

CONFERENCE
ON ENGINEERING
AND ARCHITECTURE
DESIGN EDUCATION
ΕΑΔΕ 2024

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CONFERENCE
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EADÉ 2024

BOOK OF ABSTRACTS

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INTERNATIONAL COOPERATION, RESEARCH AND PRACTICE IN TEACHING ARCHITECTS

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research
international cooperation
practice
innovative teaching methods
learning based on challenges

The link between university and practice is one of the basic pillars of university education. This is especially true in the field of engineering and architectural education, as engineering disciplines are by their very nature focused on practical application. Close cooperation with partner institutions or practicing architects from abroad further enhances the quality of education by mutual sharing of knowledge, practical experience, or teaching methodology.

The Faculty of Architecture and Design of STU in Bratislava purposefully supports and applies the link between education, research, international cooperation and practice. Two basic models of cooperation are implemented at the faculty:

- Model of linking international research and educational projects with education;
- Model of involvement of practicing architects with international experience in design studio teaching.

The contribution is focused on the analysis and evaluation of experience from the application of the mentioned models to the teaching of studio creation at FAD.

The basis for comparing the mentioned models is long-term experience with connecting international research and educational projects with the teaching of architectural and urban design, on the one hand, and the systematic involvement of practicing architects with foreign experience in the teaching of studio design, on the other.

As part of international cooperation on research projects, the contribution focuses on Interreg schemes, which appear to be ideal for the field of architecture and urban planning, given their close connection to practice and cooperation with municipalities or stakeholders. As part of international educational projects, it will be an evaluation of experiences within the Erasmus+ project schemes (BIP, KA2, or EU), which are aimed at strengthening skills and knowledge in certain thematic areas. The model, which is based on the management of studio work by foreign architects, or architects with foreign experience, is generally used at top schools of architecture worldwide. At the FAD we apply this model within the so-called vertical studios through the teaching of architects from the BIG studio, or through the connection of Slovak practice and foreign experience in the vertical studio GLOCAL (Global changes – new realities).

The goal of the contribution is to point out the desirability and necessity of connecting education and research through cooperation with foreign experts and with real problems at the local level. The aforementioned synergy reflected in the study programs of architecture and urbanism helps in a fundamental way to introduce innovative teaching methods and supports learning based on overcoming challenges.

IMPACT OF THE ARCHITECTURE STUDY POPULARISATION ON THE NUMBER OF APPLICANTS

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The Faculty of Architecture and Design STU in Bratislava has a long-term tradition in teaching the architecture in Slovakia. However, the number of applicants for subjects such as the Architecture and Urbanism has had a decreasing tendency in the last decade. The reason for this decline was not only due to the pandemic, but also to increasing attractiveness of the foreign architecture universities. The high school students' awareness of the architecture is insufficient. Students lack soft skills, nor they have sufficient ability to express themselves at hand drawing graphic. Teachers have implemented many different activities aiming at making education more attractive. The paper entails the purpose, concept and goals of the different activities that promote and make the study more attractive. These activities also embrace general lectures about the faculty of architecture undertaken in various secondary schools or mentoring the courses in drawing, modelling, or descriptive geometry. The paper will evaluate and describe the methods and impacts of those activities and their implementation on interest in the study during recent years. The attractiveness of the courses depends on level of knowledge of the given subject. Last, but not the least the potential developments in the future and inclusion of other necessary activities in terms of the study attractiveness are outlined herein.



architectural education
applicants
activities

STUDENT'S MOTIVATION DUE TO COOPERATION WITH THE CITY ADMINISTRATION

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Cooperation between universities and practice is currently the preferred trend in education. To create realistic assignments, the Faculty of Architecture and Design of STU is trying to connect teaching with practice in the form of cooperation with the private sector and public institutions including municipalities.

This resulted in numerous projects at the Institute of Urban Design and Planning, which were presented to the professional and public. Some of these collaborations successfully led to the creation of Changes and amendments of the spatial plan, served as a basis for the creation of spatial planning documentation or participation with the public and dialogues with investors.

This article deals with the evaluation of the benefits and shortcomings of cooperation between school and practice from the point of view of individual stakeholders - students, teachers, representatives of municipalities and the public. The research is based on evaluation of a case study of cooperation with the District of Bratislava - Nové Mesto (eng. Bratislava New City). Students of the 3rd and 4th year of the bachelor's degree and selected students of the master's degree took part in this cooperation called "New" Nové Mesto (eng. "New" New City). Representatives of the city district government participated intensively in the teaching process by taking part in the control of progress, the final presentations of the urban design proposals and the final exhibition of the urban studies. The number of actively involved stakeholders provides a sufficiently broad database for the analysis of cooperation.

The new findings and ideas of the research can contribute to higher motivation of the students, make the teaching process more efficient and the projects more usable for practice.

cooperation with practice
municipality
Bratislava Nové Mesto
urban design study
students
motivation



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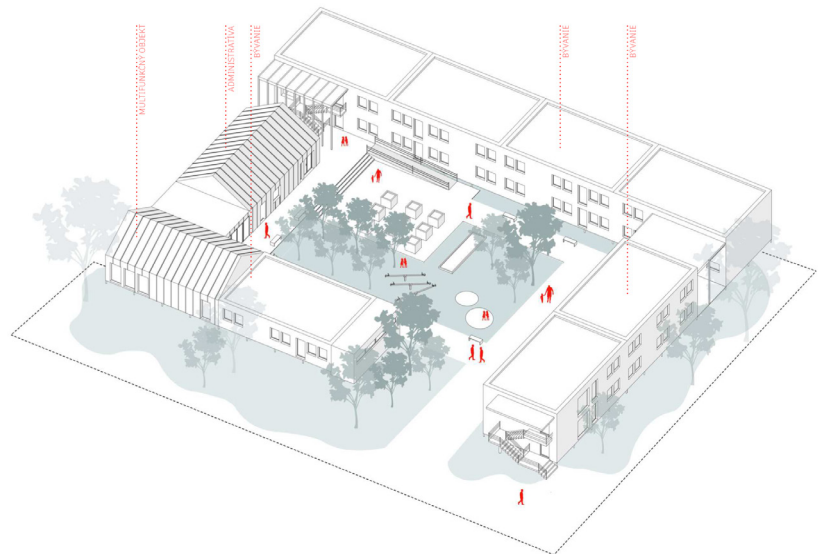
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The reconstruction of Ukraine will be a challenge not only for politicians, but also for architects and urban planners. In the article, the authors address the question of what the renewal of Ukraine should look like: the current predicament should be understood as an opportunity to renew the building stock in a more qualitative, sustainable, and inclusive way, so that the spatial framework for individual and community life can significantly improve. The article deals with the course in the student design studio, where the topic Architecture for Recovery was the semester assignment. Our hypothesis is that the emphasis placed on flexibility, expandability, modularity, repeatability of the solution, speed of construction, availability of resources, efficiency and autonomy of operation, long life and quality of the internal environment will lead to sustainable solutions with high architectural quality for the recovery of destroyed settlements. It should not be a temporary emergency solution, but a high-quality and long-term sustainable architecture, ready to respond to changing needs or climate changes.



architecture
recovery
disaster
sustainability
quality

EVALUATION OF THE CONTINUING EDUCATION PROGRAM ON SOCIALLY RESPONSIBLE ARCHITECTURE

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This article evaluates the educational effectiveness of the selected module of accredited continuing education program "Design of the built environment in the process of deinstitutionalization". Graduates of the selected study program are expected to acquire basic knowledge and skills related to the design of the built environment according to established quality criteria for social services. The acquired knowledge will be the basis for processing a new module with a similar focus. The level of education obtained can have a significant impact on improving the lives of recipients of social services, as well as on compliance with human rights in accordance with the Convention on the Rights of Persons with Disabilities. The goal of education is to eliminate the negative impacts of institutional culture on people at risk of social exclusion and, at the same time, to meet the sustainability and development requirements of the community. The results of the research include recommendations to innovate the methodology of lifelong education for professionals.

architecture
social inclusion
continuing education
Universal design education
interdisciplinarity

OPENING LECTURES II

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DOUGLAS TONG KUM TIEN

ON SENTIMENT ANALYSIS FOR CAPSTONE DESIGN CURRICULUM

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In engineering education, capstone design is one of the most essential curricula that solidifies major knowledge and cultivates practical skills through a collaborative learning process to solve real-world problems. Students must undergo several preparatory courses, demonstrate interest in the subject, and interact with seniors who have completed the capstone course. Seniors' feelings about the capstone design are often conveyed to younger students. Therefore, this study does not focus on existing lecture satisfaction or course achievement, but on the emotions felt through curriculum performance. Using a sentiment analysis on the course review data included in the report submitted after completing the capstone design course, emotions such as positive, negative and neutral emotions of fourth-year students who took the capstone design course for 14 years were examined. In particular, we analyse changes in emotions by year, differences between male and female students, and differences in emotions depending on whether or not the capstone design was passed. Through the emotion analysis results, we discuss ways to improve the capstone design and future research directions for the sentiment analysis methods in engineering education.

capstone design
sentiment analysis
engineering education

RESEARCH ON MENTAL MODELS IN THE PROCESS OF ARCHITECTURAL EDUCATION: UX THEORY AND ARCHITECTURAL DESIGN

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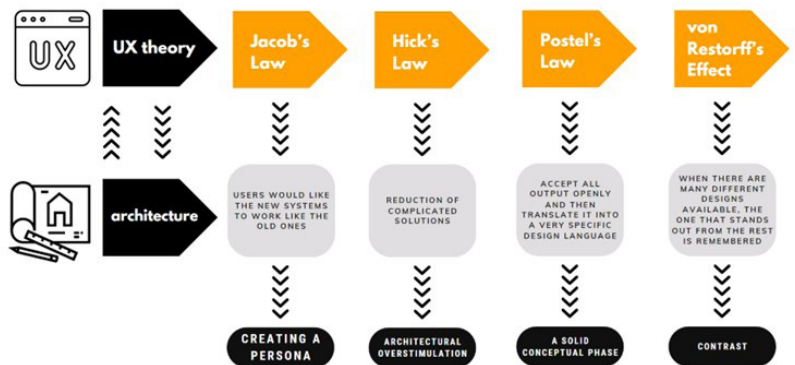
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The design of architectural objects requires a reliable approach to the entire design process, from engineering solutions to high-quality aesthetics. Throughout the entire process, the user remains one of the most significant factors influencing the development of functional, spatial, and aesthetic solutions, ultimately determining design decisions. The main assumption of the article is to conduct research on the mental models present in the theories utilized by UX (User Experience) and their integration into the process of architectural education. The research analyzed possible dissonance of mental models that leads to conflicts in the perception of architecture between the designer and the user. Analytical research also included the transfer of Jacob's, Hick's, and Postel's laws into the language of architecture. The article utilizes comparative methods, employing surveys for both qualitative and quantitative interpretation as research tools. The research was carried out based on student conceptual designs prepared as part of the course Shaping Elementary Service Structures at the Faculty of Architecture of the Wrocław University of Science and Technology.

Mental models



UX design

Jacob's law in architectural design

Hick's law in architectural design

Postel's laws law in architectural design

mental models in architecture

perception in architecture

THE IMPART MODEL: IMPARTING TRANSFORMATION THROUGH INDUSTRY-LINKED MULTIDISCIPLINARY PROJECTS

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There is a gap between market expectations and graduate capabilities. Besides acquiring knowledge, graduates must be well equipped with soft skills, life skills and various non-technical capabilities. Therefore, education should go beyond "filling the container" to include facilitating "changes in the size and shape of the container (enlarging capacity)". Both informational and transformational learning are important. Nonetheless there has always been a greater emphasis on informative learning compared to transformative learning. The motivation to help address this imbalance has resulted in the IMPART model. IMPART is an acronym for Industry. Multidisciplinary. Projects. Assessment. Reflection. Transformation. The IMPART model uses industry-linked multidisciplinary projects, project-based learning pedagogy, 3600 assessment and feedback together with reflection on experiences and learning from failure as the means to effect transformation in attitudes and behaviours as well as gaining knowledge and skills. This model can be used intentionally to create transformative learning experiences. This initiative won the gold medal at the 2022 QS-Wharton Reimagine Education Awards for the Science of Learning category.

project-based learning
transformative learning
industry projects
multidisciplinary
reflection
learning from failure

SESSION I

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PART I

URBAN PLANNING

INNOVATIVE AND ALTERNATIVE METHODS AND PROGRAMMES OF EDUCATION

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MULTIDIMENSIONAL MODEL - EDUCATIONAL AND CREATIVE TOOL FOR DESIGNING SUSTAINABLE RECONSTRUCTIONS OF URBAN STRUCTURES

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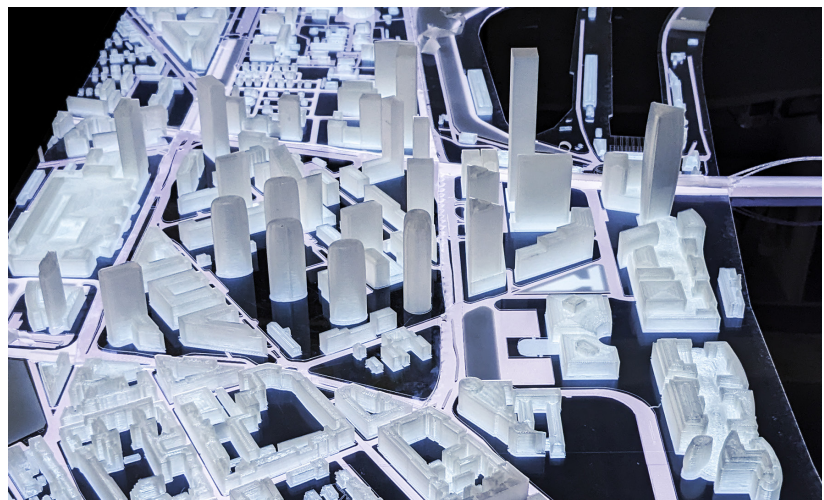
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The article explores multidimensional models as a combination of physical maquettes with mixed reality technology within architectural education and practice, emphasizing a shift from conventional teaching methods. It suggests that incorporating sensory-rich presentations can deepen understanding of urban and architectural problems. Despite ambiguity surrounding their definitions and methodologies, multidimensional models possess untapped potential that justifies their integration into pedagogy and participatory planning. The paper provides methodological instructions for production, emphasizing the importance of interdisciplinary collaboration. The principle of cooperation is synergistic element in a complex organised design process and a key educational element. Selected case studies, including projects in Bratislava and Accumoli, demonstrate the efficacy of multidimensional models in fostering discussions on urban development and facilitating sustainable reconstruction efforts post-disaster. These interactive tools serve students, professionals, and public to envision lost heritage and sustainable futures of urban structures. Article presents the results of the applied interdisciplinary research projects KEGA realized at the Faculty of Architecture and Design, Slovak University of Technology in Bratislava.



multidimensional model
digital restoration
mixed reality
mixed media
education

EMPOWERING URBAN PLANNING WITH NATURE BASED SOLUTIONS – LINKING RESEARCH AND EDUCATION TO FACILITATE TRANSITION FROM SUSTAINABLE TO REGENERATIVE CITIES

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Challenges related to the climate crisis and its consequences, such as rising sea levels, urban heat islands or floods, engender pressure on architectural education. Sustainable design often inclines to regenerative one - an emerging trend focused on the restorative power of architecture. The question appears upon the tools and methods that would facilitate both students and academics to address new challenges. This article offers insights into one of such methods based on the integration of students into research programmes. The European Union's Horizon 2020 research project SOS Climate Waterfront and follow-up interdisciplinary courses and events are presented to illustrate this process. Starting with research by design approaches, and continuing with follow-up initiatives, groups of students gradually extend their areas of experimentation empowering urban designs with nature-based solutions (NBS), building their critical reflection on climate change consequences and envisioning climate futures. Published, exhibited and awarded students' works confirm numerous benefits and efficacy of the proposed research-based architectural education.

climate change
futures
regenerative design
architectural education
nature-based solutions
waterfronts

INVOLVING METHOD OF LIVED EXPERIENCE IN URBAN DESIGN EDUCATION. EFFECTS OF EXCURSION IN URBAN DESIGN TEACHING AT FAD STU

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The trends of interdisciplinary research have become increasingly important in the field of architecture and urban design, linking cognitive sciences, psychology and philosophy to reveal insights into the links between conscious and unconscious experiences in creative design processes.

It is important to understand the boundary between a designer's lived experiences and theoretical knowledge. This understanding impacts the design process and implementation of fixed archetypes and spatial patterns. In order to facilitate the design process, it is crucial to set up an educational system that takes this boundary into account. To what extent does theoretical knowledge override (often incorrect) subconscious preferences, and how does it impact the final decision of the author in a meaningful way?

Lived Experience, in its essence, refers to the knowledge gained through personal encounters and direct involvement in particular circumstances. It serves as one of the base methods of experimental learning. Within the education of architects and urban designers, lived experience is most commonly used as a tool of pedagogical process focused on designing spaces for people with various vulnerabilities. At the Faculty of Architecture and Design of the Slovak University of Technology in Bratislava (FAD STU), the method of lived experiences has been applied to courses teaching universal design, but also in courses related to urban planning and urban design.

The context of the post-Soviet city provides a very limited scope of the urban environments and thus also spatial experiences, compared to settlements in Western Europe and their structures. Most of those are in direct contrast to the theories of basic principles of designing a healthy city, such as undefined open spaces or lack of legibility. Therefore, to understand urban principles, students are often forced to rely on images of cities they have not personally experienced.

The presented paper aims to evaluate to what extent the personal urban experience influences the application of the gained theoretical knowledges. The research consists of three main parts: desk research, experiment with the students of FAD STU and feedback questionnaire with students with personal experience, and evaluation. Moreover, the research works towards the emerging topic of lived experiences and the effects of the unconscious creative processes that have an impact on the final product in architecture, design and urbanism.

lived experience
urban design education
experiential learning
design process

SESSION II

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PART II

DESIGN

INNOVATIVE AND ALTERNATIVE METHODS AND PROGRAMMES OF EDUCATION

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DESIGN THINKING. HOW TO UNDERSTAND IT?

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The concept of DESIGN THINKING - the process of creating a successful product for specific markets is popular and used by managers in practice. However, the experience of educating designers of product forms and shapes suggests that when the concept is understood in a reduced way, its effectiveness is lost. Students focus too much on exploring end-user needs, often misidentifying them and consequently neglecting other product features such as semi-finished product criteria, production, service, marketing strategies, etc. However, we ask the question in the first place: "What is mindset?". Cognitive activity, or the aforementioned chronologically arranged analytical and testing steps in product development. A number of factors influence the unique and singular mindset of a student - a future designer. A mentally healthy person is capable of original thinking even without a methodology and knowledge of the process, although they are certainly useful and helpful to the outcome.

The content of the paper wants to draw attention to what primarily influences thinking, what is the output of the author's thinking and how it affects the designed product. The educator helps the student to reinforce personal positives and modify negatives, to form a securely creating professional after a comprehensive knowledge of what shapes his thinking and why he creates in his own way.

design
thinking
originality
process
analysis

ART PROJECTS IN ARCHITECTURAL EDUCATION AS A TOOL FOR SOCIO-CRITICAL REFLECTION

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The study of architecture, urban planning and design in its utility offers at universities of technical orientation a primarily rationally directed education. The offer of a conceptual and socially critical approach to creation is only represented to a low degree. Students create projects that take into account the latest technical, environmental and architectural trends, but receive few assignments or conceive their designs as specific philosophical statements critically examining current social and political phenomena, whether on a local or trans-regional scale. By implementing courses and seminars with an emphasis on various visual media, students are given the opportunity to analyze in space themes and statements that they cannot apply in standard architectural design. Our study analyzes alternative methods in architectural education at technical universities that handle intermedia visual arts. We investigate the forms of teaching and its application in different universities in the Central European context in the near vicinity. The paper is supplemented with case studies from the Faculty of Architecture and Design of STU in Bratislava.



art project
education
social-critical reflection
public space

EVOLUTION IN TEACHING METHODS OF ILLUSTRATION PROCESSES IN DESIGN

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The aim of the article is to note the scale of evolution that is taking place in the process of teaching architecture students. The changes mainly concern design supported by emerging programs such as the New European Bauhaus (NEB) or a new interdisciplinary project initiated by the European Commission in 2020. The European Green Deal Program is also important for the teaching processes.

Significant qualitative changes should also be noted in the teaching of hand drawing. They are even more visible because they are expanded by students' opportunities to select and evaluate the quantitative and qualitative teaching process. The opportunity to choose objects and the affirmation of contemporary graphic possibilities often encourage people to prefer fashionable imaging techniques, often abandoning the possibility of mastering previous workshop techniques. In fact, such re-evaluations are most often an inaccurate interpretation of the current state and ways of illustrating the design process. Because the methods of working in the field of imaging the designed architecture and its presentation are highly diversified and depend to a large extent on the requirements of investors. Hand-drawing techniques and traditionally constructed models are also important.

Nevertheless, creating opportunities to work in the digital environment is an educational necessity and an expected offer, especially since students' skills in this area are low. Because the fascination with the computer as a source of entertainment is not consistent with the knowledge of the computer as a work tool. Therefore, opening additional possibilities for enriching knowledge with current illustration methods is certainly a needed direction.

education
architecture
illustration
design
curriculum

CREATIVE THINKING IN DESIGN EDUCATION: ACTION-CENTRIC AND DESIGN THINKING APPROACH

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In the study program Design at the Faculty of Architecture and Design at Slovak University of Technology in Bratislava, several approaches are being implemented when supporting creative thinking and doing of students. The paper will compare two different, but mutually non-confrontational approaches to designing: individual spontaneity and improvisation, and a multidisciplinary “learning by doing” approach. Two different groups of students of the same technical-artistic field of Design in the early years of their studies have been observed while coping with a specific design assignment which has been specifically chosen for the purpose of testing the two particular approaches. One group will follow the methodology of design thinking based on a rather systematic and rational approach, whereas the other group will test the action centric method supporting intuition and emotion. The specific evaluation criteria – the visual esthetics, the logic of the form, the typology of the element and the utility and user experience – were set and will be observed and evaluated.



creative thinking
design thinking
action-centric
rationale
spontaneity
design education

SESSION III

**CHAIR OF THE SECTION:
ASSOC. PROF. HENRICH PIFKO,
FAD STU BRATISLAVA, SLOVAKIA**

PART I

PROTECTION OF CULTURAL HERITAGE

PROBLEM- AND PROJECT-BASED EDUCATION

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- 42** **A NEW INTERNATIONAL HUB FOR DIGITAL ARCHITECTURAL HERITAGE BASED IN GDAŃSK, PAVIA AND FLORENCE AS A TOOL FOR DIDACTIC AND SCIENTIFIC DEVELOPMENT**
JAKUB SZCZEPAŃSKI
-
- 43** **UNESCO CHAIR AT STU - UNESCO CHAIR FOR RESTORATION OF ARCHITECTURAL HERITAGE**
PAVOL PILAŘ, JANA GREGOROVÁ, FILIP BRÁNICKÝ
-

A NEW INTERNATIONAL HUB FOR DIGITAL ARCHITECTURAL HERITAGE BASED IN GDAŃSK, PAVIA AND FLORENCE AS A TOOL FOR DIDACTIC AND SCIENTIFIC DEVELOPMENT

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In the paper the author outline the education needs in the field of documentation and visualisation of architectural heritage and potential of using innovative digital laboratories to train a new generation of architects. The evolving built environment and technology continuously challenge architectural educators to take an innovative approach to better understand, preserve and protect the architectural heritage. One of those approaches is a methodology based on the integration of education, practice and research on digital cultural heritage (CH) in the form of an alliance of laboratories as a cross-border hub for sustainable development and cultural heritage preservation.

The paper is focused on the case of three laboratories from Poland and Italy: DAda Lab - UNIPV, Pavia; DAB Lab - Gdańsk Tech; and DARWIN Lab - UNIFI, Florence, which, using common methods, tools and activities, combine practice and research with education of architects and engineers. Through the joint implementation of various European CH projects, the laboratories engage their resources and students in hands-on activities, providing opportunities to experiment with new tools and forms of research-oriented education.

architectural education
educational strategies
professional training
innovative laboratories
technological progress
digital architecture
cultural heritage
history of education

UNESCO CHAIR AT STU - UNESCO CHAIR FOR RESTORATION OF ARCHITECTURAL HERITAGE

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The UNESCO Chair at the Slovak University of Technology in Bratislava is an effort to create a professional platform for the issue of restoration of architectural heritage, with the connection of educational and scientific research activities of university workplaces to professional and methodological workplaces from practice, with emphasis on interdisciplinary approach to restoration of monuments and files. It arises as a response to frequent inconsistencies in the interpretation of international methodological documents, which occur both among employees of monument offices and designers. This conflict is based on the lack of knowledge about the principles of protection of monuments by designers and contractors, as well as the owners of monuments, but also on the other side of the insufficient level of construction and technical education of employees of monument offices. Therefore, the interest of the UNESCO Chair will focus on those aspects of the problems that most often occur in professional practice. Greater emphasis will be placed on the technical side of the restoration process and the application of such architectural interventions, the aim of which is to preserve or restore the identity of the traditional historic seat. The UNESCO Chair at STU is a bridge between academia, civil society, local communities, research, self-government, public administration and policy making.

architecture heritage
UNESCO Chair
education
interdisciplinary approach
cultural sustainability

SESSION IV

**CHAIR OF THE SECTION:
DR. DOUGLAS TONG KUM TIEN,
TAYLOR'S UNIVERSITY, MALAYSIA**

**CO-CHAIR OF THE SECTION:
ASSOC. PROF. VLADIMÍR HAIN,
FAD STU BRATISLAVA, SLOVAKIA**

PART III

ENGINEERING EDUCATION OF ARCHITECTS

INNOVATIVE AND ALTERNATIVE METHODS AND PROGRAMMES OF EDUCATION

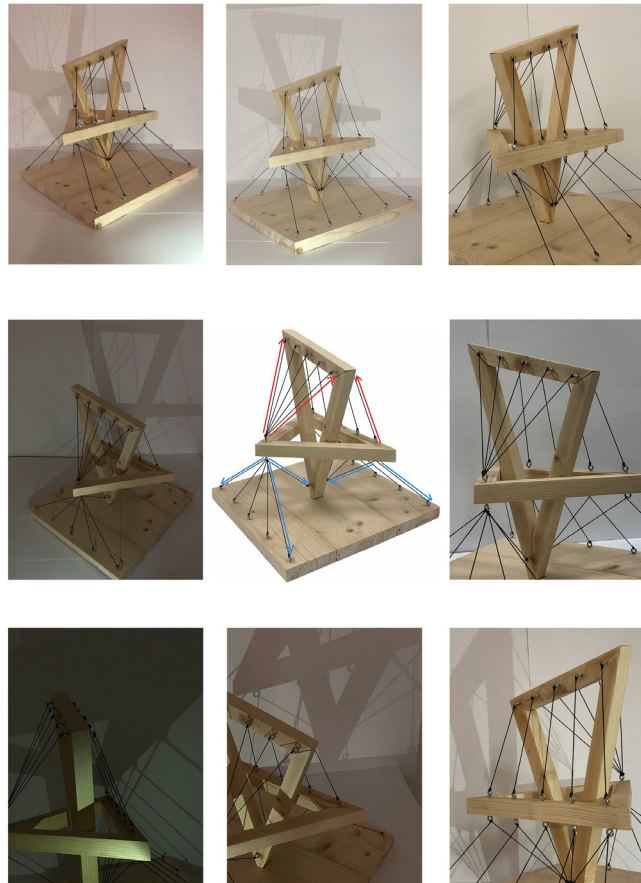
- 46** **EMPOWERING ARCHITECTURAL MINDS WITH INNOVATIVE STATICS EDUCATION**
PETER ROŠKO
- 47** **STUDIO-ORIENTED LEARNING METHOD TO REALISE THE COURSE IN STRUCTURE FOR THE INTERIOR ARCHITECTURE STUDENTS** MAGDALENA CELADYN, ANNA MICHALEK
- 48** **STRUCTURES AS AN INTERSECTION BETWEEN STUDY PROGRAMMES: ARCHITECTURE AND CIVIL ENGINEERING**
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- 49** **SCIENTIFIC ANALYSIS OF THE IMPLEMENTATION OF RESEARCH TECHNOLOGIES, SOLVING ENERGY AND ECOLOGICAL CRISIS, IN STUDENT WORKS** MÁRIA BUDIAKOVÁ
- 50** **ANALYSIS OF ENERGY PERFORMANCE IN BUILDINGS THROUGH METHODOLOGY FROM BIM TO BEM. CASE STUDY: FADIL HISARI, PRIZREN, KOSOVO** VIOLETA NUSHI, FRESKIM SULEJMANI, ARTA BASHA JAKUPI, VLORA NAVAKAZI

EMPOWERING ARCHITECTURAL MINDS WITH INNOVATIVE STATICS EDUCATION

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The paper introduces innovative educational approaches for students of architecture focusing on the principles of statics in bearing structures, demonstrates methods to cultivate students' intuition and comprehension of structural statics in architecture, emphasizing practical applications over complex engineering techniques and intricate mathematics. The concept of static optimality naturally arises from individuals' innate sense of safety and comfort within optimally designed structures. Static principles in architectural design are elucidated through natural examples, such as the principle of equilibrium, and analogies, like the flow of forces within a structure. The fundamental structural elements - such as columns, bars, beams, plates, walls, membranes, and shells – are explained together with their static properties, load-bearing capacities, and deformation behaviors. Students assemble these structural elements akin to playing with building blocks, exploring the efficacy of different configurations and the advantages of optimizing their arrangement into static structures. Students create real models of optimal load-bearing structures which undergo statics supervision.



architecture
design
structure
statics
innovative education

STUDIO-ORIENTED LEARNING METHOD TO REALISE THE COURSE IN STRUCTURE FOR THE INTERIOR ARCHITECTURE STUDENTS

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This paper discusses a modification proposed for the in course in building structure delivered to the second-year undergraduate students of interior architecture. The proposed adjustment concerned setting up design studio-modelled, problem- and project-based structural design module, which was to supplement the preceding lectures. The main objective of this practical module was to enable students to make a structurally informed interior architectural design, and to explore the range of integration of architectural design and engineering aspects of designing interiors' components in a search for their formal and aesthetic integrity. The inquiry on the effects of this learning scheme was based on the qualitative evaluation of the students' design projects, and the effects of a survey among students concerning the structural design component of the course in building structures. The results confirmed effectiveness of this model in the context of understanding the interconnectedness of structural and architectural aspects in the creation of interiors.

interior architecture
structure course
project-based learning

STRUCTURES AS AN INTERSECTION BETWEEN STUDY PROGRAMMES ARCHITECTURE AND CIVIL ENGINEERING

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In the school year 2019/20, a new method of teaching Design Studios was implemented at the Faculty of Architecture and Design Slovak University of Technology in Bratislava. "Vertical Studios" under the leadership of individual teachers are founded on teachers' personalities or specific orientations of the atelier. Students from the 4th year of the bachelor grade and first and second year of the magister grade are learned together in one common vertical atelier. Vertical studio "Structures in architecture" focuses on building design, where the structure participates in creating the architectural expression. The academic environment is ideal for the verification of experimental architectural designs, in which student's creativity is manifested not only in the field of architecture, but also in the structural design of the building. The static analysis of the structural system of student's designs and the dimensioning of the load-bearing structures developed in co-operation by teachers and doctoral students at the Faculty of Civil Engineering STU means for students of architecture a more detailed understanding of the static design of the building.

structure
design studio
static verification
structural design
creativity

SCIENTIFIC ANALYSIS OF THE IMPLEMENTATION OF RESEARCH TECHNOLOGIES, SOLVING ENERGY AND ECOLOGICAL CRISIS, IN STUDENT WORKS

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The paper is focused on the implementation of research technologies that aim to address energy and ecological crises in student works. The students incorporated the partial results and outputs of the scientific grant project into their architectural designs. The methodological approach to working with students focused on the creative incorporation of the new technologies in development that contribute to a positive energy balance of the building and address air purification and air quality improvement. Detailed methodology procedures were developed on how to achieve the creative incorporation of research innovative technologies into the planes of the building envelope and roofs. Implementation examples are provided to confirm the soundness of the methodology. To validate the methodology and procedures above, student works were scientifically analyzed, in which the following was evaluated: students' skills related to how they used the means of research innovative technologies in the development of the architectural concept, demonstration of invention triggered by inspiration in the technologies, exceptionality of the technological and architectural concept, and achievement of inventive architectural design.

research technologies
scientific grant project
work methodology
architectural design

ANALYSIS OF ENERGY PERFORMANCE IN BUILDINGS THROUGH METHODOLOGY FROM BIM TO BEM. CASE STUDY: "FADIL HISARI", PRIZREN, KOSOVO

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Building Information Modeling (BIM) and Building Energy Modeling (BEM) have emerged as pivotal processes in assessing the energy performance of buildings, both existing and new. This methodology spans from project initiation to the entire lifecycle of a structure, playing a critical role in various research domains. A case study on the "Fadil Hisari" lower secondary elementary school in Prizren, Kosovo, underscores the indispensability of transitioning from BIM to BEM for energy calculations. The research analyses the insufficiencies of the building's audit report and advocates for advanced analysis through the BIM to BEM method, highlighting its potential for substantial energy savings.

Additionally, the study aims to interpret thermal transmittance coefficients (U-values) in compliance with local regulations and compare them with cost-optimal levels achieved via simulated combinations of building materials within the same climatic zone. By focusing on this educational institution, the research presents opportunities to integrate BIM into BEM methodologies, displaying their viability for implementation within the framework of general literature and local laws.

Furthermore, the research systematically examines key challenges and prospects, emphasizing the necessity of adopting this approach effectively. A comprehensive analysis seeks to foster understanding and acceptance of BIM to BEM integration, recognizing its significance in advancing energy efficiency in building design and management.

BIM
BEM
audit report
energy demand
proposed measures
energy simulation

OPEN SESSION V

**CHAIR OF THE SECTION:
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UNIVERSITY OF LJUBLJANA, LJUBLJANA, SLOVENIA**

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FAD STU BRATISLAVA, SLOVAKIA**

PART II

REFLECTIONS ON CONTEMPORARY PROBLEMS OF SOCIETY

PROBLEM- AND PROJECT-BASED EDUCATION

-
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PAVOL PAULINY, BEATA POLOMOVÁ, MARTINA JELÍNKOVÁ
-
- 55** **STUDENT AND COMMUNITY ENGAGEMENT TO INCREASE IMPLEMENTATION OF INCLUSIVE ENVIRONMENT**
ZUZANA ČEREŠŇOVÁ, NATÁLIA BOŠKOVÁ FILOVÁ, LENKA SULÁKOVÁ
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- 56** **RESEARCH BY DESIGN:
TRANSFORMATION OF FORMER BARRACKS CAMPUS**
GABRIELA ROLENČÍKOVÁ, IVANA ŠVECOVÁ
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- 57** **EMBRACING CHATBOT AS A SELF-LEARNING CATALYTIC FOR ENGINEERING EDUCATION**
TRI LATHIF MARDI SURYANTO, AJI PRASETYA WIBAWA, HARIYONO HARIYONO, RAFAŁ DREŻEWSKI, ANDREW NAFALSKI
-

DESTRUCTION OF ARCHITECTURAL HERITAGE DURING THE WAR - SHOCK THERAPY OR A NEW CHALLENGE IN THE EDUCATION OF FUTURE ARCHITECTS

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The current education of architecture students in the field of restoration of architectural heritage recalls war conflicts and the destruction of architectural heritage as a precedent that in a special way determines and sometimes divides the opinions of experts on restoration. The war in the European space in Ukraine and its consequences on the construction and technical condition of monuments and the emotional perception of the loss of cultural-historical values as a result of the war conflict sets new tasks for future architects. Tasks we thought would be a thing of the past. The presented study considers a change of thinking in the field of restoration of monuments destroyed in a sudden catastrophic event. As case studies for the comparison of unexpected extinction and especially the method and potential of restoration of cultural-historical values, we compare the educational approach applied after WW2 in Europe in comparison with the current sudden losses arising from several reasons - wartime bombing in Odesa, Ukraine (from 2022), devastating fire in Slovakia Banská Štiavnica, UNESCO (2023) and the earthquake in the Italian city of Accumoli (2016). The comparison of the goals of rescue and the potential of restoration brings complex perspectives in education and the usability of the results in an international context, especially for the needs of student exchange between schools.

monument restoration
education of architects
destruction of monuments
war
disaster
Odessa
Banská Štiavnica
Accumoli



STUDENT AND COMMUNITY ENGAGEMENT TO INCREASE THE IMPLEMENTATION OF AN INCLUSIVE ENVIRONMENT

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In the context of teaching the course Universal Design at the Faculty of Architecture and Design, Slovak University of Technology in Bratislava, the research on how to increase student and community engagement focusing on environmental analysis and participatory planning was conducted. The intention was to advance students' knowledge of how to work with inclusive principles and the user experience aspect of selected objects, in order to create solutions that support inclusive environments for all. In the analysis of the built environment, emphasis was placed on the issues of the seven principles of universal design, whether in residential or public buildings, which are an essential part of the architectural design.

Students were asked to work on one of four proposed topics and focus on it under the guidance of a teacher during the whole winter semester 2023. After choosing the topic, students selected one residential or public building located in Slovakia or abroad, which they analysed in detail by on-site research, analysis of available sources and documents, or a questionnaire survey.

universal design
inclusive environment
residential buildings
participatory planning

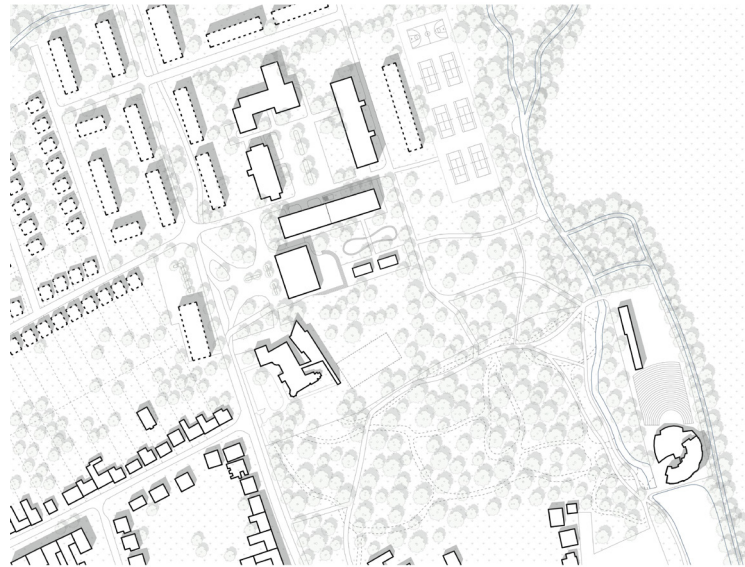
RESEARCH BY DESIGN: TRANSFORMATION OF FORMER BARRACKS CAMPUS

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Many military sites of varying importance, quality and size were built during the era of socialism in Czechoslovakia. The urban integration of these areas into structure of smaller settlements is still often problematic in aspects of differences in typology of each building or non-standard layout. These existing structures have great potential on the one side but number of limits on the other side.

The subject of a dozen case studies is placed in village Jaslovske Bohunice in the west part of Slovakia. The public space as well as the buildings are mostly in a neglected state and the entire area deserves extensive revitalization. Several universally applicable conclusions and knowledge in the field of transformation of unused military areas have been brought during three semesters. And at the same time, possibilities arose to insert new objects into these urban structures. The repetition of individual phases of research (action research) brought with each new cycle a further enrichment of knowledge and reflection for the next cycle of tasks.



military site
sustainability
transformation
refurbishment

EMBRACING CHATBOT AS A SELF-LEARNING CATALYTIC FOR ENGINEERING EDUCATION

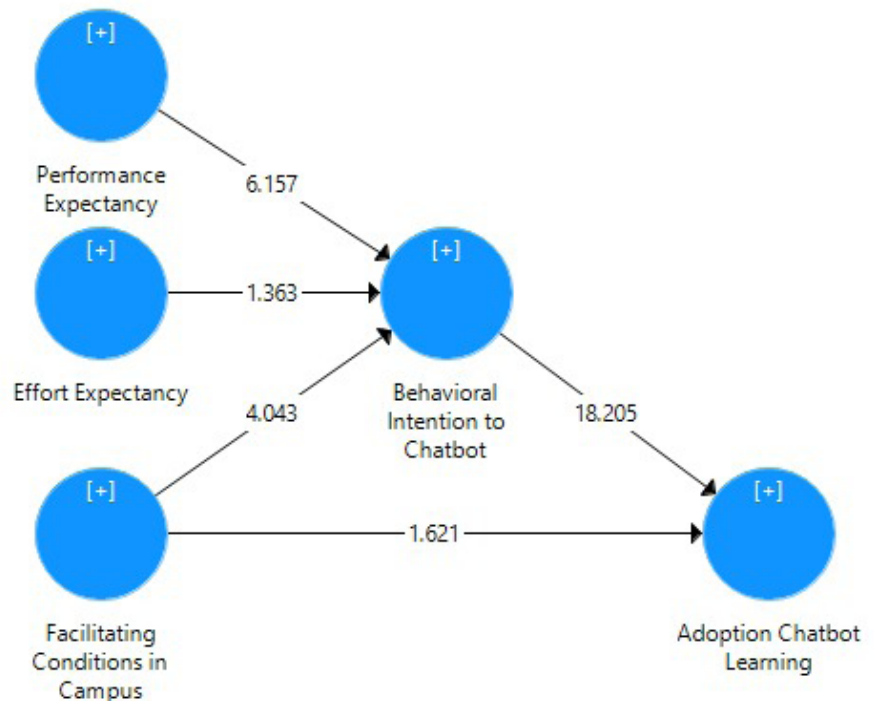
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Self-learning is essential in higher education, as students assume responsibility for their own learning without direct supervision. Google as a search engine is one method students can self-learning, unfortunately not all information can be accounted for, the overflow of information increases the chances of students being distracted from their goals. Thus, the emergence of chatbots brings a new aspect to self-education. Since the pandemic, researchers have explored the potential of chatbots as flexible and easily accessible educational tools. However, the cause of the acceleration of learning in students is still unknown. This research aims investigate chatbot technology can speed up self-learning among students in Engineering education. This quantitative research with 299 sample students Informatics and Information Systems in Surabaya. The data is PLS. This study affirms that the availability of stable internet connection, servers or cloud computing, computers and software, and training and mentoring impact the utilization of chatbots to improve self-learning. The study proposes creating a chatbot as an innovative tool to support engineering education.



self-learning,
Chatbot technology
engineering education
innovative learning
adoption technology

OPEN SESSION VI

**CHAIR OF THE SECTION:
HONORARY CHAIRWOMAN PROFESSOR MARIA JOLANTA ŻYCHOWSKA,
CRACOW UNIVERSITY OF TECHNOLOGY, POLAND**

**CO-CHAIR OF THE SECTION:
ASSOC. PROF. ZUZANA ČEREŠŇOVÁ,
FAD STU BRATISLAVA, SLOVAKIA**

SPECIFIC PROBLEMS IN EDUCATION AND TRAINING PROCESS OF STUDENTS

**60 INTERDISCIPLINARY SYSTEMS THINKING AND ICT
 SELF-CONCEPT IN HIGHER EDUCATION**

STANISLAV AVSEC, BRINA KURENT

**61 PREPARING STUDENTS FOR THE LABOUR MARKET
 IN THE AGE OF DIGITALIZATION, AUTOMATION AND AI:
 LESSONS FROM INTERNATIONAL UNIVERSITIES**

TASHFEEN AHMAD

INTERDISCIPLINARY SYSTEMS THINKING AND ICT SELF-CONCEPT IN HIGHER EDUCATION

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Today's higher education technology-enhanced learning environment presents students with complex challenges that demand holistic approaches. Systems thinking points to a possible educational approach using whole system perspective for solving complex problems, especially in disciplines where design plays an important role. This study explores relations between interdisciplinary systems thinking and self-concept related to information communication technology (ICT). For this purpose, an effective sample of 156 undergraduates was collected for an empirical study in teacher education, architecture education and mechanical engineering study programme. The results indicate significant variations in levels of system thinking and ICT self-concept (SC) based on the study major. Furthermore, multiple regression analysis reveals both positive and negative predictors in system thinking using ICT SC as explanatory variable. This study provides deeper insights into integration of systems thinking and ICT competences to prepare students for the demands of competitive technology-enhanced education for sustainable development.

systems thinking
ICT self-concept
higher education
education for sustainable development
multiple regression analysis
predictive modelling

PREPARING STUDENTS FOR THE LABOUR MARKET IN THE AGE OF DIGITALIZATION, AUTOMATION AND AI: LESSONS FROM INTERNATIONAL UNIVERSITIES

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Introduction: Technologies are disrupting the way we live, work and play. This disruption is changing the future of work and will require different work skills from employees. Various employability reports suggest that undergraduate students are not ready for work as they graduate. They lack the skills which may enable them to be a productive part of future of work. Furthermore, employability reports also suggest gap between academia (research) and industry (practice). To bridge this gap, this presentation is an attempt to explore, how to prepare undergraduate students for the future of work?

Methodology: To answer this question, case study approach was utilized and I reached to top 25 Canadian universities (using Times Higher Ranking 2024) for an interview.

Major Findings: The preliminary findings indicate that co-op, work-integrated learning, community service learning, and experience-based learning are more important than ever before. Furthermore, the future of learning should include opportunities to learn via gamification and other smart methods. This may require institutions to build "classrooms" where students sitting from different departments are trying to solve problems using their interdisciplinary and entrepreneurial approach.

Contribution: This presentation will be useful for students, lecturers and university administrators as well as all stakeholders involved in an effort to prepare human capital for the labour market in the age of digitalization and AI.

education
students
future of work
skills
lifelong learning

CONFERENCE PROGRAMME

10 – 12
JUNE
2024

<p>9th of June 2024 (Sun)</p>	<p>10th of June 2024 (Mon)</p>	<p>11th of June 2024 (Tue)</p>	<p>12th of June 2024 (Wed)</p>	
<p>16:00-18:00 Meeting of the WIETE International Academic Advisory Committee (WIETE-IAAC)</p>	<p>9:00-10:00 <i>Registration, Coffee</i></p> <p>10:00-11:30 Opening Ceremony</p> <p>11:30-12:00 Coffee Break</p> <p>12:00-14:00 Opening Lectures I</p> <p>14:00-15:00 <i>Lunch</i></p> <p>15:00-16:20 Opening Lectures II</p> <p>17:00-19:00 Expert Tour: Two Faces of the City - visit to the historic centre and the newly renovated Slovak National Gallery</p>	<p>9:30-10:00 <i>Registration, Coffee</i></p> <p>10:00-11:40 Session I Innovative and Alternative Methods of Education</p> <p>11:40-12:10 <i>Coffee Break</i></p> <p>12:10-13:40 Session II Innovative and Alternative Methods of Education</p> <p>13:40-14:40 <i>Lunch</i></p> <p>14:40-16:00 Session III Problem- and Project-based Education</p> <p>16:00-17:00 Open Session: WIETE Interactive Presentation: WIETE journals and the changing publishing landscape</p> <p>20:00-22:00 Conference Banquet</p>	<p>9:30-10:00 <i>Registration, Coffee</i></p> <p>10:00-12:00 Session IV Innovative and Alternative Methods of Education</p> <p>12:00-12:20 <i>Coffee Break</i></p> <p>12:20-14:00 Session V Problem- and Project-based Education</p> <p>14:00-15:00 <i>Lunch</i></p> <p>15:00-16:20 Session VI Specific Problems in Education and Training Process of Students</p> <p>16:20 - 17:00 Closing Ceremony</p> <p>17:00-19:00 Expert Tour: Two Faces of the City - visit of Bratislava's newly emerging downtown</p>	

CREDITS

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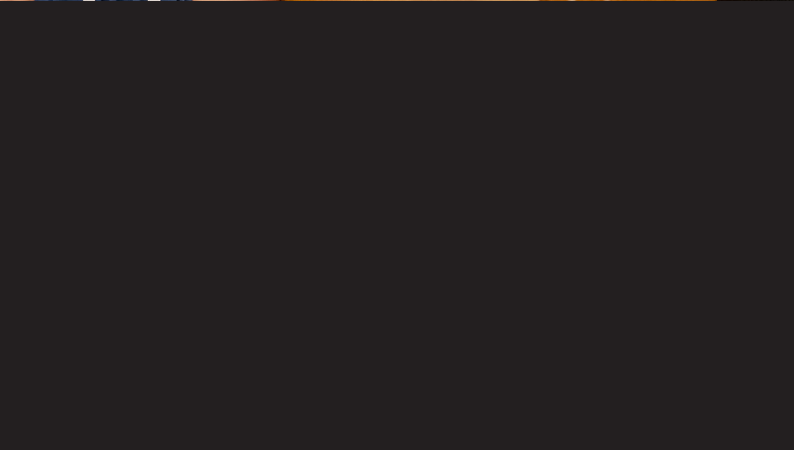
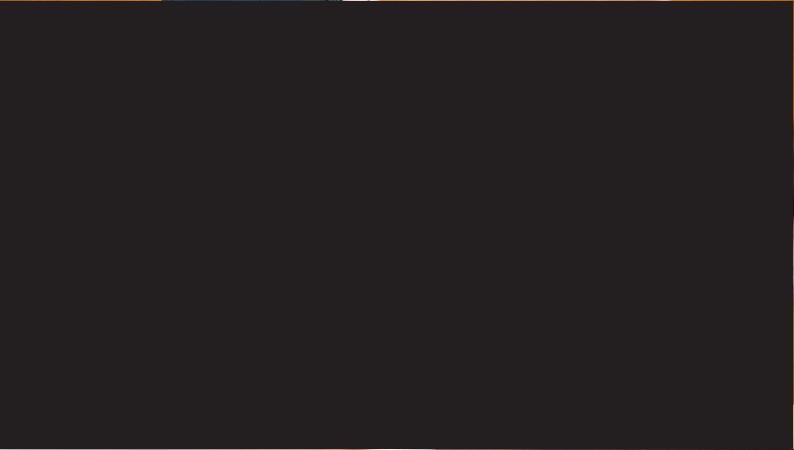
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