

## Implementation of inclusive strategies in education

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**ABSTRACT:** This article presents a human-centred approach in education and the creation of built environment, products, services, information and communication technologies that respect the diversity of users with the aim to develop a non-discriminatory, inclusive society. One of the human-centred design methodologies is universal design (UD), which is taught as a compulsory subject within the Faculty of Architecture at Slovak University of Technology (SUT) in Bratislava, Slovakia. The philosophy of teaching UD is based on inclusive strategies with active engagement of students. Universal design is related not only to physical accessibility, but also to the accessibility of teaching and learning methods for diverse users, such as universal design for learning (UDL) and universal design for instruction (UDI).

### INTRODUCTION

Human-centred design methodologies respond to the physical, psychological, social and cultural needs of human beings. This holistic and innovative approach constitutes a creative and ethical challenge for all architects and designers to create inclusive environment for all people. The human-centred approach is applied in various methodologies, such as universal design, design for all, inclusive design and people/user-friendly design. Creation of a non-discriminatory environment is considered to be the most important democratic process, which leads to the achievement of a socially sustainable society.

Leurs et al point out that students of architecture should be educated to be more sensitive and empathetic towards the diversity of human beings [1]. Therefore, the human-centred approach, such as the universal design method should be an integral part of architectural education with the aim of creating a better environment for all people [2].

The European Union adopted several policy documents concerning the implementation of UD, such as: 1) Resolution ResAP(2001)1 on the introduction of the principles of universal design into the curricula of all occupations working on the built environment; and 2) Recommendation CM/Rec(2009)8 of the Committee of Ministers to member states on achieving full participation through universal design.

SUT's Faculty of Architecture in Bratislava is the only Slovak university, which is following the Resolution ResAP (2001)1. Despite this fact, the situation in our faculty is not satisfactory as the subject UD is compulsory for students of architecture in the last year of their Bachelor study. UD belongs among the basic architectural methods presenting a holistic approach to the creation of the environment; therefore, it would be beneficial to teach this method earlier. In contradiction with the world-wide movement focused on socially responsible design, the subject UD was excluded from the curricula of the study programme for design students. According to Ostroff, *Design education must be more inclusive and more diverse, reflecting the range of people who design affects* [3].

The importance of UD is also emphasised in the UN Convention on the Rights of Persons with Disabilities (UNCRPD), ratified worldwide and in the Slovak Republic in 2010. As stated in the UNCRPD (Article 4 - General Obligations), it is necessary to ...*undertake or promote research and development of universally designed goods, services, equipment and facilities, and ...to promote universal design in the development of standards and guidelines* [4].

### HUMAN-CENTRED APPROACH IN HIGHER EDUCATION

The human-centred approach is related not only to physical accessibility, but also to the accessibility of teaching and learning methods for diverse users in higher education. Therefore, it is necessary to provide new solutions for

comprehensive universal accessibility of higher education, covering all aspects of accessibility and usability for a wide spectrum of people in accordance with the strategic framework for European cooperation in education and training (ET 2020). This document claims that in the period up to 2020, the primary goal of European cooperation should be to support the further development of education and training systems in the member states, which is aimed at ensuring personal, social and professional fulfilment of all citizens, social cohesion and active citizenship [5].

The EU Council conclusions on the social dimension of higher education (2013) invites the member states to increase opportunities for flexible learning by diversifying the way in which learning content is delivered; for instance, by adopting student-centred approaches to teaching and learning [6], using inclusive educational strategies, such as universal design for learning (UDL) and universal design for instruction (UDI).

Inclusive educational strategies provide innovative solutions, which can be flexibly adapted to the diverse abilities of each individual, taking into account preferred learning and communication styles or other specific needs of students in higher education. The aim of UDL/UDI methods is to engage and motivate all participants in the educational process to achieve efficiency, attractiveness and accessibility of education for all. Methods of UDL/UDI can help not only a certain group of people with special/specific needs, but they can also create optimal conditions for all students [2].

The human-centred approach is implemented in the educational environment covering various areas:

- Teaching and learning by using the methods of UDL/UDI;
- Services, information and communication in accessible multi-sensory form (combination of tactile, visual and acoustic forms) or compatible with assistive technologies and devices;
- Creation of an inclusive physical environment by using the principles of universal design in indoor and outdoor environment of higher education institutions and campuses.

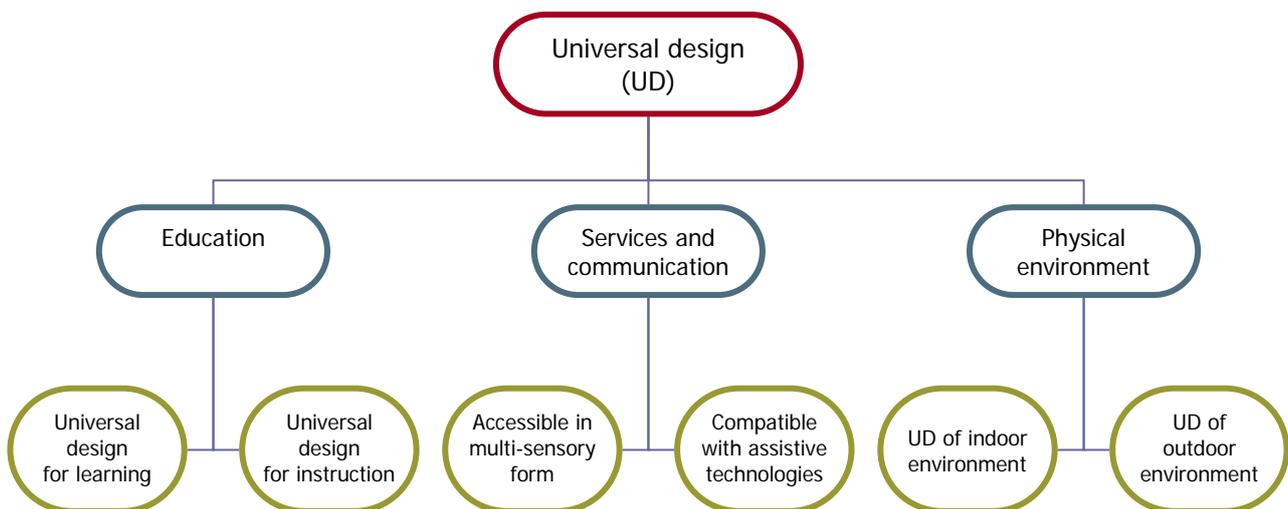


Figure 1: Scheme of implementation of universal design in educational environment.

## UNIVERSAL DESIGN

The universal design methodology originated in the USA, as did the *seven principles of universal design*, which were formulated by the experts from the Center for Universal Design (CUD) at the College of Design at North Carolina State University in 1997.

UNCRPD defines universal design as the *design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. Universal design shall not exclude assistive devices for particular groups of persons with disabilities where this is needed* [4].

According to Rollova et al, the method of universal design/design for all (DfA) is based on the aim that built environment, services and products should be designed to meet the needs of the widest possible range of users. Architects, urban planners and designers must change routine design procedures; they must put greater emphasis on improving user quality of environment, so that no users feel discriminated against built environment for the reason of physical barriers [7]. Froyen views UD/DfA *...as an academic and professional research and design response to a democratic requirement for integral and inclusive accessibility based on a social concept* [8].

UD is often considered by architects to be something ancillary and additional to architectural design, focused only on a small group of users. UD should be an integral part of the design process, aiming to create a better environment for all people [9]. Paulsson states that *...the great idea of UD/DfA is a society for all, not only barrier-free but basically one empowering all people and securing equal opportunities and participation...Education is one of the cornerstones in*

*realising this vision* [10]. Therefore, education of students and practitioners should be focused on the consistent application of the seven principles of UD - equality, flexibility and simplicity in use, perceptibility of information, safety, comfort, appropriate dimensions when creating public spaces, buildings, services, products, information and communication systems.

## UNIVERSAL DESIGN FOR LEARNING/INSTRUCTION

The theory of UD extended from the architectural and design scope to the field of education with the aim providing inclusive educational methods for a heterogeneous group of people with different skills and capabilities [3]. The methodology of universal design for learning and universal design for instruction have been developed in the USA by the Center for Applied Special Technology (CAST) and the Association on Higher Education and Disability (AHEAD).

The UDL method elaborated by Rose and Meyer, is focused on the implementation of three main principles in the educational process: 1) multiple means of representation - how a teacher presents the subject matter to students by using multimedia and multi-sensory resources; 2) multiple means of expression - how students demonstrate their knowledge in written/oral/audio-visual form; and 3) multiple means of engagement - how to motivate students [11].

The method of UDI is based on the seven principles of UD. McGuire, Scott and Shaw developed this method and they added two other principles for the purpose of UDI: 1) community of students (Principle 8) - learning environment promotes interaction and communication among students, as well as student's interaction with the university/faculty; and 2) classroom climate (Principle 9) - training and instruction are welcoming and accessible to all students [12].

## UNIVERSAL DESIGN AT THE FACULTY OF ARCHITECTURE STU IN BRATISLAVA

UD has been taught at the Faculty of Architecture at Slovak University of Technology (FA-SUT) in Bratislava since 1995. The teaching of UD was initiated by Assoc. Prof. Samova after her research stay in the Adaptive Environment Centre (renamed to the Institute for Human Centered Design - IHCD) in Boston in the USA. Nowadays, there are two compulsory subjects at the FA-SUT focused on human-centred design approach: 1) Universal Design (for students of the Architecture and Urban Planning study programme); and 2) Universal Design in Landscape Planning (for students of the landscape architecture study programme). Both subjects provide students with information on basic principles of UD and on how to apply these principles in architectural and landscape planning.

The methodology UDL/UDI in teaching UD at the FA-SUT is applied, especially, by using various forms of presentation and elaboration of semester works (video documents, essays, posters, photo documentation, etc) to attract a heterogeneous group of students with diverse abilities and learning styles. Moreover, the teaching of UD should focus on an active engagement of students in different educational activities:

- Simulation exercises, so that students are more empathetic in taking the diversity of users of the built environment into consideration, and are better able to understand users' needs and the principles of UD;
- On-site survey and assessment of existing public facilities and spaces in accordance with the UD principles and legislative requirements;
- Discussions and collaboration with people/users with different disabilities or limitations.

Human-centred approach in architectural and design education can be fostered by using participatory design process with active involvement of students and users with different abilities [2]. According to Laznibatova, several studies have confirmed that the effectiveness of education depends on the form of presentation, content and mainly on student engagement in the activities [13].

## EMPATHETIC SIMULATION EXERCISES

Students should be guided to work with the various users/experts in participatory planning and to experience different users' situations in simulation exercises to foster new approaches in architectural and design education [2]. Paulsson [10] and Leurs et al [1] proposed the involvement of users with disabilities in the training of architects and designers, as well as in professional practice, and empathise with people with disabilities to develop a designer's attitude towards the diversity of people.

Creating empathy by students consists of three steps: 1) exploring people/users; 2) immersing themselves in people's lives; and 3) connecting them with people/users [14]. Therefore, within the UD subject there is familiarity with collaboration with associations of people with disabilities (the Union of Slovak Blind and Partially Sighted People, go-ok, etc), as well as with the Union of Retired People and the Union of Mother Centres (families with children). To cover heterogeneous groups of users, simulation exercises should consist of:

- Simulation of a blind person's movement with a white cane in public spaces and buildings;
- On-site surveys of public spaces and buildings from the position of person in a wheelchair;
- On-site surveys by using a pram with a small child or moving heavy luggage.

Simulation exercises can be executed in a real environment or in artificial one, such as an exhibition with different types of spaces (e.g. black box - completely dark interior to show visitors how a blind person feels the space). This interactive exhibition can help students/visitors to test accessibility, safety, perceptibility and usability of different spaces, information and products.



Figures 2, 3 and 4: Simulation exercises at the Faculty of Architecture SUT in Bratislava, Slovakia.

Simulation exercises are connected with the social model of disability that considers the disability not only as a characteristic of an individual, but also as a relationship between people and their environment/society, which can produce limitations for some groups of people. Therefore, simulation exercises are not focused on a disability, but on the environment. According to Froyen et al *...handicap situations are not necessarily medically-related but are often a consequence of poorly adjusted designs* [15].

The aim of simulation exercises is to help students of architecture to understand the functional limitations of the built environment better. Dujardin explains the importance of these exercises that *...by simulating a diversity of physical and mental disorders, the students develop the ability to appraise whether a designed environment tends to create or eliminate handicaps* [16]. Usually, students of architecture do not realise there are obstacles in the built environment, but sitting in a wheelchair they discover how difficult it is to manage going up a steep ramp or to open a door and enter a room. By participating in simulation exercises they learn how a good design can help to make the environment more accessible for all people, as stated in the EIDD Stockholm Declaration© 2004 *...Good design enables, bad design disables* [17].

Another positive effect of simulation exercises is that students' attention is shifted from visual perception of architecture to a more multi-sensory experience of all components of the environment, including hearing, touching and smelling. Multi-sensory perception and accessibility of the built environment, communication and information systems are often underestimated. This situation is criticised by Paulsson *...The beauty of architecture and design is almost exclusively elaborated from visual points of view. What is beauty for people with sensory limitations, for instance impaired vision or blindness? What aesthetic values are experienced and appreciated?* [9]. Herrens and Heylingen point out that in the process of creating an environment without taking into account the *user-friendliness, multi-sensoriality and functionality*, this can result in physically, sensorially or mentally inaccessible spaces [18].

## CONCLUSIONS

Human-centred design theories are focused not only on environmental accessibility, but are aimed at social inclusion in which the importance of active participation of everyone in society is emphasised as one of the factors of social sustainability [19]. All people should have an equal opportunity to participate in various activities in community life, so as not to be limited by any architectural or communication barriers. Meyerson and Lee stress the importance of user participation and social engagement in architectural and design education, as well as in practice [20]. According to Koncekova *...The issue of education critically affects the quality of life and value ranking of society orientation as well as social and economic development of the whole country* [21].

Vavik points out that the overall educational aim of teaching is to give the students tools and attitudes to *find inclusive, innovative, appealing solutions* to the user's needs, wishes and requirements [22]. Therefore, an active way of acquiring the knowledge concerning UD/DfA and using empathetic methods to sensitise and increase the awareness of ageing and disability as very effective and instructive methods of teaching is proposed:

- Lectures with provocative questions (activation of students);
- Discussions with various people (including people with a range of disabilities or impairments, parents with small children, etc);
- Simulation exercises, role-play activities (to emulate experience of users), observation and analyses (of environment, building, product or daily activities of people);

- Workshops (with participation of people with disabilities or some limitations);
- Competitions and awards (e.g. international student competition Schindler Award - Access for All).

An inclusive society accepts the diversity of people with different mobility and perception abilities/limitations and offers opportunities for participation in social life for everyone. Architects and designers play a very important role in creation of inclusive society, because they have strong impact on how people will feel themselves in the environment - included or excluded ones. Dovey emphasises that ...*Architecture is the engagement in designing and building a better future* [23].

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