings) and for larger scale uses as well (produced electricity distributed directly to the existing electricity grid).

This paper pertains to demonstrate why Whirlwind Towers could be the right solution to our environmental problems and explains why this technology could be a game changer in our struggle with environmental pollution and global warming. This paper presents the conceptual idea behind the ‘Whirlwind Towers’and lays out the groundwork for future studies on this technology as an efficient, reliable and cheap alternative for electrical generation.

Keywords: *whirlwind tower, wind power, electricity, structural engineering, renewable energy.*

*GROUPS OF INDICATORS IN THE CONTEXT OF SCIENTIFIC STUDY OF
SUSTAINABLE TRANSPORT AND THEIR IMPORTANCE - WESTERN
BALKAN STUDY*

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Abstract

The scientific approach to sustainable transport studies relies on appropriate tool for analytical analysis of the most important factors with capacity to contribute in that direction. The AHP method is one of the most efficient and very often used mean by researchers when tackling sustainable development issues. That method starts with identifying of such factors - indicators and in case those indicators on the first level of hierarchy contain economy, social and environment, as a standard. In this research, based on literature study and local specifics in Western Balkans, the groups of good governance and planning, and culture as two additional groups are added.

As a part of wider study, a significant number of experts in Western Balkan region has been interviewed with request to compare five group mentioned with the procedure "pairwise" according to AHP method. The results have been analytically analyzed and presented in form of tables and variety of diagrams. The analysis included all of interviewed experts together, but also a special light was put on the results of different groups: countries, profession, etc. The analysis lead to interesting results concerning the importance of mentioned groups of indicators in the eyes of interviewed experts. Such results could be of significant importance for policy and decision making on different levels (government, municipalities, corporative and private).

Key words: *sustainable development, AHP method, indicators, transport*

*The process of Urbanization in the city of Kaçanik and it's impact in the
Cultural Herritage*

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Abstrakt

Having in mind that the process of urbanization has undergone a rapid change in the last decades in the entire globe, at the same time in Kosovo as well and while going through some notes and materials I came across many changes in the respect of the city growth, both physically and in the number of population, certainly not neglecting the role of the past, respectfully the role of cultural heritage in all stages of development.

Cultural herritage is a valuable asset of a country and as such, it must be protected, restored and promoted. Urbanization as a process has both advantages and disadvantages. It, as well can be seen in the city of Kaçanik. The agantages lie in the fact that we have a transformation of society meaning, the increase participation of population in economic activities, less secondary but more tertiary and quaternary economic activities. While, the disadvantages of effecting the urbanization in the cities tend to be the decrease of population participation in manucrafting activities, in some cases the ceasation of the economic activity and enrisking seriously the disappearance of some forms of cultural herritage in general.

Therefore, based on the findings of our research we will try show the causes advantages and disadvantages of th Process of Urbanization in the city of Kaçanik and it's impact in the Cultural Herritage in this city.

*ENVIRONMENT POLLUTION FROM WASTE IN THE MUNICIPALITY OF
GOSTIVAR*

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Abstract

The fast development of industry and growth of the consumption have led to the creation of a huge quantity of waste which is being deposited on the surface land of the municipality Gostivar. Nowadays, waste is being presented as one of the biggest and most important problems not just in our region but globally, however, there is required need for organizing and regulation of sanitary spaces for the regulation and managing the landfills according European standards, which standards requesting for technical, financial and human resources also needs for special land exclusive from the municipality's territory.

The regional landfill "Rusino" is thought to be a landfill for the entire region of the Pollog's region municipalities which will solve the problem of urban waste for both urban municipalities(Tetovo and Gostivar) and also of the rural municipalities in the Pollog's region. 80% of all the waste is a result of agricultural, industrial, mining activities and inert waste from construction and building business, while 20 % of the waste is coming from households, and a great part of it can be recycled (plastic, metal, paper, glass and organic materials) etc.

Authors of this paper and study will explain according their expertise about actual conditions of waste transfer, selection and of course managing the landfill from the municipality of Gostivar, but also the proper managing of the same in the future. It's very important to have a successful and effective managing of waste so the future generations won't be threatened from waste pollution.

Keywords: *Waste, landfill Rusino, environmental pollution, waste managing.*

Determination of Sugar, Acid and Moisture Content in Honey

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Abstract

Fivesamplesof honey produced in Skopje: 1 from beekeeper and 1 commercially available, 2 from different beekeepers from Kumanovo and 1 from beekeeper from Preshevowere characterized of theirsugar, acid and moisture content. High performance liquid chromatography (HPLC) with refractive index (RI) detector, volumetric, and refractometry methods were applied in the analysis of honey samples. The most abundant sugar was found to be fructose represented from 38.92 to 44.63%, glucose was between 22.59 and 33.17%, while the sucrose content was from 2.41 and 7.81%. The total amount of fructose and glucose was within the standard value of min 60 g/100 g honey. The least amount of moisture was observed in the commercially available honey (16.6%), and the most moisture contentwas in one of the honey samplesfromKumanovo (17.6%). The max prescribed moisture value is up to 20%.The acid content was recorded from 9 mEq/1kg in the honey sample which was purchased in a supermarketto 28mEq/1 kg in honey sample from Preshevo in the comparison to max allowed value up to 50mEq/1 kg honey. The results were compared with the safety standards established from the Ministry of Agriculture, Forestry and Water Economy. In general, according to the results, honey can be acceptable for human consumption.

Keywords: *Glucose, Fructose, Honey, HPLC, RID, Sucrose*

Application of Newton's Forward Interpolation using MATLAB and Wolfram Mathematica

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Abstract

Interpolation is the estimation of values between data points. The problem of polynomial interpolation is useful and important because of its applications to numerical derivation and integration. To construct an interpolation polynomial, exist many techniques, including linear interpolation, Lagrange's interpolation, Divided differences, Spline interpolating, Newton's Forward and Backward interpolation, Stirling interpolation, Bessel's interpolation etc. The Newton's Forward interpolation as one of most important numerical techniques have huge application in mathematics, computer science and technical science. The development of many software packages has enabled the numerical methods to be solved quickly and accurately. Such are the Matlab and Wolfram Mathematica software packages. MATLAB is a numerical analysis environment and a programming language. MATLAB enables easy function plotting, data visualization, algorithm implementation, and creating user interfaces. Wolfram Mathematica is a highly used computer program in mathematics.

This paper provides an analytical description of Newton's Forward interpolation. Also, in this paper, in addition to the analytical approach of the Newton's Forward interpolation, MATLAB and Wolfram Mathematica software will be applied, which will provide algorithms and then solve specific problems with the application of these software's.

Keywords: *Interpolation, Newton's Forward interpolation, MATLAB, Wolfram Mathematica*

*ANALYSIS OF KINDERGARTEN BUILDINGS IN MARIBOR,
POSSIBILITIES OF RECONSTRUCTION FOR IMPROVING ENERGY
EFFICIENCY AND FUNCTIONAL ASPECT OF THE BUILDINGS*

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Abstract

Kindergartens present an important segment of the public building stock in the Municipality of Maribor, Slovenia. As they were built over different time periods, their architecture reflects features of various social systems, norms and construction trends. Consequently, the existing building stock of kindergartens is quite heterogeneous, the average age of the buildings is more than 50 years.

In accordance with the contemporary trends, most of the older kindergartens do not correspond to current requirements related to functionality, indoor environment quality, safety and predominately energy-efficiency. Therefore, the issue of their transformation is very important in the contemporary context. The buildings should be transformed to fulfill functional requirements of contemporary preschool educational process, at the same time, the transformation should provide the improvement of building energy performances, as one of the most important aspects of today.

In the current paper three kindergartens built in the late 1970s in the city of Maribor were analysed. Parameters important for the aspect of energy efficiency were compared: basics characteristics of the building, representative elements of the thermal envelope and available data of the energy efficiency and energy consumption. The second step of the study considers possibilities of buildings reconstructions and provides options of transformations for chosen buildings. The paper presents transformations of the buildings considering both, possibilities for improving energy efficiency and functional aspect of the building.

Key words: *kindergartens, building transformation, energy efficiency, city of Maribor*

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Abstract

Objectives: Maintaining and improvement in Occupational Safety and Health, monitoring of accidents, ill health and incidents, as well as achievement of plans and the extent of compliance with standards, must be considered in measuring performance of safety and health executive system. Incident rate for non-fatal accidents at work (IR) is a metric that can be used as a tool to compare a company's safety performance against a national average, or IR's in other countries.

As the main objectives of this study, a statistical analysis of accidents with lost time in 10 construction companies (with 25-35 employees on average) in Republic of North Macedonia in the period 2017-2018 was made and IR for this period was calculated. Afterwards, the accidents were ranked by the type of injury, injured body part, activity, circumstances and the causes.

Methods: The IR values in the analyzed companies are calculated according to the appropriate formula, and the obtained annual figures for 2017 and 2018 are compared with official data published in EU countries in the past years.

Results: The comparison made, shows that we still have a high rate of injuries at work, especially in the construction industry. This situation is further complicated by the fact that many of non-fatal accidents at work both in our country and in some EU countries, remain unreported and unregistered, leading to unreal figures for the injuries.

Conclusions: Therefore, a possible comparison of these terrain data with the data for IR from the annual reports of accidents at work published by Macedonian Occupational Safety and Health Association for the relevant years, would be unrealistic. Consequently, reducing the IR and raising the level of awareness to emphasize the ultimate importance of occupational health protection at all levels, should be the primary goal of the risk management system.

Keywords: *incidence rate; measuring performance; risk management.*

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Abstract

A multidimensional cadastral system is the most reliable framework for representing real estate in time and space. It should be noted that cadastral and construction data, for example, until the beginning of the third millennium, that is, the beginning of the 21st century, were mainly represented in a two-dimensional plane in the coordinate system (X, Y). This cadastral data system was called *analog* (pen and paper) and had limitations. The multidimensional cadastral system provides a variety of land information: land use, land regulation, buildings, buildings, utilities, vegetation, mineral resources, water resources, etc.

A study of the International Federation of Surveyors (FIG) 1994-1998 showed that there was a critical need for a multi-purpose cadastral system for sustainable economic development. Since then, real estate and cadastre, does not consist of only a certificate and a map, but also of a wider system, including a 3D cadastre. Therefore, in Kosovo, the multidimensional cadastre is also called the Kosovo Cadastral Information System (KCLIS). In all Western Balkan countries, there are still consequences of informal constructions, which are being gradually resolved and registered in the cadastre. This is the main focal point of this study between cadastral data with private or public buildings. This link increases data accuracy and creativity in real estate management. For both high and low rising constructions, geoinformation is required for both the parcel and the constructed facility, which must be integrated into the cadastral system. The quality of the data is then harmonized in accordance with the legal and technical standards. The effects of layers in GIS according to defined specifics and topology, integration of layers, improvement of the accuracy of cadastral data and ownership, and geometric appearance of the plot influence the construction of an effective model of sustainable economic development,

Research on this topic focuses on establishing a critical link between standards between a multidimensional cadastral system and buildings sustainable economic development in the country.

Key words: *Multidimensional Cadaster, 3D cadaster, sustainable development*

*INTRODUCING TRAFFIC CALMING MEASURES AND INCREASING
TRAFFIC SAFETY IN THE SCHOOL ZONES – “11th OCTOBER”
PRIMARY SCHOOL IN SKOPJE*

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Abstract

Calming traffic through the application of engineering tools can encourage drivers to reduce their speeds. At lower operating speeds, drivers are better able to react in time to avoid collisions. This is particularly important around children, who may behave erratically or may not be alert to traffic. “Traffic calming” is the installation of physical measures that alter driver behavior and improve conditions for non-motorized street users.

This paper presents a concept of introduction of traffic calming measures and increase of safety in the zone of the "11th October" primary school in Skopje. Traffic solutions are envisaged that will contribute to increasing the safety and calming of the traffic in the school zone, in order to protect the most vulnerable category of traffic participants, pedestrians or children. In addition, traffic solutions are focuses on physical changes to roadways to achieve traffic calming, specifically to achieve improved safety and accessibility routes for children. All measures should be properly designed, with appropriate spacing and use of signs, striping, lighting, and vertical elements where necessary to improve visibility.

Keywords: *Traffic calming measures, Traffic Safety, Traffic signalization and equipment.*

*Sustainable architecture and sustainable development of cities in
postmodern society*

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Abstract

By 2050, 90% of the planet's population is projected to live in cities. This prediction puts mankind under immense pressure on the way cities and building technology will evolve. Today's society is characterized by Late Capitalism, Globalization, Consumerism ... We face pollution, climate change, overcrowding ... There is a growing trend of building a sustainable architecture that helps save energy and thus engages in the struggle for nature protection and against climate change. This is just one of the goals of sustainable development. The question is how can we adapt our cities to sustainable cities with a circular economy, ready for the new challenges?

Most cities in the Republic of North Macedonia have been built centuries ago, contain historical layers, and have evolved over the years as cities with folk, spontaneous architecture. It is most recognizable in the old core of the city. These parts today are characterized as self-sustaining places, with a pleasant city atmosphere. Does the folk genius, nowadays forgotten and neglected, actually lay the foundation for sustainable building and architecture? To confirm this, we need to go back a step and see how we can apply the urban lessons of folk architectural genius to the current post-transition / postmodern society.

Keywords: *city, sustainable development, sustainable architecture*

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Abstract

One of the main schemes, that support renewable energy sources, is a feed-in tariff. A feed-in tariff is a law for renewable energy that obliges energy suppliers to buy electricity produced from renewable resources at a fixed price. In general, hydro-power plants, wind power plants, PV installations and Thermo power plants on biomass and biogas can be included. Feed-in tariff should increase investment in renewable energy projects and reach the national targets for the share of RES in the gross final consumption. The amount of the feed-in tariff is determined by the Energy Regulatory Commission of the Republic of North Macedonia.

This paper analyzes the period when this support measure was approved, how it was implemented and what were the conditions for using it. A small project of a photovoltaic power plant will be presented, where feed-in tariff is used and how it affects on the period of return on investment. This paper will also present the legal and technical procedures that must be met by investors in order to be part of it. The main purpose of this article is to show how feed-in tariff motivates the private sector to invest in renewable energy sector and to present the results of this support mechanism in our country. From the analysis and research it can be seen that this model of financial support is crucial for investors to decide to invest in renewable energy projects.

Keywords: *Feed-in tariff, renewable energy, power plant, financial support*

*COMPARATIVE ANALYSIS ON FIRE RESISTANCE OF RC BEAMS WITH
DIFFERENT CROSS SECTION DIMENSIONS ACCORDING TO
EUROCODE 2*

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Abstract

A parametric analysis of two span continuous reinforced concrete beam exposed to standard ISO 834 fire curve is presented in this paper. The influence of the cross section dimensions on the fire resistance of the beam exposed to fire only from three sides is analyzed.

The analysis of the reinforced concrete beam is conducted by using the Method of Reduced Cross Section, given in Eurocode 2, Part 1-2. Temperature dependent mechanical and thermal properties of the constructive materials (concrete and steel) are taken according to the recommendations given in Eurocode 2, part 1.2.

The analysis has shown that the height of the cross section has minimum positive effect on the fire resistance of the analyzed RC beam and this is due to the increased lever arm of the cross section, but not to the lower temperature of the reinforcement. The height of the cross section does not influence the temperature of the reinforcement which is in the bottom part of the cross section. In case of wider cross section, the temperature is slightly lower and a higher fire resistance is achieved.

Based on the results of the conducted analysis the behavior of the reinforced concrete beam exposed to fire has been defined and recommendations for increasing the fire resistance are given.

Keywords: *Continuous RC beam; Standard fire curve; Thermal analysis; Non-linear thermal and static analysis, Non-linear and non-stationary temperature field; Fire resistance.*

*IMPORTANCE AND ECOLOGICAL STATUS OF MAVROVO LAKE FOR
DEVELOPMENT OF TOURISM IN NACIONAL PARK MAVROVO*

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Abstract

The Mavrovo National Park is located in the territory of the municipalities of Mavrovo-Rostuše and is the largest protected area in the Republic of Macedonia. The location and the territory of the Mavrovo National Park in the formation of the Macedonian tourism product is with great importance. Mavrovo National Park, right after Ohrid and the capital Skopje, can be considered the third tourist region in the country. The structure of the Park offer today is based on two main matrices: The presence of the largest ski resort in the country, which is a strong element of attraction from all Balkan countries especially in the winter and has the highest concentration of hotels on the territory, and the second matrix are spread villas, cottages and other urbanized areas throughout territory.

Regarding the hotel offer in NP Mavrovo, although there are no precise statistics from this sector, however from several following studies scanned all over information's are as follows: there are 18 hotels, 7 resorts, 5 motels, 400 rooms and about 2000 beds.

Lake Mavrovo also contributes for development of tourism in the NP Mavrovo. Mavrovo Lake represent a true pearl of the National Park and of course to the municipality. Besides fishing on the lake there are so many opportunities such as: camping, walking, many water activities and more.

The authors through this paper give special attention to the impact of Mavrovo Lake and its ecological status on tourism and also to above mentioned tourism activities.

Keywords: *Mavrovo National Park, Mavrovo Lake, tourism, ecological status.*

A Sustainable UV-Vis Spectrophotometric Method for Fluoride Determination

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Abstract

The cheapest and one of the most efficient method for preventing dental caries is usage of fluorides. Human body is exposed to fluorides through drinking tap water, using various food products, toothpastes and by air in polluted industrial areas. Optimal fluoride concentrations are important for good dental health but higher concentration can cause health problems including skeletal fluorosis, thyroid and neurological disorders. Determination of fluoride concentration in tea infusions may be important for predicting total daily fluoride intake. A rapid and easy-to handle spectrophotometric method was applied for determination of fluorides in tap water, black tea, green tea and toothpaste. Fluoride ions react with alizarin complex one and lanthanum(III) to form violet complex in 5 min at pH range from 3 to 8. A dose from reagent F-1K was added to the reaction cell where 5 mL of the sample was pipetted before. A calibration curve was constructed using NaF as a standard in the concentration range between 0.01 and 0.5 mg·L⁻¹ against blank sample from the commercial kit. The absorbance was set at 571 nm using a plastic 1 cm cuvette in the analyses. The fluoride concentration of tap water, black tea, green tea and toothpaste were 0.2 mg·L⁻¹, 0.12 mg·L⁻¹, 0.11 mg·L⁻¹ and 0.34 mg·L⁻¹, respectively. Preliminary results show that the sustainable method can be used for routine analysis for determination of the fluoride ions in water, tea and toothpaste.

Keywords: *fluoride, spectrophotometry, tea, toothpaste, water*

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Abstract

The territory of the Republic of Kosovo enters the territorial areas that have sufficient amount of water if they are properly protected, managed, controlled and distributed.

Seeing that a part of Kosovo - namely the town of Gjilan and its surroundings, in times of drought, the water supply always becomes a problem. This is the reason of this study, to find a way to secure a better, more suitable, economical, stable and long-term model of water supply for the Municipality of Gjilan.

This study has started earlier in 2016 and since we have had several field visits, consulted with academic, professional and experienced staff, and studied various projects around the area.

The idea of this project is to construct a reservoir by building a dam in the cadastral zone Pogragja, in the municipality of Gjilan. The reservoir has the potential to accumulate up to 10 million m³ of water. Preliminary analysis shows that this reserve is guaranteed. With this amount of water, and the rate of water supply per capita, and by introducing water losses of up to 20%, up to 100,000 inhabitants can be supplied through this accumulation.

The project is also expected to have a filtration station, with a more modern filter with lower construction and operating costs and at the same time provide better water quality compared to the traditional filters. The project also includes the construction of a pumping station that would allow water to be raised to a level that would be needed to supply water users at higher water supply points. The main pipeline for the distribution of water to the existing water reservoirs in the existing city network, should also be constructed in the frame of the project.

The area which will be covered by the accumulated water is mainly social land, and will not affect the construction cost in terms of land expropriation.

In the socio-economic aspect, the beneficiaries will be the community in the municipality of Gjilan, where they will have sufficient and quality water for 24 hours, 365 days a year. There is no relocation of residents to the accumulation area.

*SUISTANABLE URBAN MOBILITY PLANS FOR A SUCCESSFUL
FUTURE OF CITIES*

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Integrated traffic planning is a new way of planning that derives from the experiences and good practices of many European cities and regions that have worked on its successful implementation. Its main purpose is to reduce the environmental burden caused by the transport system and to contribute to the establishment of a sustainable, attractive, attractive, accessible and healthy environment.

A key element of integrated traffic planning is the Sustainable urban mobility plan (SUMP). This Plan is based on European Union documents as well as guidelines set by the European Commission. The Sustainable urban mobility plan is a document with a set of measures to help cities to achieve a shift towards more sustainable modes of transport and higher quality of life. The key to change is moving towards integrated traffic planning. The SUMP offers the opportunity to transition from classic to modern, comprehensive traffic planning. Integrated traffic planning does not override, but on the contrary, builds on existing planning practices and has a long-term and strategic vision for sustainable mobility.

The Sustainable urban mobility plan is a document that incorporates and updates the existing strategic documents of the city itself. It is a new way of thinking and planning that represents a step towards more sustainable traffic planning in the region - in line with modern European Commission guidelines and recommendations.

Keywords: *SUMP, mobility, strategy, urban plans.*

A Comparative Study between Traditional Dyeing and Introducing Liposomes

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Abstract

Dyeing is a process where the pigments and dyes are applied on the textile, where the final goal is achieving colour with desired colour fastness. There are various dyes for different materials such as acrylic fibers, nylon, wool, silk, polyester and cotton. For example, one of the oldest and traditional dyeing processes for wool and silk is with the use of the acid dyes. The main substance which is used is acetic or citric acid. NaCl is introduced in order to control uptake rate of the dye. The classification of the acid dyes is related to their structure as anthraquinone, azo, and triarylmethane dyes, while according to the role, they can be divided in groups such as leveling, milling, and metal complex acid dyes. Nevertheless some dyes can produce duller shades, can also damage the fibers of the textile, are toxic and have bad impact in the environment. In order to overcome these problems, liposomes are introduced in the process of finishing and dyeing. The effect of liposomes in textile colouring is due to the hydrophobic and hydrophilic parts of the liposome resulting in carrying different types of dyes. As a result of gradient realize of dyes, the effect of coloring is leveling. Liposomes are promising vesicles for carrying dyes and in addition they can be used not only in the dyeing process, but also in bleaching, washing, and scouring.

Keywords: *acid dyes, fiber, liposomes, textile*

*SUSTAINABLE URBAN STRATEGIES APPLICABLE IN THE DENCE
URBAN MATRIX OF THE CITY OF SKOPJE*

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Abstract:

This research analyses certain sustainable urban strategies that are in correlation with the improvement of the air quality, lowering of the air temperatures in summer period and improvement of the social cohesion of it's habitants. More precisely, this research discusses about the possible ways of application of the analyzed sustainable urban strategies for achieving sustainable solutions regarding urban planning and design of a public space and underground parking in the center of Skopje.

This study was conducted in the following steps. At first, the sustainable urban discourse was analyzed in order to give explanation which of the mentioned sustainable urban principles can be applied on the analyzed case. Then, different analytical methods and information from various scientific areas were used, which helped in detecting the real problems present on the analyzed location. In order to define the adequate sustainable strategies that will have ecological and socio-environmental qualities, the so called "green features" were established. "Green" feature in this research represents a sustainable quality of a particular strategy or urban measure that can improve the air quality, lower the summer temperatures, revitalize the location, improve the social cohesion, create people centered urban design and redefine the city values. These "green features" can assist in determining project's sustainability value.

Having in mind that this location is situated in dense urban matrix in the city of Skopje – city built on seismically active surface and well known for its air pollution and high temperatures during the summer period – the sustainable urban strategies recognized in this research as applicable can assist on finding better, healthier, more sustainable, eco-friendly and people-friendly solutions. These strategies and measures can also be applied in wider urban context on cities with similar environmental problems.

Key words: *Sustainable urban strategies, Air quality, Lowering of the air temperatures in summer period, Social cohesion, Environmental urban planning.*

Comparison of transmission of electromagnetic spectra of Glass and Polycarbonates

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Abstract:

Glass is a solid non-crystalline, amorphous translucent structure and finds many practical uses in optical and optoelectronic technology. Soda-lime glass is mainly known, consisting of approximately 75% silicon dioxide (SiO₂) and some minor additives. Their optical transparency

enables many practical applications in electronics, fiber optic, technology, construction etc. These qualities have led to widespread use of glass.

For many glass applications and polycarbonates find similar applications. Polycarbonates are a lighter alternative to traditional glass.

Polycarbonates (PCs) are a group of thermoplastic polymers that find many practical applications. Polycarbonates are hard, tough, optically transparent materials. Due to some of their features, implementation is steadily increasing.

This study compares the transmission of the electromagnetic spectrum, namely the advantages and disadvantages in some respects.

Keywords: *transmission, electromagnetic spectrum, Solar Power, Infrared*

*NEW NONSTANDARD METHOD FOR MEASURING PHYSICAL
PROPERTIES OF HOMEMADE POLYMER FILAMENTS FOR 3D FFD
PRINTING*

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Abstract:

As desktop fused deposition modeling 3D printing becomes an everyday occurrence and 3D printing filament extrusion, a DIY makers practice, establishing a method for physical characterization of parts using only small amounts of homemade filament is of interest. This research represents a new method for measuring change in physical properties of 3D printed parts, printed with less than 1g of filament. Changes are observed due to material change (ABS, PLA, PET, recycled PLA 3D prints, recycled PET 3D prints, recycled PET), change in 3D printing procedures, changes in filament extrusion properties and changes in the thickness of the part. Results of this research are in correlation with the results from the standard tests used in everyday practice. This is of interest because it allows fast characterization of exotic filament blends with very little material for research purposes, reducing the costs of production, and the possibility to implement fast changes in the filament blends.

The idea of 3D printing is the last word of technology and becomes a current challenge when speaking about sustainable development in the area of technology and science. This research is focused on finding new solutions regarding to 3D printing, which is one of the main goals of nowadays science and technological development.

Keywords: *3D printing, printing filaments, fused deposition modelling (FDM)*

*RATIONAL SUMMARY OF THE PB AND ZN CONCENTRATES AFTER THE
ANALYSIS OF THE ELEMENTAL COMPOSITION*

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ABSTRACT:

Large amounts of Pb and Zn minerals are found in Kosovo, at the Trepca and Artane mines. Unlike some metals, Pb and Zn are not freely found in nature but in the form of minerals from which they are derived. In nature there are sulfur minerals and Pb oxides. Among the most abundant sulfur minerals as well as the most important one is galenite (PbS), whereas cerusite mineral (PbCO₃) is the most abundant Pb oxide mineral. Even Zn minerals have a composition of sulfur and oxide. In nature there are many minerals that contain Zn but of industrial importance are ZnS (scalarite), ZnS • nFeS (marmatite) and ZnO (zinc). The sources of Pb and Zn minerals are composite sources which besides Pb and Zn also contain significant amounts of other metals such as Fe, Cu, Sb, Bi, As, Ag and Au. In the Pb and Zn mineral flotation plants where the Pb and Zn concentrate is obtained as a product, analysis of the concentrate is in most cases carried out in the elemental form of the components. During the metallurgical process of smelting and refining in metallurgical aggregates for the calculation of load elements and products the need for rational composition of the concentrate arises. One of the methods of determining rational formation when giving the elemental composition is widely discussed on the paper.

Keywords: *concentrate, elemental composition, product etc.*

*ANALYSIS OF KEY METALLURGICAL PARAMETERS OF FE-NI
PRODUCTION DURING THE YEARS 1984-1997 AND 2007-2017 AT THE
NEW FERRONIKEL SMELTER IN DRENAS*

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New foundry of the new ferronickel in
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ABSTRACT:

This paper analyzes and compares the main parameters of the Fe-Ni alloy production process during years 1984-1997 and 2007-2017 in the new ferronickel smelter in Drenas.

The main research parameters are:

- Average of iron-nickel ore spent during the research periods
- Percentage of moisture in the iron-nickel ore
- Percentage of Ni in the final product: Fe-Ni
- Average amount of charge per research period
- Average amount of Fe-Ni alloy produced
- Coefficient of utilization in the mentioned periods

During the 1984-1997 production analysis, the composition of the iron nickel ore is mainly from the Republic of Kosovo, the Glavice and Qikatove mines.

The quantity of ore used during the years of 2007-2017 consists of several countries,

- Iron-Nickel ores of Kosovo (Glavice and Qikatove mines)
- Iron-Nickel ores from Albania
- Iron-Nickel ores from Indonesia
- Iron-Nickel ores from Guatemala
- Iron-Nickel ores from the Philippines
- Iron-Nickel ores from Turkey

During the years 1984-1997 the amount of ore entering rotary kilns is higher than the amount of iron-nickel ore during the years 2007-2017 (described on the paper through designated numbers).

When analyzing the production parameters of the years 1984-1997, it is noticeable that the amount of moisture, a very important parameter, is higher than during the years 2007-2017. As thoroughly described on the paper, based on industrial and experimental laboratory data from research work at the new Ferronikel smelter in Drenas, the utilization coefficient is higher during the years 2007-2017 as a result of changes that occurred in those years.

The research is based on data from the archive of the new ferronickel smelter in Drenas during the years 1984-1997 as well as from laboratory and industrial analysis carried out at the new ferronickel smelter in Drenas 2007-2017.

Key words: *foundry, Fe-Ni, calcine, ore etc*

*Strategies for Understanding Problem Solving and Strategies for Assessing
Mathematical Thinking*

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Abstract

The intuitive rightness of learning with understanding as well as with mathematic educators, has led to widespread acceptance of the importance of developing strategies for easier understanding of mathematics. Although most instructions in mathematics has not considered this knowledge, there is an ever-growing body of knowledge about learning and teaching mathematics that we believe can give bold new direction to classroom instruction so that all students learn with understanding. The strategy for Understanding Problem Solving, will enable teachers to tackle problems in a structured and meaningful way by assessing logical and systematic approach to the problem solving. The strategy for assessing Mathematical Thinking is an ultimate goal of teaching that students will be able to conduct Mathematical investigations by themselves and that they will be able to identify where the Mathematics they have learned is applicable in real world situations. Therefore, processes like: specializing, generalizing, conjecturing and convincing are fundamental in this strategy. This research leads to the idea of providing new insight of strategies for understanding problem solving and strategies for assessing mathematical thinking, both researched by quantitative and qualitative methods in the collection of data as well as in their analysis.

Keywords: *strategies, problem solving, mathematical thinking*

IMPROVING STUDENTS' KNOWLEDGE WITH INTERACTIVE ONLINE COURSES

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Abstract

Everyday use of technology by the new generation of students is leading to its use in every aspect of learning. It increases their ability to learn in new ways outside the classroom, which pushes the boundaries of education. The use of technology in education has led to an increased use of interactive learning which is redesigning the fundamental processes of education. Interactive learning increases the students' motivation by actively engaging them with the material in the process of learning and at the same time it sharpens critical thinking skills, which are fundamental to the development of analytic reasoning. Besides traditional teaching in the previous 3 years, supporting the concept of blended learning, we have provided an interactive online course Distance Learning, where we used well- prepared SCORM packages to support easier and collaborative learning. The interactive environment consisted of Learning Management System (Moodle) and lectures developed in an interactive way using appropriate tools, packed as interoperable SCORM packages. The evaluation of the results achieved in the course shows that those students that were more engaged in the interactive environment for online learning achieved much better results on the final assessment. They gained their knowledge more easily, and the new environment helped them to increase their overall understanding and knowledge construction for the given course in a more interesting way. In this paper we present our approach of combining the traditional teaching with the use of interactive courses and the implication of this approach for students' achievements.

Keywords: *interactive learning, learning management systems, blended learning, online learning*

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Abstract

Servers are devices with a particular set of programs or protocols who serve to store information, to distribute it and also other resources. They have an important place in our lives today. Everything we search for, send or upload online is stored on a server, or server network. There are many types of servers, categorized depending on the functions they perform. We will discuss all types of servers one by one focusing more on their security side. The sensitivity of data stored and transferred by servers requires increased security so that they are not going to be misused. There is no such thing as perfect software or firewall. It means that we need to test and to update time by time the server's system. In addition to the physical protection required, we will focus more on the forms of virtual protection. We will explain also innovative methods to increase server security, hoping to reduce safety gaps. We are interested in increasing the reliability of the servers, finding the real possibilities for the servers to be used always through a legal authorization.

Keywords: *Servers, threats, security issues.*

Simulation of the Euler approximation in SDE

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Abstract

This paper is an introduction and survey of numerical solution methods for stochastic differential equations. In mathematics and computational sciences, the Euler method is a first-order numerical procedure for solving ordinary differential equations (ODEs) with given initial value, in SDEs Euler approximations give one of the best results after working with a approximation method.

Also to the Stochastic Differential Equations (SDEs) one of the simplest time discrete approximation of an Ito process is the Euler approximation, or called the Euler-Maruyama approximation. We shall consider an Ito process $X = \{X_t, t_0 \leq t \leq T\}$ satisfying the scalar of a SDE. And to illustrate various aspects of the simulation of a time discrete approximation of an Ito process we shall examine a simple example by using Excel Simulation.

Keywords: *SDEs, Euler-Maruyama approximation, Ito process, Excel Simulation.*

*Integrating Education for Sustainable Development in English
Language Classrooms*

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Abstract

This study deals with issues for Sustained Development (SD); Precisely, it deals with issues of education for sustainable development (ESD) at the University of Mitrovica "Isa Boletini" (UMIB) Kosovo. The purpose of this study is to present shortly the SD seventeen Goals (SDGs) for 2030, which are set by the United Nations General Assembly in 2015. Since these goals are broad based and dependent on each other, these 17 SDGs definitely influence the UMIB's curricula. As the fourth SDG deals with Education, the study will discuss about education, its major role in increasing students' awareness about SD, and the influence of good teaching practice by applying appropriate GloCal (Global and Local) approaches that fit to the global 21st century needs. Bearing in mind that Higher Institutions (HI) prepare students to become professionals in a specific field for the future, being aware of the need of the education for SD, and its important global and local role, this study will present few examples of SD and its current challenges, achievements, observed in English language classes.

The study concludes that one of the greatest achievements in ESD is the application of active approaches to teaching, peer teaching, all-inclusive classes, collaborative, cooperative learning, creative thoughts and actions, as well as critical thinking. It also recommends HEI to introduce special topics about SD in every subject. Through the education of SDGs and education about the SDGs, the students will be able to adapt, integrate easily, embrace new opportunities, and increase their level of knowledge i.e. importance in our country and beyond.

Keywords: *Sustainable development, global, education, integration.*

Survey of data analytics and its applications in healthcare

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Abstract

The purpose of this study is to provide an analyses on how we can uncover additional value from health information used in health care centers using a new information management approach called as data analytics. Including data analytics in health sector provides stakeholders with new insights that have the potential to advance personalized care, improve patient outcomes and avoid unnecessary costs. To date, health care industry has not fully grasped the potential benefits to be gained from data analytics. The growing healthcare industry is generating a large volume of useful data on patient demographics, treatment plans, payment, and insurance coverage attracting the attention of clinicians and scientists alike. In recent years, a number of peer-reviewed articles have addressed different dimensions of data science application in healthcare. However, the lack of a comprehensive and systematic narrative motivated us to construct a survey analyses on this field. This research study defines data analytics and its characteristics, comments on its advantages and challenges in health care. Data analytics not only provides new analytical opportunities but also faces lot of challenges. The challenge starts from choosing the data analytics platform. While choosing the platform, some criteria like availability, ease of use, scalability, level of security and continuity should be considered. Analyses of all challenges of data analytics are analyzed and insights are represented and discussed and argued.

Keywords: *data analytics, healthcare, comparative analyses, data analytics platform*

*Impact of ICT in Healthcare System and Implementing IT strategy In
developing Countries*

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Abstract

The use of ICT in medical services has made it possible for us as researchers in the field of health care to contribute to acceptable solutions to overcome this situation by using ICT as a key tool for improving health services. During the research, the Strategies of developing countries, respectively Western Balkan countries, have been reviewed, analyzing how advanced they have been towards Kosovo and how much they have adhered to the WHO recommendations. In this paper it has been identified that the main problem in developing countries, especially in Kosovo, remains high mortality, where the findings show that mortality has increased especially as a result of chronic illness due to lack of information at the time of appropriate for medical staff and patients. At the same time, there is a high lack of digitalization of processes in the management of medical services, which has directly impacted on the health of the population and the performance of the stakeholders, which provide health services. The research has also resulted that Kosovo has failed in many phases. The national strategy for the implementation of the eHealth system as well as the state of health services in Kosovo still remains with traditional paper-based methods. Therefore, my intention is to propose a strategy for the implementation of the health system where the objective is to improve the current situation in healthcare. The paper will focus on electronic healthcare system strategy and its implementation. A system framework will enable us to understand the daily needs of people with illnesses in order to develop tailored ICT solutions, which can help them, maintain or improve their health status and well-being during the time. The proposal follows the enterprise architecture principles and tries to set up an implementation roadmap.

Keywords: *E-health, Strategy, Technology, Security, Patients.*

The Importance of Introducing Nanotechnology in the Educational Process

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Abstract

Nanotechnology is one of the fastest growing fields of science and has a great impact in the global economy. As a science, nanotechnology deals with how the different atoms in something arranged are, how weak or strong the bonds are, the conductivity of the materials and so on. The importance of introducing nanotechnology in the educational process is to create new ideas how to create new materials. Nanoscience and nanotechnology play important role in various areas such as electronics, energy, biomedicine, cosmetics, agriculture and car industry. For example, in medicine, liposomes can carry drugs more efficiently and at the same time the drugs are less toxic. Rapid and continuous progress in the field of technology accelerates the demand for specific expertise and knowledge. As a result, curriculum should be changed from primary and secondary education to higher education. The subjects related to nanoscience and nanotechnology such as chemistry, physics, and biology should be strengthened especially within the frameworks of the faculties such as Faculty of technological sciences in order to respond to market demands for the new challenges. Developing modern approaches and practices should be in direction to improve laboratory skills and the further engineers should apply how to design something with improved characteristics. These contemporary approaches and practices include organizing a variety of seminars, workshops, scientific events, lectures, faculty teaching, as well as organizing different competitions in these areas.

Keywords: education, nanoscience, nanotechnology

*RESEARCH METHODOLOGY IN THE STUDY FIELD OF
INTERNATIONAL RELATIONS*

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Abstract

The research methodology is a guide of science. Without the research methodology, a research plan and a verification method, science would be doomed to failure or generally it would not be science!

Through methodological research we derive new knowledge which is verified. The fact that the research methodology is present in study departments is an indication of its importance in the world of science and scientific discourse. Research methodology conceptualizes, categorizes and systematizes knowledge, in a way enabling us to construct science.

International Relations describe the political interaction among states, societies and organizations. They include studies on war and peace, economic and political cooperation, ecological problems, etc. Therefore, the methodological understanding of international politics and relations requires a systematic approach in order to identify the underlying processes and driving forces. (Sprinz & Yael Wolinsky, 2002: 6).

Although International Relations as a study field and academic discipline emerged at the beginning of the 20th century, it was largely influenced by several scientific disciplines such as political science, law, history, and consequently it also incorporated methodological research on these disciplines.

In this paper we will address the research methodology in the academic discipline of International Relations, including qualitative and quantitative research as a means of data collection.

Keywords: *Methodology, Research, International Relations, Qualitative Research, Quantitative Research.*

Students' attitude towards mathematics

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Abstract

The importance of math and connectivity with all areas of life is great. Therefore, improving its teaching is the main challenge facing each teacher. People have very different attitudes to math, some love it, some of them seem very difficult and some even hate it. Although it is true that mathematics is built on an axiomatic and complicated foundation, it is indicated that the ultimate foundation of mathematics has its beauty. Teachers who see beauty in the nucleus of mathematics can make their students see it that way, are more likely to be able to get their students' attention and teach them the most effectively. Mathematics is one of the seven areas of basic education curricula that has traditionally been and continues to be a fundamental part of pre-university education. The main purpose of this research is to identify students' attitude towards mathematics. In this research participated 50 students from elementary school "Adem Jashari" in Skopje, 25 of whom are girls and 25 boys aged 13 to 14 years. The research also provided a graphical interpretation of the data obtained from the questionnaire and in the end has been given some conclusions based on the results.

Keywords: *maths, students, attitude, learning*

A university digital evaluation app

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Abstract

Digital technologies allow applications to be created with a very high-performance. Such digital application is the university evaluation app. This application has several advantages such as: level of accuracy of data processing, easier way of storing results, faster distribution, etc. Students will feel free to complain about professors and the university in general. The survey is conducted to see how regular professors are at what they do, whether they respect the schedule and the syllabus, what the communicative values are, what the student-professor relationship and evaluation of the university in general is. In order for students to feel more comfortable, evaluations and comments are published anonymously to both professors and the university. In line with anonymity, we have also worked on the integrity of this platform. In the application we have created the possibility that only those who are truly college students will be able to register and eventually make assessments. These estimates are calculated with an algorithm and provide accurate data for each professor. The purpose of the evaluation application is primarily to raise the level of performance at the university and not to lower the values of the professors and the university. The app is built on three levels. Database level, Front end level and Back end level. The Frontend is built using the javascript programming language (React.js), the Backend is built using the Node.js runtime and the database is a MySQL one. The app aims to lower student evaluation barriers to academic and university staff. The purpose should not be viewed with the tendency to discourage, belittle, or humiliate the personal and professional values of an academic staff. On the contrary, students, in one way or another, reward the professors they have collaborated with thus improving the academic environment.

Key words: *application, evaluation, raising the level of performance at the university*

*Mathematical Modeling and Simulations of Path Planning and Obstacles of
Mobile Robot*

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Abstract

This paper is presented a development of a mathematical model of mobile humanoid robot. It is following deductive principle, i.e. to start from a completely general model applicable to a set of tasks. Such a model is further adjusted according to need certain specific situations.

The robot is wheeled humanoid robot as a structure composed by upper human-like body and cart mobile platform.

The cart construction is supported by 4-wheels configuration, electric drive on the rear vehicles, and is directed from the front wheels.

A general simulation system is realized at movement in a horizontal (2D) plane and the robot is modeled as a 3-DOF system (three degrees of freedom).

We have considered a known environment where fixed potentials were assigned to the goal and the obstacles. It moves successfully within different obstacle configurations (closely spaced obstacles), and it solves the problem with a local minimum occurrence.

Researches made in the paper are new opportunities and directions for new researches.

As expected, the robot can easily handle low speed cart movements, and intuitively problems appear with an increase in speed. We restricted the consideration to cart motions which are relevant to the humanoid robot working in human-centred environments. A mobile robot is usually intended to work in services; so in homes, department stores, restaurants, museums, hospitals etc.

The working conditions of humanoid and semi-humanoid robots directly determine the requirements related to the ability of robots to maintain balance, stay stable, remain accurate and provide the qualities to perform controlling tasks in the given circumstances of functioning.

Keywords: *Mobile robots, Guidance and control, Obstacle avoidance. Robustness, Robot Posture.*

Using Python Programming for Assessing and Solving Health Management Issues

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Abstract

Data analytics and Data Science in general has changed the way we manage, analyze and leverage data in any industry. One of the most promising areas where it can be applied to make a change is healthcare. Healthcare analytics have the potential to reduce costs of treatment, manage better the resources, predict shortage of medicaments or injections, avoid preventable diseases and improve the quality of life in general. Hospitals and clinics are strongly resource-constrained, making cost control critical to sustainability. And ensuring medical staff, treatment and diagnostic facilities are scheduled efficiently is a large-scale optimization problem with many dimensions. The research study is therefore focused in management of health issues in a hospital and provides a model how to realize better management of similar hospitals and resources. Predictive models can make human decisions more effective and highly automate an entire decision-making process. It increasingly, predictive analytics uses data from to improve safety and performance of patient outcomes. The modernizing healthcare industry's move towards processing massive health records, and to access those for analysis and this will greatly increases the complexities. Insights, recommendations and guidelines are discussed and argued.

Analysis of strengths and weaknesses of e-Commerce application in North Macedonia

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Abstract

The purpose of this study is to analyze the strengths and weaknesses of e-commerce, the reasons why it is not very commonly used in North Macedonia and the reasons why e-commerce is useful for companies or enterprises and customers. We live in a world where technology has changed the lifestyle of the majority of the world's population. These changes have influenced the field of business, which are themselves witness how things have leaked. Information Technology has advanced quite different businesses and has given them the opportunity to be represented in more countries around the world via 'shop' online. Research study was conducted in several public and private enterprises in Macedonia, 2019. Participants in this study were about 20 employees at various companies, and about 40 clients or customers of these companies. Participants belong to different ages from 18 years and above and participants from both genders: males and females. For the collection of data regarding the project are using two types of questionnaires: one for companies or enterprises and another for customers. The questionnaire includes 10 questions enterprises, of which multiple answer questions are three, two questions that must be answered with YES or NO, four questions with a single answer to a question in which the Likert scale is used. The purpose of the questionnaire was to gather the data.

Keywords: *e-commerce, customers, comparative analyses of e-commerce, electronic services*

Plotting graph of function using MATLAB

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Abstract

There are many software packages through which computer technologies can be applied to teach mathematics. Such is the MATLAB software. MATLAB (matrix laboratory) is a fourth-generation high-level programming language and interactive environment for numerical computation, visualization and programming. MATLAB is interfacing with programs written in other languages, including C++, Java and Fortran. MATLAB is used for 2D and 3D plotting and graphics, linear algebra, algebraic equations, non-linear equations, data analysis, statistic, operations with matrices, calculus, differential equations, numerical calculations, integration, transforms, curve fitting and various other special functions.

On this paper we will discuss how to plot the graph of function, drawing multiple functions on the same graph, drawing bar charts, contours and three-dimensional plots.

Keywords: *MATLAB, function, plotting.*

*MATHEMATICAL MODELING AS TOOL FOR INCREASING THE
EFFICIENCY IN HIGHER EDUCATION*

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Abstract

Universities are the main society engine, forcing overall human development through generating quality professional staff and manpower in all fields. More or less, their functioning is pretty much interesting and important scope for every government. Multiple state or private bodies are (or should be) engaged for measuring different aspects of its quality, in terms of resources used especially in its past and present condition, in order to detect potential inefficiency. So, the main question than would be what to do to improve it / which measures should be taken? All of this is surely targeting high knowledge parameters gained at the end of the education process. So, having this “system” with in and out aspects in mind, we can model segments of the process in order to increase efficiency by locating “weak” spots and suggest improvements, using mathematical modeling. Building the model is done using linear programming (LP) specific methods, such as Data Envelopment Analysis (DEA), that offers the possibility to give specific measurement of the parameters that need to be smaller or bigger in the reality. In our case, we measure the quality and want it to be greater.

Keywords: *DEA – Data Envelopment Analysis, LP – Linear Programming*

Development of human capital and role of Universities in Multi-Ethnic Societies

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Abstract

Human capital is the most important factor for the sustainable development of a country. After the socioeconomic transformations the post-communist states inherited a human capital that was an important factor in adapting to new social conditions. Multiethnic states inherited an ethnic structure of highly educated human capital that did not coincide with the ethnic structure of society. This inherited situation as well as the inertia of the postmonist ideology made it difficult to implement fair anti-discrimination policies. Opening of universities in Albanian language in the Republic of North Macedonia created the basis for implementation of anti-discrimination policies in state institutions and public founded enterprises. Ethnic representation in all bodies, institutions and public enterprises has gradually improved.

Using data from various official sources of the relevant institutions of the Republic of Northern Macedonia, we will present the correlation of the ethnic structure of human capital and the development of universities and the effect of this correlation on equitable representation in the structure of employees in institutions other public enterprises in the Republic of North Macedonia..

Keywords: *human capital, universities, fair ethnic representation, Republic of Northern Macedonia.*

*VOCATIONAL EDUCATION AND TRAINING AS A MECHANISM FOR
ACHIEVING SUSTAINABLE DEVELOPMENT IN NORTH MACEDONIA*

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Abstract

Vocation education and training (hereinafter: VET) system is an important element of the lifelong learning systems in the modern economies. VET can be considered as an investment in human capital in the countries, because it provides population the skills, competences and knowledge demanded on the labor market. VET is important for the economy, as well, because it enhances enterprise performance, especially small and medium sized enterprises. Skilled workers easier find jobs and are more competitive on the labor market. Another acknowledged advantage of VET is that it encourages research and innovation.

According data from Eurostat, 50% of young Europeans participate in initial VET organized and offered by secondary schools, on average. However, there are significant disproportions among the European countries regarding this data. Thus, some countries have participation in upper secondary education from 15%, while others of 70%.

This paper examines the VET system in Republic of North Macedonia. We are focusing on the resources of the secondary educational system, also known as initial VET system. The authors analyze the key trends in the initial VET education, including participation, resources and outcomes from this system. The aim of this work is to explore VET mechanisms to achieve sustainable development.

Key words: *Vocation education; Vocation training; Secondary education*

*The digital skills among the high-school students in the R. N. Macedonia -
Comparative aspects*

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Abstract

The research topic of this paper is on the state of digital skills among the high-school students in the R. N. Macedonia. The main scientific goal of this paper is to provide a better understanding of the digital skills among the high-schools students in our country according to the Digital Competence Framework of the European Union. The digital skills according to this framework are organized in five different components as follows: (1.) information skills and data literacy; (2.) communication skills and collaboration; (3.) skills to create digital content; (4.) security skills for working with digital technology; and (5.) problem solving skills. We used a comparative approach in analyzing the digital skills among the high-school students in five different high-schools in the Southwest region of the country. We collected data from 477 respondents – high-school students. It was an anonymous survey made in May/June 2019. The data analysis of this research paper contributes to the state of digital skills among the high-school students in our country. Also, it is a good basis for future creation of national and local digital skills strategies and policies, which is a very important issue for the sustainable development of the R. N. Macedonia. This is related to the Sustainable Development Goal 4 of the 2030 Agenda for Sustainable Development. It is to ensure inclusive and equitable quality education and to promote lifelong learning opportunities for all. And one of the targets of SDG 4 is a significant increase in the number of young people and adults who have the appropriate skills, including digital skills for employment and decent jobs as well as improving the society as a whole.

Keywords: *digital skills, high-school students, R. N. Macedonia, sustainable development*

*Some approximations for Euler number and comparing their convergence
using software Octave*

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Abstract.

There are used some known facts and inequalities in order to find new relations and equalities which approximate Euler number. Also, comparisons and visualizing between existing approximations and obtained results, which are given as infinitely series, are given using software Octave by testing their rate of convergence to Euler number for some terms.

Key words: *Carleman's Inequality, Polya's inequality, Octave, Euler number*

Characteristic points of a triangle presented through the GEOGEBRA software

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Abstract

Geometry is a branch of mathematics that deals with the shapes, sizes, position of the figure. The word geometry comes from the Greek language "geo - earth" and "meter - measurement". The first beginnings of geometry are in Egypt and Mesopotamia. The Greek mathematician Tales of Miletus used geometry to solve problems such as the distance of ships from shore, the height of the pyramids etc. The most influential books on geometry are those of Euclid called "Elements".

In our century, in addition to classical learning, various interactive software is used in learning geometry. Among them we can mention Geogebra. Geogebra was created in 2001/2002 by Markus Hohenwarten. GeoGebra is interactive mathematical software consisting of teaching and learning from elementary to university level. This software is provided as a pedagogical and mathematical auxiliary tool. GeoGebra helps teach math because using this software, students see different mathematical formulas, algebraic and geometric presentations. GeoGebra is software that can be downloaded free of charge and can be easily installed on computers or other smart devices. In this paper, using the GeoGebra software, some characteristic points of a triangle are presented such as: center of an inscribed circle, center of an outer circle, triangle median intersection (center of gravity), triangle intersection height (orthocenter).), then addressing their pedagogical aspect.

Keywords: *geogebra, software, geometry, triangle*

Kurt Wüthrich

Education for Employment in North Macedonia Project

Abstract

One of the main reasons for Switzerland's high economic performance and thus having one of the highest GDP per capita in the world, as well as having a constant low unemployment rate of around 3% is its permeable education system that produces high-qualified professionals at all levels.

The Universities of Applied Sciences (UAS) were established in mid 1990s, aiming to revitalize the economy and upgrade the successful dual vocational education and training system through a link to the University level. The UAS have three main tasks:

- a) Studies according to the Bologna Credit Transfer system,
- b) Continuing education for professionals and
- c) Applied research and services, strongly related to the needs of the labour market.

Today, UAS graduates are highly-demanded technical specialists, managers or researchers in companies, NGOs and administration, and hence drivers for innovation and competitiveness of Switzerland's economy and society.

Different countries around the globe, among which China, started to establish similar types of practice and application-oriented Universities. Could Universities of Applied Sciences also be of benefit for North Macedonia?

Key words: *Permeable education system, University of Applied Sciences, Labour market orientation.*

ENVIRONMENTAL ATTITUDES OF MACEDONIAN SCHOOL STUDENTS

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Abstract

Understanding environmental attitudes is important because they often determine behavior that either increases or decreases environmental quality. The main purpose of this study is to investigate the level of environmental attitudes of the students from the Republic of North Macedonia. New Ecological Paradigm Scale, known as NEP Scale (Dunlap et al., 2000) was used. The study involved 161 students at age 14-17. Most of the participants reported pro-environmental attitudes (3.64) which indicate a low endorsement of the NEP among the sample of North Macedonian students. The averages of the sub-dimensions varied between 2.87 (“Limits to growth”) and 4.22 (“Possibility of an eco-crisis”). Like as others non-industrialized societies, students from the Republic of North Macedonia tend to believe in the profound connection between nature and humanity, or there are no clear differences between pro-NEP (4.04) and pro-DSP (dominant social paradigm) views (3.19). We must look at students’ environmental education achievements in the context of the overall social-economic conditions in which we carry out the education process. The results of this research may help to explain the situation and describe the obstacles and possibilities for environmental education in the schools of the Republic of North Macedonia. Also, the community could use this research in building a more effective dialog with the environmental education community as a way to achieve a sustainable society. In order to discover the factors that create a pro-ecological orientation of young people in this country, additional researches are needed.

Key words: *attitudes, high school students, NEP scale, Republic of North Macedonia*

