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INCLUSIVE HIGHER EDUCATION

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"The highest result of education is tolerance."

Helen Keller: My Key of Life (1904, p. 32)

Hellen Keller was the first deaf-blind person to earn a bachelor of arts degree.

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Introduction

Zuzana Čerešňová

This publication summarizes research of the current state of accessibility to higher education for students with special needs in selected European countries and provides analyses of a new concept of human-centred (student-centred) approach in higher education. The publication is one of the research outputs of the UNIALL project: **Accessibility of Higher Education for Students with Special Needs**, co-funded by the European Union in frame of the Erasmus+ program, Key Action 2 – Strategic partnership in higher education. The significance of the UNIALL project, conducted in 2015-2018, is an accentuation of the social responsibility of higher education institutions to create an inclusive educational environment for diverse students. The aim of the UNIALL project is to implement human-centred approach in education and design process to enhance the access to higher education and to support the equity and inclusion of all people in higher education. The UNIALL project focuses on all aspects of accessibility to higher education. Project partners from European countries (Czech Republic, Italy and Slovakia) have a wide range of expertise in various fields

of human-centred design and inclusive education. The Centre of Design for All at the Faculty of Architecture, Slovak University of Technology (CEDA FA STU) in Bratislava coordinated the UNIALL project.

The publication consists of five chapters that define the research framework and methodology for the creation of inclusive higher education. This comprehensive methodology covers the monitoring, evaluation and implementation of the human-centred approach in the following fields:

- 1) Teaching and learning process by using student-centred pedagogy;
- 2) Support services, study materials, information and communication technologies (ICT) accessible to diverse students;
- 3) Designing of inclusive environment of higher education institutions and campuses.

The first chapter is focused on the framework of inclusive higher education, including the definition, development and fundamental legislative and policy documents, as well as the analyses of current state of access to higher education in the UNIALL partner countries. The second chapter provides analyses and comparisons of selected human-centred methods (e.g. Inclusive Design, Design for All, and Universal Design) for creation of an inclusive learning environment. The third chapter proposes various support services and assistive technologies that can facilitate higher education for students with special/specific needs. The fourth chapter defines the fundamental design criteria of inclusive university campuses, including outdoor spaces, sport, leisure time and recreational facilities, and student dormitories. The fifth chapter provides the proposals of basic requirements and design recommendations for the creation of inclusive school environment, including various learning spaces and circulation areas with common spaces for informal learning and social activities. Moreover, this chapter is focused on the wayfinding aspects by providing appropriate spatial solutions and multisensory elements. This chapter is based on the outputs of selected case studies of inclusive higher education, which were elaborated within the UNIALL project.

1

INCLUSIVE EDUCATION



1. Inclusive Education

Zuzana Čerešňová

Petr Peňáz

Giuseppe Di Bucchianico

Education and work are the main conditions of human independence and substantially contribute to the fulfilment of life. Therefore, it is essential to create an environment that does not restrict an access of persons with disabilities to education and work. To improve the inclusion of persons with disabilities into society, it is necessary to strengthen the inclusive education and to create favourable conditions for this type of education. The aim of inclusion is not to eliminate differences among people, but to enable every person with different abilities and capabilities to be accepted by the community on the basis of human rights (Ceresnova, 2013).

Inclusive education is the education that is **equally available and accessible** to every person, while respecting individual differences in physical and cognitive abilities, various social, cultural and religious backgrounds.

Inclusive education is based on solutions that can be flexibly adapted to diverse abilities of each individual, taking into account preferred learning and communication style or other specific needs of students in higher education (Ceresnova, Rollova, 2015).

Inclusive education, encompassing “universal accessibility to knowledge”, does not refer solely to the needs of people with special educational needs, but includes all learners, taking into consideration their differing needs to achieve **effective education for all** (Porfirio et al., 2016). Also, very important aspect is active engagement of all students in the process of decision making regarding their needs to accessibility. According to Erkilic (2012, p.198), inclusive education *“has to be conceived of as a strategy or system that embraces all students with their diverse abilities and disabilities and promotes a wide level of accessibility with equal opportunities and full, active participation”*. Inclusive education also plays an important role in the formation of human attitudes since childhood, creating prerequisites for developing empathetic thinking and accepting the diversity of human society.

Inclusive education is focused on the application of **human-centered approaches**, where the center becomes a person with individual abilities/disabilities that are respected. Attention is aimed at creating such an educational environment that is friendly, accessible, safe, and healthy for all participants in education, including teachers and other staff. Human-centered approaches in the educational and design processes are one of the tools to create the inclusive educational environment. In both areas, the focus is on the needs of diverse people, while respecting their individuality and various requirements. The physical environment should take into account the different spatial demands of people, including those who have disabilities or limited abilities. In the field of education and training, it is about respecting the individual qualities of each person in terms of educational as well as social needs.



1.1 Development of Inclusive Higher Education

The first steps to accessible higher education for people with disabilities were evident after the end of World War I, mainly in the United States. The US government passed the Vocational Rehabilitation Act of 1918, which help to create educational assistance for veterans with disabilities at colleges (Madaus, 2011). Also, after World War II, the huge numbers of veterans with disabilities were enrolled in colleges. Some higher education institutions provided them various services, for example: accessibility adaptations of buildings and provision of readers and note-takers, priority seating and course registration. At that time, the discrimination still existed, and some colleges were refusing the students with disabilities because of inaccessible campuses.

Until 1960s, the support was focused mainly on the students with **physical disabilities**. In 1963, the term **learning disability** was presented by Samuel Kirk, and later this term was designated by the US government as a category of disability in primary and secondary education (Madaus, 2011). An important step towards developing inclusive education was the US federal law on Education for All people, including children with disabilities, adopted in 1975. Later on, the Americans with Disabilities Act (ADA) was adopted in 1990 and amended in 2008, which has significantly contributed to the promotion of the rights of persons with disabilities (Nussbaumer, 2012).

In Europe, the progressive initiatives started in the United Kingdom in the late 1970s by "The Warnock Report" (1978), and by adopting the Education and Learning Act (1981). These documents defined integrated education and also a new concept of **Special Educational Needs** (SEN), which was widely spread throughout the world (Priestley et al., 2010). The Special Educational Needs and Disability Act (SENDA) was adopted in UK in 2001. This act requires that student with disabilities should not be subject to "less

favourable treatment” in educational institutions (including schools, colleges and universities) and that **“reasonable adjustments”** should be made to provide accessible education to all students (Priestley et al., 2010).

Later, the process moved from integration to inclusion, and the term *“special needs”* was replaced by the term **“individual needs”**. In framework of inclusive education, we are talking about a heterogeneous learning environment that is made up of diverse people with various preferred learning style, type of intelligence, abilities and requirements. Therefore, some countries (e. g. Nordic countries) rejected the categorization of persons with special needs, because it can cause the exclusion of certain group of people. However, it is necessary to know the specifics of each student, and therefore the categorization of the needs should rather help to find appropriate support, methods, forms and tools in the learning process.

The development of inclusive education on an international scale was evident mostly in the 1990s, particularly with the support of the United Nations Educational, Scientific and Cultural Organization (UNESCO). UNESCO’s activities aim to eliminate any discrimination in access to education. In 1990, the **Education for All movement** was launched, which adopted the World Declaration on Education for All in the same year (UNESCO, 2009). Since then, several international documents on inclusive education have been issued to support its implementation in the country’s education policies in order to create and ensure inclusive society development. Many activities were focused mainly on inclusive education at primary and secondary level, not tertiary education. Improvement started after the United Nations (UN) approved the **Convention on the Rights of Persons with Disabilities (CRPD)** in 2006, which is very important document focused on various aspects of social inclusion, covering also inclusive education system at all levels and lifelong learning.

In 2015, UN approved the **2030 Agenda for Sustainable Development**, which provides a unique opportunity to build more inclusive and equitable societies. According the Agenda, Sustainable Development Goal (SDG 4) calls for inclusive and equitable quality education and lifelong learning opportunities for all by 2030. As a part of this Agenda, UNESCO leads and coordinates the **Education 2030 Agenda**, which has the central mes-



sage *“every learner matters and matters equally”* (UNESCO, 2017, p. 12). The Education 2030 Framework for Action provides guidance for the implementation of this ambitious goal. This Agenda defines inclusive education as *“a process of strengthening the capacity of the education system to reach out to all learners”* (UNESCO, 2017, p. 7).

1.2 World Documents on Access to Education

With regard to ensuring the access to education on the equal basis for all people, several international documents have been adopted, including:

- **Convention against Discrimination in Education**, adopted by UNESCO in Paris in 1960, enshrines the right of every person to accessible and quality education. According to this Convention (Article 5) *“Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms.”*
- **World Declaration on Education for All**, adopted by UNESCO (the Education for All movement) in 1990, states that every person (children, young people and adults) should have appropriate and equitable conditions for education so that everyone can fully develop individual potential. This Declaration (Article 3: Universalizing Access and Promoting Equity) emphasizes universal access to education for all persons, respecting their individuality. The Declaration states (Article 5) that *“the basic learning needs of youth and adults are diverse and should be met through a variety of delivery systems.”*
- **Salamanca Statement and Framework for Action** – adopted by UNESCO at the World Conference on Special Needs Education in 1994. The Statement affirmed the international agreement on the principle of **“education for all”** that every student has unique characteristics, interests, abilities and learning needs and the education systems should be designed and educational programmes implemented to meet these diversities among students.

Very important document focused on social inclusion and equal rights is the **Convention on the Rights of Persons with Disabilities (CRPD)** approved by the United Nations (UN) in 2006 and ratified by many countries



(including Slovakia, Italy, and the Czech Republic). One of the CRPD aim is to stress the implementation of Universal Design into legislation. CRPD, Article 2 defines **Universal Design** as:

“...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.”

CRPD, Article 9 (Accessibility), specifies measures related to provision of **accessibility** to the physical environment, to transportation, to information and communication technologies and to other services for the public. These measures also relate to indoor and outdoor facilities, including also the higher education institutions.

The requirement for provision of **inclusive education** is stated in CRPD, Article 24 (Education): *“States Parties shall ensure an inclusive education system at all levels and lifelong learning...”*. Moreover, CRPD (Article 24, Item 2) specifies the requirements for provision of support and appropriate measures with the regard of individual needs of persons with disabilities, for example using the most suitable ways and means of communications for the particular person, e.g. in Braille, other alternative information-communication ways or sign language. CRPD (Article 24, Item 5) stipulates that *“States Parties shall ensure that persons with disabilities are able **to access general tertiary education**, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others.”*

According to the **UN document “Accessibility and Development”** (UN, 2015), accessibility is a global value and must be perceived as an investment, and not as a cost issue, so it requires a change of mind and policy. The objectives should not be just to equalize opportunities for people with disabilities, but to ensure equitable accessibility for all people by applying the principles of Universal Design that take into account the diversity of people and their different capabilities and limitations.

1.3 European Documents on Access to Higher Education

The fundamental European document on human rights is the **Charter of fundamental rights of the European Union** approved in 2000. This Charter states (Article 14 Right to education) that „*Everyone has the right to education and to have access to vocational and continuing training*“ (EU Charter, 2000).

The most important document is the **Convention on the Rights of Persons with Disabilities (CRPD)**, approved by the United Nations (UN) in 2006 and ratified by many European countries; therefore, they have to implement the provisions stated in CRPD into national legislation (see chapter 1.2).

In 2009, the **European Disability Forum (EDF)** issued the **Statement: Inclusive education** – Moving from words to deeds (EDF, 2009). This document is intended to contribute to the implementation of Article 24 (Education) of the CRPD into national legislations of European countries through concrete guidelines and actions.

One of the first EU document focusing on the importance of **accessibility** and implementation of Universal Design in education is the **Resolution (2001)1 on the introduction of the principles of Universal Design** into the curricula of all occupations working on the built environment. This resolution was adopted in 2001 and defines **Universal Design**:

“as a strategy which aims to make the design and composition of different environments, products, communication, information technology and services accessible and understandable to, as well as usable by, everyone, to the greatest extent in the most independent and natural manner possible, preferably without the need for adaptation or specialized solutions.”



In 2009, the EU issued the **Recommendation (2009)8 on achieving full participation through Universal Design**, which emphasizes the need to integrate the UD principles into national policies, legislation and practice to promote an active and independent way of life for all citizens, including people with disabilities. This Recommendation sets out incentives to introduce UD requirements as one of the conditions that must be fulfilled in public procurement. At the same time, a control over the consistent application of these principles in practice must be ensured.

In 2010, the European Union adopted a new strategy: **Europe 2020 – A strategy for smart, sustainable and inclusive growth**, which presents the three basic priorities of the EU. The strategy outlines the five headline targets to be achieved by 2020 in the areas of employment, research and development, energy, education and social inclusion. A target on educational attainment is to reduce the dropout rate and to increase the share of the population aged 30-34 having completed tertiary education from 31% to at least 40% in 2020.

Following the new Europe 2020 strategy, the European Commission endorsed the **European Disability Strategy 2010-2020: A Renewed Commitment to a Barrier-Free Europe** (ED Strategy) in 2010. ED Strategy aims to ensure a consistent inclusion of people with disabilities in society and to enable them to participate actively in different areas. The main areas defined in ED Strategy, where measures need to be taken, include: Accessibility, Employment and Education. ED strategy defines **Accessibility**:

“as meaning that people with disabilities have access, on an equal basis with others, to the physical environment, transportation, information and communications technologies and systems (ICT), and other facilities and services. ...Accessibility is a precondition for participation in society and in the economy.”

ED Strategy also emphasizes the importance of education and promotion of inclusive education for students with disabilities.

The European Disability Forum (**EDF**) **Alternative Report** on the implementation of the CRPD states that the above-mentioned ED Strategy has limited scope and insufficient financial resources for its implementa-

tion. According to the EDF Alternative Report, harmonization of European legislative and regulatory requirements in defining “*disability*” and “*reasonable accommodations*” is needed, as well as in the area of accessibility of environment, products, services and information and communication technologies. This harmonization of regulations is also important from the point of view of the mobility of students and academic staff (e.g. under the Erasmus + program), so as to create equal conditions within the EU member states.

In February 2017, the European Commission issued the **Report on the implementation of the ED Strategy**, stating that access to inclusive education is still difficult to reach for people with disabilities. This report states that about 29.5% of people with disabilities (aged 30-34) have successfully completed higher education, which is not sufficient in comparison with the other population (42.5% of university graduates). In the field of accessibility (3.1 Accessibility), the need for the adoption of the *European Accessibility Act* and the development of *European Standards for Accessible Environment* in accordance with Design for All / Universal Design principles is highlighted. The report defines steps how to achieve inclusive education at all levels (3.5 Education and training).

The other important European documents focused on **accessibility of higher education** are as follows:

- **Strategic framework for European cooperation in education and training (ET 2020)** approved by EU Council in 2009 with the aim to ensure all citizens their personal, social and professional fulfilment, social cohesion and active citizenship. One of the objectives of ET 2020 is to promote inclusive education and ensure that all learners, including those with special needs, complete their education. One of the priority areas of ET 2020 is to promote personalised learning, to ensure the early identification of special needs and to provide well-coordinated support services.

- **Council conclusions on the modernisation of higher education**, approved by EU Council in 2011, focuses on the systematic development of effective inclusive strategies to ensure access for under-represent groups, in particular through student-centred learning and by providing relevant support, guidance and counselling. This document also stresses the



importance to increase the social responsibility of higher education institutions to create inclusive educational environment.

• **Council conclusions on the social dimension of higher education**, approved by EU Council in 2013, invites the EU Member States to take the following measures:

- Secure more equitable access to, participation in and completion of higher education (HE), because there are many individuals who do not participate in HE due to insufficient system of support and guidance;
- Adopt national strategies and action plans which are aimed at increasing the access, participation and completion rates of disadvantaged groups in HE;
- Facilitate the development of proactive strategies and provision of counselling and support services for the students with special needs;
- 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.

Many European documents and projects focused on inclusive education are covered by the **European Agency for Special Needs and Inclusive Education**, which aim is to help member countries improve their educational policy and practice at all levels of education and lifelong learning.

1.4 Access to Higher Education in the Czech Republic

At the turn of the twentieth century and in the first decade of the twenty first century, Czech universities gradually reached the level of accessibility comparable to the European standards; paradoxically, the degree of implementation is at the moment higher than at Czech primary and secondary schools. In 2018, the Ministry of Education, Youth and Sports supports the services for the existing 1988 students who declare specific needs (0,81% of the total number of students) to the amount of 80 million CZK (approx. 3.2 million EUR).

Following the Report on the situation of persons with disabilities, prepared for the Government Board for People with Disabilities (Hruby, 1992), the accessibility process has occurred in several, originally independent, institutional levels:

1. The development of the departments for research and training in special education. Although, their objective was the preparation and training of teachers for inclusive education on the primary and secondary levels, they were also connected to the establishment of the first counselling centres;
2. Pedagogical and psychological counselling centres became a standard at universities which resulted in the foundation of the **Association of university guidance counsellors**;
3. The development of service centres which at first provided technological services (Czech Technical University in Prague, Masaryk University in Brno, etc.) resulted in the foundation of the **Association of the service providers for the students with specific needs at universities** (AP3SP) in 2013.

In the 1990s, Czech universities started using European funds for reno-



vation of their premises and removing the physical barriers in the campuses. In addition, the first support services focused their attention primarily on the accessibility for persons with visual impairments. A particular attention needs to be paid to the case of the Czech Technical University in Prague: Centre Tereza (today a part of the Centre Elsa) was founded as a result of a Tempus project in 1992. The centre provided the accessibility of electronic and physical documents also for blind students of other Prague universities (the separation of Czech and Slovak Federal Republic was the reason for the fact that the same project started a similar centre at Comenius University in Bratislava). At the end of the 1990s the Faculty of Informatics at Masaryk University joined this initiative which laid the foundations for the present Teiresias Centre.

In relation to the Decree No. 155/1998 Coll. on sign language (amended by the Decree No. 384/2008 Coll. to a law on the communication systems of deaf and deafblind persons), the attention of universities at the turn of the 20th and 21st centuries turned to students with a hearing loss. Noteworthy projects from this period include Drama Education for the Deaf at Janacek Academy of Music and Performing Arts in Brno and sign language linguistics at Charles University in Prague. Both of the universities started to provide internal interpreting services to meet the needs of their students. In 2003, the extent of the services at Masaryk University broadened and included also speech-to-text reporting.

The early years of the 21st century brought the turn of attention towards specific learning needs and other invisible difficulties of students. The requirement for more accurate diagnostics culminated in the years 2012-2015 in the development of a new diagnostic test battery – DysTest – standardized for higher education students. In the same time period the extensive investments of the European Social Fund (Education for Competitiveness Operational Programme) enabled the removal of the remaining physical barriers in university buildings and the foundation of service centres at a number of universities, which later formed the association AP3SP.

1.4.1 Czech National Documents on Accessibility of Education

1. Action Plan for Inclusive Education for 2016–2018

The action plan is based on the priorities contained in the **Strategy for Education Policy of the Czech Republic until 2020** and defined in more detail in the **Long-term Plan for Education and the Development of the Education System of the Czech Republic (2011–2015)**.

2. *The Strategic Plan for the Scholarly, Scientific, Research, Development, Innovation, Artistic and Other Creative Activities of Higher Education Institutions for 2016–2020*

This strategic plan is based on the proposal to amend Act No. 111/1998 Coll. on Higher Education Institutions and on Amendments and Supplements to some other Acts (the **Higher Education Act**), as proposed to the Government of the Czech Republic in November 2014. The Priority objective 2, “Diversity and accessibility”, describes situation the Plan strives for, i.e. accessibility of HE to a wide range of students. It envisages that HE institutions will offer a broad and diversified **access to good quality education**: *“The education offers of HE institutions will reflect the needs, interests and possibilities of the wide population of students, including the exceptionally talented. The diversified education will enable the achievement of apparent added value for knowledge, skills and competencies of all students, regardless of their social and economic background, age, nationality, previous educational or professional experience or special needs caused by health or other difficulties.”*

One of the measure to be adopted in order to achieve these objectives is the provision of **financial support for institutions** enabling access for specific groups of students: *“The higher costs incurred by HE institutions which support the study of students with specific needs and problems, including students with lower socioeconomic status, parents with children,*



members of language and ethnic minorities, students with specific educational needs and health difficulties and students enrolled in further education while employed ("specific groups of students") will be compensated in a contribution from the state budget. Financial support will be provided for projects focused on strengthening the capacities for their education, from building barrier-free access up to organising compensatory courses for applicants from socially excluded communities."

1.4.2 Overview of Czech Legislation Related to Accessibility of Higher Education

The key legislative regulations that determine the requirements of accessible higher education in the Czech Republic are the following:

- **Convention on the Rights of Persons with Disabilities**, which entered into force for the Czech Republic on 28. 10. 2009. Due to the fact that the Convention is an international agreement modifying rights and duties of persons (Art. 49, point a) of the Constitution of the Czech Republic), it belongs to the category of so-called presidential agreements and in compliance with Art. 10 of the Constitution of the Czech Republic its ratification requires the agreement of both Chambers of Parliament of the Czech Republic. The Convention was announced under No. 10/2010 Coll. of International Treaties, but the Czech Republic has not yet proceeded to the ratification of the Optional Protocol.

- **Act No. 198/2009 Coll. (Sec. 1–7) on equal treatment** and on legislative means of protection against discrimination and amendments to certain other acts (**Anti-Discrimination Law**). This is the key law, which defines the group of people with disabilities quite widely (according to Sec. 5

there is no doubt that, for example, persons with specific learning disorders and other invisible disabilities are from the point of view of Anti-Discrimination Law persons with disabilities) and grants them very excessive and sometimes not easily implementable rights – it introduces, for example, the possibility of positive discrimination (Sec. 7) and states that it is not discriminatory in the view of Anti-Discrimination.

- **Act No. 155/1998** Coll. (Sec. 7–10) on the **communication systems** of persons with hearing loss as amended by Act No. 384/2008 Coll. (hereinafter only Law on the communication systems). This law defines the use of communication systems of deaf and deafblind persons as their means of communication. For higher education of persons with hearing loss, Sections 7 and 8 (right to free education in special communication systems and to the study of the systems themselves) are relevant. The well-known weakness of the act is the fact that it does not deal with education of the service providers (e.g. sign language interpreters) and the service then cannot be provided due to the lack of providers.

- **Act No. 121/2000** Coll. on copyright or related rights, (**Copyright law**), Section 38 is the relevant provision granting the persons with disabilities a free licence of an electronic or other accessible format of published works which would enable them to access documents published in a format inaccessible to them.

- **Decree No. 64/2008** Coll. on the **form of publishing information** related to the exercise of public authority via **web sites** for persons with disabilities (**Regulation on accessibility**). This Decree (as well as the measures implementing Act No. 81/2006 Coll., which amends Act No. 365/2000 Coll. on information systems of public administration and amending certain other laws) defines the format which the published information should follow to ensure that persons with disabilities are in the necessary extent able to access the information connected with public administration activities published in a form which enables remote access. Thus, the Decree helps persons with disabilities to reach the same or very similar conditions of everyday life as other users. Nevertheless, the rules described in the Decree no longer comply in all respects with the current requirements on real Web accessibility. Thus, even websites which satisfy the Decree may be problematic



for persons with disabilities. Despite these drawbacks, the Decree can be used as a solid basis for a preparation of accessible websites.

- **Decree No. 398/2009** Coll. about general technical requirements securing **barrier-free use of buildings** (Regulation on barrier-free use of buildings). A key legal regulation determining technical requirements for buildings and their parts to secure their use by persons with motoric, visual, hearing and mental disabilities. The bottleneck of the Decree is the pragmatic provisions Sec. 2 and Sec. 14, which enable exemptions from normally mandatory provisions and which are in practice often applied particularly during the renovation of older buildings, including schools, instead of technical adjustment.

Act No. 111/1998 Coll. about universities and on change and amendments to other acts as amended by Act No. 137/2016 Coll. (**Higher Education Act**). The accessibility of higher education institutions is not specifically defined by the law. The only relevant resolutions include Sec. 1, which vaguely refers to the accessibility of university education in compliance with principles of democracy; Sec. 21, which mentions the obligation of schools to publish information of accessibility; and Sec. 78, which also vaguely mentions the obligations a school has in relation to the persons with disabilities when it applies for institutional accreditation.

- **Rules for providing support to public universities** by the Ministry of Education, Youth and Sports, Appendix No. 3 **Financing** increased costs connected with the education of students with special needs. This is a **methodological guide**, which is amended every year. For 2018, the valid amendment is R. No. MSMT-1251/2018-2, p. 27–57. There are two main sources of financing inclusive HE institutions, both enshrined in the same document. Firstly, counselling services and school infrastructures needed for providing counselling and other indispensable services, as arises mainly from the Convention and the Anti-Discrimination Act, Act on the Communication Systems of the Deaf, etc. (i.e. not the service itself), are funded by the same principle that applies to mainstream students. The ministry does not specify the amount of money the individual HE institutions should spend on the necessary service. Secondly, apart from counselling, the mechanisms of financing the increased costs incurred by HE institutions with

regard to incapacities are specified in the Appendix. The document contains a **typology of students with special needs**, which takes into account their disability, and a list of **standardized measures** designed to satisfy the needs of students with disabilities. The procedures result from an agreement between a student, professional service office of the institution of higher education and a representative of a faculty or a study programme based on the student's communicative possibilities. The main aim is to enable the student to successfully progress through the studies both formally and from the point of view of content and to reach the necessary goals of studies, work and/or research.

The above described classification results in the following scale:

- A. Student with visual impairment
 - A1. Screen user
 - A2. Braille/speech output user
- B. Student with hearing impairment
 - B1. Spoken language user
 - B2. Sign language user
- C. Student with mobility impairment
- D. Student with specific learning disorder
- E. Student with autism spectrum disorder
- F. Student with other difficulties

When a university applies for a contribution in connection with this methodological standard, it is obliged to prove that:



1. The institution of higher education is able to guarantee the provision of services satisfying special needs of students;
2. The institution of higher education is able to guarantee a minimum staffing to provide the study of students with special needs;
3. The institution of higher education proves that it has adopted organizational measures.

1.4.3 Summary of Current Status

The Czech legal framework is fragmented and scattered throughout individual documents with different degree of compatibility among them. With exceptions, the rights defined at the highest level are difficult to implement. Their implementation (the implementing decrees and other specific measures) is delayed in relation to more general regulations, and it often fails to satisfy the end users. Focusing purely on the Czech context (i.e. without taking into consideration the international context), the striving for internationalization, and student and staff mobility, the following measures would make a significant improvement:

1. specifying obligations of the HE institutions in terms of accessibility of education in the education law and authorizing the Ministry of Education to issue an implementing decree which would address the service needed in general;
2. changing the current methodological document (the Rules and its Appendices, amended on yearly basis) into a decree in order to turn the existing contribution into guaranteed means of funding;

3. improving professionalism and establishing standardised services in order to share them more easily among institutions and verify the quality;

4. defining more precisely the required competencies of the applicants and graduates on the accreditation level to make clearer whether the medical restrictions are compatible or not with the chosen field of study.

Regarding the European perspective, it is desirable to achieve similar goals at European level and enable **the same standards in the European area**. However, it is impossible in the current political and particularly academic conditions, to circumvent the ongoing process of seeking national solutions and promoting the implementation of additional conventions, whether the regional or national users identify themselves with them or not.



1.5 Access to Higher Education in Italy

There is generally always a close relationship between a national legislative framework on a specific area or theme and the direct effects on citizens' everyday life. In Italy, in relation to the issue of inclusive education this occurs only partially.

Italy, in fact, has an extremely rich and articulated legislative framework on the general subjects of disability and accessibility and on the more specific ones referring to university education and instruction, but very often there is a clear distance between what the laws provide and their applications.

1.5.1 Overview of Italian Legislation

Related to Accessibility of Higher Education

By limiting itself only to the reference legislation on accessibility of the educational system, as we have said, the framework is quite complex. The principal laws (followed by procedures for the updating and application), here given in chronological order to grasp the evolution of the legislative content, are as follows:

- **Law 5 February 1992, No. 104:** *“Legge-quadro per l’assistenza, l’integrazione sociale e i diritti delle persone handicappate”* (Framework Law for the Assistance, Social Integration and Rights of Handicapped Persons): it

guarantees the full respect of human dignity and rights of freedom and autonomy of persons with disabilities and for the first time promotes the full integration in the family, school, work and society in an extensive manner. This is based on the idea of preventing and removing conditions that impede human development, the achievement of maximum possible autonomy and the participation of disabled persons in collective life. The law provides for interventions pursuing the functional and social recovery of those affected by physical, psychic or sensory disabilities, ensuring services and amenities for preventing and overcoming the social marginalisation and exclusion of disabled persons.

- **Law 28 January 1999, No. 17:** *“Integrazione e modifica della Legge-quadro n. 104/1992”* (Integration and Modification of Framework Law No. 104/1992): it integrates Law 104 from 1992, introducing specific instructions relative to activities that Italian Universities must provide to favour the integration of students with disabilities during their university education. Each University is obliged to provide specific services, including technical and didactic aids, specialised tutoring services and individualised treatment to assist with passing exams. In particular, the law imposes that each University Rector delegate a member of its teaching staff with the responsibility for initiatives concerning integration within the University environment.

In particular, this law deserves a deepening in the treatment because it introduces the theme of **national coordination**, probably one of the elements that really contributed to change the collective approach to the issue of disability in Italian universities. Starting from 1999, the delegates of the Rectors to Disability have met in several occasions with the purpose to favour the exchange of experiences and best practices already in place in some Universities. That is until 2001, when the **CNUDD (National University Conference of Delegates for Disability)** was established, the main national coordination body for accessibility to university education of special needs students. Back in January 2002 the CRUI (Conference of the Rectors of Italian Universities) started a cooperation with the CNUDD, also aimed at preparing common guidelines for the Universities, recognizing it as national body of coordination and guidance of all the actions in favour of the students with disabilities. The first Guidelines were drafted, then reviewed in 2014, understood as basic indications to prepare, albeit in accordance

with the independence of each University, suitable and as much as possible homogeneous services, inspired by shared principles of admission, participation, independence and integration of students with disabilities, who should be granted equal opportunities of training, study and research, while promoting the awareness raising of the academic community on the topics of diversity and disability.

Over the years the CNUDD has become increasingly important as a reference body for the Ministry of education, university and research for all that concerns the enforcement of the provisions laid down in Law 17/1999 and, then, in Law 170/2010, the latter concerning the problems with **Specific Learning Disorders** (DSA). The Delegate in fact supervises the utilisation of the funds allocated under Law 17/1999 in his/her University and makes sure that the procedures established by ministerial directives are completed by the set deadlines (in particular the completion of the annual assessment form for the performance of interventions by the Universities). However, the result is that each University, despite applying the same directives and guidelines, can act independently, actually generating an unequal treatment for students with disabilities between the more virtuous Universities and the less virtuous ones.

- **Law 9 January 2004, No. 4:** *“Disposizioni per favorire l’accesso dei soggetti disabili agli strumenti informatici”* (Measures Favouring Access to Information Tools by Disabled Subjects): also known as the “Stanca” Law from the name of its promoter, this law recognises and protects every person’s right to access all sources of information and relative services, including those offered via information technologies and telecommunications. In particular, this law protects and guarantees the right to access information and telecommunications services offered by the public administration and services of public utility without discrimination, even to those who, suffering from a disability, require assisted technologies or particular configurations.

- **DPCM dated 30 April 2008:** *“Regole tecniche disciplinanti l’accessibilità a strumenti didattici e formativi a favore degli alunni disabili”* (Technical Regulations Governing Accessibility to Didactic and Educational Instruments in Favour of Students with Disabilities): it dictates the technical rules disciplining **accessibility to didactic and educational instruments** of Law No. 4 from 2004. In particular, it describes accessibility as the

capacity of information systems to provide services and useful information, without discrimination. It also clarifies the assistive technologies that permit persons with disabilities to overcome and reduce disadvantageous conditions in order to access the services provided by information systems.

- **Law 3 March 2009, No. 18:** *“Ratifica ed esecuzione della Convenzione delle Nazioni Unite sui diritti delle persone con disabilità, con protocollo opzionale, fatta a New York il 13 dicembre 2006 e istituzione dell’Osservatorio nazionale sulla condizione delle persone con disabilità”* (Ratification and Implementation of the UN **Convention on the Rights of Persons with Disabilities – CRPD** –, with an optional protocol, realised in New York on 13 December 2006 and Institution of the National Observatory on the Situation of Persons with Disabilities): with this law Italy committed to ensuring all acts, actions and policies necessary for a decisive change in the strategy for dealing with issues of disability. The CRPD, by focusing the efforts of the State on the rights of persons with disabilities, definitively abandons the vision of non-ability as an illness and works to bring about a cultural change: conveying interventions in favour of those with disabilities from a sector-specific and fragmentary approach toward a global approach to the construction of a fully inclusive society and an environment for all.

With regard to the implementation path of the CRPD, which basically began from this law, it is appropriate to make a reflection. In the period of time following the ratification of the CRPD by Italy, not much has been done so far to implement its contents: the practice and experience that have been witnessed that the cultural change underlying the new approach proposed by the CRPD is not consolidated nor homogeneous on the national territory. Disability continues to be a theme neglected by political agendas, while a medical and welfare approach continues to dominate, far from the principles of accessibility and comfortable and autonomous use of environments, products and services by everyone.

- **Law 8 October 2010, No. 170:** *“Nuove norme in materia di disturbi specifici di apprendimento in ambito scolastico”* (New Regulations Governing Specific Learning Disorders in the School Environment) and relative guidelines: it recognises dyslexia (difficulties in learning to read), dysgraphia (inability to write coherently) and dyscalculia (severe difficulty in



making arithmetical calculations) as **specific learning disorders**, successively known as “LD”. These disorders are manifested in the presence of adequate cognitive capacities, in the absence of neurological pathologies and sensory deficits, which may represent an important limitation to particular daily activities. For those with LD, the law pursues the aim of guaranteeing the right to an education.

- **Ministerial Decree 12 July 2011:** *“Diritto allo studio degli alunni e degli studenti con disturbi specifici dell’apprendimento”* (Educational Rights of Pupils and Students with Specific Learning Disorders) and relative guidelines: it issues **guidelines** for the right to an education of students with specific learning disorders (LD). In particular, the Decree opens up toward a further protection of the right to an education, focused specifically on students with LD, diverse from that foreseen in Law 104/1992. In fact, the type of intervention for exercising the right to an education foreseen in the Decree focuses on individual and personalised teachings, compensative instruments, dispensatory measures and adequate forms of verification and evaluation.

1.5.2 Summary of Current Status

If the Italian legislative framework therefore appears to be widely structured on the themes of accessibility to the educational system, this does not find the same efficiency or homogeneity on the implementation and above all the applicative level in Italian universities.

The current inefficiency is due to the physiological slowness with which the culture of inclusion is able to spread. On the other side, the **lack of homogeneity** is probably due to a set of factors, both of a legal nature, i.e. “legislative federation”, which determines a division of legislative competences between the State and the Regions (which has led to territorial inhomogeneity even between the different definitions of disability), both of the “administrative autonomy” of the Universities, which have teaching, scientific, organizational, financial and accounting independence. Although it is in accordance with national laws and under the coordination of collegiate bodies such as the CUN (National University Council), the CRU (Conference of the Rectors of Italian Universities) and, in particular, the CNUDD (National University Conference on Delegates to Disability).

So, trying to describe the **Italian university system**, the first aspect that emerges is that in Italy the Universities are numerous and **inhomogeneous**: there are 85 Universities, 66 of which are state-run and 19 of which are private. Moreover, there are further 11 online institutions (non-state), for a total of 96 Universities. They often differ widely, not only in size (from Mega Universities with more than 40,000 students, to Small Universities with less than 10,000 students), but also in the quality and quantity of services offered, though all referred to the current national legislative framework. That's why also services favouring the inclusion of students with special needs are very different from one to another.

Starting from this framework, recently Censis, a famous Italian socio-economic research institute, developed a special national investigation on inclusion of university students with special needs (Censis, 2016). The data gathered are particularly significant for their vastness and methodological

rigour. In particular, the coverage of 45 universities with respect to the total number of students enrolled in a university program for the academic year 2014-15 (the year examined by the study) is equivalent to 74.2%: hence while a reading of the data provides only a partial vision of the phenomenon in absolute terms, it is however significant in relation to present trends and the incidence of the phenomenon in Italy.

The report from Censis (2016) points out how over the past decade the **number of students with disabilities** attending Italian universities has grown consistently: during the academic year 2014-15 alone the number of enrolled students with LD amply exceeded the threshold of 12,000 individuals (12,826), with an increase of 11.2% over the course of three years. This process may be a result of:

- processes of reform dealing with the structure of secondary educational programmes and the consequent effects on the continuation of studies by the two typologies of students mentioned above;
- recent legislation supporting the inclusion and full exercising of the rights of citizenship by students with disabilities and LD.

If current Italian legislation is a symptom of a **diverse cultural approach** to the issue, it has also promoted further changes in social attitudes, increasing the awareness and maturity of diverse stakeholders, first and foremost the families of students with disabilities and LD. This has triggered a sort of virtuous cycle supporting the inclusive potential of the Italian university system.

Moreover, the enrolment of students with disabilities is constantly on the rise. This trend, contrary to general enrolment and registration numbers, witness to a contraction during the three-year period 2012-14 of more than 4 percentage points (-4.4%), led on average in 2014 to a total of 8.6 students with disabilities for every 1,000 students enrolled (considering a "disability level" greater than 66%, in a disability scale from 0 to 100%).

The disaggregation of the average regional value reveals how the incidence of students with disabilities is significantly higher than the average value in universities in the central part of the country, aligned with the analogous higher number of these students in the secondary school system.

Relative to the size of the Universities, in terms of enrolment and registration figures, there is a greater incidence of students with disabilities in smaller schools whose total number of students does not exceed 10,000.

A further aspect considered by the survey from Censis was the presence of individuals with disabilities among those who go on to earn their diploma: in this case the so-called mega-universities present a value of almost 6 students per every one thousand (5.9 per 1,000), higher than the corresponding national average of 5.

It would thus appear that the smaller universities are more attractive to students with disabilities, also because they are logistically “easier” and “closer”, being greater in number and distributed across the country. That said, they are not distinguished for their performance in supporting a successful education.

A further reflection must be made for specific learning disorders, considering that solely among the 45 universities examined, the number of registered students with LD rose from 1,303 individuals during the academic year 2012-13 to 2,619 in 2014-15, marking an increase of +101%. The university system must thus face up to the considerable speed at which Italy is recognising and certifying this type of disorder, which is acquiring growing visibility and numerical consistency, despite continuing to be inferior (1.6 for every 1,000 students registered in 2014-15) to the incidence of students with disabilities.

While this emersion and growth of the presence of students with disabilities and LD is destined to settle with time, in the coming years it will nonetheless have a significant impact on the university system that, other than optimising its services of welcoming, orientation and specialised tutoring, will be increasingly asked to extend further connections with the secondary school system, more than it is doing at present, with the objective of reinforcing its capacity for inclusion and containing the risk of the dissipation of potential human capital represented by the aforementioned typologies of students.



1.6 Access to Higher Education in Slovakia

The situation in Slovakia in terms of inclusion of people with disabilities in higher education is still not very satisfactory in comparison with other European countries. There are 20 public universities, 3 state universities and 12 private universities in Slovakia. In 2017, the overall number of students at Slovak universities was approximately 130 000. Currently, there are relatively low numbers of students with specific needs¹ at Slovak universities. However, their number is increasing every year. According to the data in Central register of students (as of November 2017), there are **1011 students with specific needs**, which accounts for **0.78%** out of the total number of students studying at public universities. On the other hand, several surveys reflect vested interest of secondary school students with specific needs in studying at universities. This discrepancy is caused mainly due to the insufficient physical and information accessibility of academic environment, and also because of the lack of support centres for students with specific needs.

The issue of accessibility to higher education for students with specific needs in Slovakia began to develop significantly in the 1990s. Some universities systematically supported students with disabilities at that time. The first **specialized centre focusing on the support for students** with visual impairments was established at Comenius University in Bratislava in 1993. Later, the Access Centre was established at the Technical University in Kosice in 2000. Both of the above mentioned centres provide consultancy activities and support services for students with specific needs. These centres also work as the coordination and education centres of nationwide importance. Afterwards, the support centres for students with specific needs were established in several other public universities (8 of them out of totally 20 public universities). In 2008, the research and training Centre of Design for

¹ Slovak legislation (e.g. Higher Education Act) uses the term “*specific needs*” instead of “*special needs*”.

All (CEDA) was established at the Faculty of Architecture, Slovak University of Technology (FA STU) in Bratislava. CEDA members have been dealing with the issues of universally accessible environment and have been organising education programs on inclusive/universal design since 1997.

The major development of accessible higher education in Slovakia started in 2013, which was supported by the Ministry of Education, Science, Research and Sport (Ministry). In 2013, the Ministry established the **Committee to Support of Students with Specific Needs**. Its main role is to deliver systematic solutions for studies of students with specific needs. A new legislation amendment was passed, barrier identification processes were supported and accessibility adaptations with the help of state subsidies began. The overall situation improved after the introduction of the **support service subsidy** for universities according to the number of students with specific needs.

The Ministry elaborated the **Report on the State of Education in Slovakia and on Systematic Steps for its Further Development** (Report) of 2013 that also describes the accessibility situation. In the Report objective, there is a need to create *“school system accessible to everyone”*. One of the fundamental principles is a need to guarantee inclusive educational environment. As the main insufficiency, the Report identifies barriers preventing people with disabilities or social disadvantages from access to education. According to the Report, serious barriers are the **architectural, information and personal barriers**. The role of universities is to actively identify the barriers and take measures for their removal. The next issue in the Report is **lack of the support services** and their underrated personal and financial coverage, as well as lack of study resources in suitable formats for students with visual impairments.



1.6.1 Slovak National Documents on Accessibility of Education

The first comprehensive document on improvement of social inclusion of persons with disabilities was passed by the Government of the Slovak Republic in 2001 as: National Program for Development of Life Conditions of Persons with Disabilities in All Areas of Life.

The new **National Program for the Development of Life Conditions of Persons with Disabilities for the years 2014-2020** (National Program) was created in accordance with UN Convention on the Rights of Persons with Disabilities (CRPD), which was ratified by the Slovak Republic in 2010. The National Program defines roles and measures leading to implementation of particular requirements stipulated in CRPD. One of the fundamental requirements is provision of accessibility to the built environment, transport, information, services and products and to education. The National Program defines the following roles related to accessibility to higher education:

- *To pass National Action Plan for Creation of Accessible Academic Environment and Suitable Conditions for Students with Specific Needs;*
- To systematically support networking and education of coordinators for students with specific needs;
- To propose and introduce a system for evaluation of a number of students recognized as persons with specific needs in Central Student Register.

Accessibility to higher education is emphasized as one of the objectives in the **Program Declaration of the Government of the Slovak Republic for 2016-2020:**

“The strategic objective of the Government is an effective higher education system as the stable part of the EU higher education system and

of the EU research area which provide higher education on a high level of international standards, accessible for all citizens who demonstrate preconditions for its successful completion". (Program Declaration, p. 35)

The Government is also committed to taking measures for support of students with specific needs, especially committed to foster of establishment and development of the support centres for these students.

In November 2016, the Government of the Slovak Republic approved the **Long-term Plan for Education, Research, Development and Other Creative Activities for the Higher Education for 2016 – 2021**, which provides for one of the basic priorities for the coming years to ensure accessible higher education, underlining the need to promote active policies to remove barriers to access to higher education. It is very important to create conditions for students according to their needs (flexible organization of study, availability of support services, etc.), emphasizing the need for universal accessibility of educational environment.

1.6.2 Overview of Slovak Legislation

Related to Accessibility of Higher Education

The fundamental right to education is enshrined in the **Constitution of the Slovak Republic** No. 460/1992 Coll. Code. The equality principle and discrimination prohibition is stipulated in Article 12. The right to education is defined in Article 42: *"Citizens shall have the right to free education at primary and secondary education level, and depending on the abilities of the individual and the potential of the society also at higher education level"*.

The **Antidiscrimination Act** (No. 365/2004 Coll.) prohibits any kind

of discrimination on the grounds of disability principle and stipulates an obligation to maintenance of equal treatment in education.

Following the ratification of **UN Convention on the Rights of Persons with Disabilities** (CRPD) in 2010, the Slovak Republic is legislatively obliged to execute inclusive education on all levels of education and accessibility to the built environment, products, services, information and communication.

Accessibility to higher education is stipulated in Act No. 131/2002 Coll. on Higher Education (**Higher Education Act**). In compliance with the Act, as of 1 January 2013, universities in Slovakia (Sec.100, Item 1) are obliged to create generally **accessible academic environment** also by creating suitable conditions for students with specific needs without decreasing requirements for their education output. Higher Education Act (Sec.100, Item 2) defines **students with specific needs**² as students who have:

- a) Sensory, physical and multiple disability/impairments;
- b) Chronic illness,
- c) Health impairment,
- d) Mental disorder,
- e) Autism spectrum disorder or other pervasive developmental disorders;
- f) Specific learning disorder.

Students with specific needs are entitled to **support services** according to Higher Education Act (Sec. 100, Item 4), e.g. to specific educational methods and individual educational procedures. In order to provide adequate support for students with specific needs, there are coordinators or support centers (Sec. 100, Item 7) at universities.

² Note: in 2012, in Higher Education Act, the term "student with disability" was replaced by the term "student with specific needs".

The details on **minimum requirements for a student with specific needs** are stipulated by Decree No. 458/2012 Coll. of Ministry of Education, Science, Research and Sport, effective as of 1 September 2013. The Decree specifies minimum spatial, material and other requirements related to education of students with specific needs. The Decree does not provide a comprehensive overview on requirements of particular groups (according to the types of disability) of students with specific needs.

Legislation Related to the Accessibility of Information and Study Resources

Decree No. 458/2012 Coll. on minimum requirements for student with specific needs is a significant document, which stipulates also requirements for **access to information and study resources** for students with specific needs (especially for students with sensory impairments).

The annex to the Decree No. 458/2012 Coll. defines minimum requirements in details, for example for the student with sensory impairment:

- Access to study-related information (with use of assistance technologies);
- Making accessible work possible in academic information system;
- Access to information and resources of academic library (with use of assistance technologies);
- Provision of support for access to basic study resources, lecture documents and exercise assignments;
- Provision of support for access to study resources in accessible form.



Making information systems accessible to persons with specific needs is stipulated in **Act No. 275/2006 Coll. on Information Systems of Public Administration**. Based on the Act, **Ordinance No. 55/2014 on Standards** for Information Systems of Public Administration was issued by the Ministry of Finance of the Slovak Republic. The Ordinance specifies the standards on accessibility of websites in detail in Annex 1.

Act No. 211/2000 Coll. on Free Access to Information, empowers persons with sensory impairments to request public institutions to provide them information in accessible formats. Communicating with each other and communicating with hearing persons is guaranteed to the deaf people through the sign language interpreter also by Act No. 149/1995 Coll. on the Sign Language for Deaf People and Act No. 448/2008 Coll. on Social Services.

Legislation Related to the Accessibility of the Environment

The basic requirements for accessible built environment were incorporated into modifications and amendments of **Act No. 50/1976 Coll. on Land-use Planning and Building Order (Building Act)**. The first decree concerning the accessibility to the built environment was passed in 1994 (Decree No. 192/1994 Coll.), which took into account especially requirements of persons with physical disabilities.

The current legislation related to accessible built environment is stipulated by the **Decree No. 532/2002 Coll.**, which specifies details on technical requirements for the construction and on general technical **requirements for buildings used by persons with limited mobility and persons with limited orientation ability**. In contrast to the previous Decree, the current Decree partially takes into account requirements for persons with limited ability of spatial orientation (e.g. persons with sensory impairments). However, the Decree does not specify requirements on accessible solutions for school buildings; it only focuses on general requirements for accessibil-

ity of public buildings, e.g. accessible entrance solutions, sanitary facilities, circulation premises (lift, stairs, and ramp) and basic requirements on the solution of assembly premises.

The Slovak building legislation has not yet welcomed the issue of universal accessibility and has not created a complex document, which would comprehensively specify requirements for particular typological kinds of buildings, taking into account a wide spectrum of users. The Slovak building legislation is currently going through the process of legislative amendments. Therefore, it is essential to urge fulfilment of commitments emergent from CRPD and to implement the principles of Universal Design into legislation. The Slovak Republic has signed Optional Protocol to CRPD whose aim is to monitor compliance with provisions in CRPD in particular contractual countries. Due to these tools, life and social conditions of persons with disabilities are meant to improve significantly.

1.6.3 Summary of Current Status

The first phase of the UNIALL project was focused on the monitoring and evaluation of accessibility to higher education. In Slovakia, the team CEDA FA STU conducted on-site surveys of selected 14 public universities (including 43 school buildings and 10 student dormitories) in 2015 – 2016. The students of the Faculty of Architecture STU were involved in **monitoring and evaluation of the physical accessibility** of higher education institutions.

The research results pointed out the unsatisfactory condition of accessibility to higher education in Slovakia because none of the evaluated school buildings and none of the student dormitories meet the overall ac-

cessibility criteria of the physical environment. The worst situation was documented in the accessibility of student dormitories, of which 90% of the total number of evaluated buildings did not meet the accessibility requirements, notably there were no accessible rooms and bathrooms for person in a wheelchair. The situation with accessibility of school buildings in comparison with student dormitories is better; the unsatisfactory conditions were evident in the case of 46.51 % buildings of the total number of evaluated objects (Ceresnova et al., 2017).

Within the UNIALL project, the Support Centre at Comenius University realised the **accessibility testing of information and communication systems** of selected Slovak universities (websites, online library catalogues and academic information systems) in 2016. They tested 47 websites, including 43 school websites, and 4 on-line catalogues of university libraries. Moreover, they tested 5 types of academic information systems used at Slovak universities.

The main reasons/barriers that currently prevent access of students with specific needs to Slovak higher education include (Ceresnova et al., 2017):

- Existence of physical/architectural barriers at many universities (46.51 % of school buildings and 90% of student residences were not universally accessible in Slovakia);
- Insufficient accessibility of information and communication systems (94% of Slovak academic websites and information systems had a very low accessibility level);
- Lack of the support centres for students with special needs (60% of Slovak higher education institutions had no support centre);
- Absence of strategies, development programs and action plans related to the improvement of the conditions for the study of students with special needs;
- Lack of well-trained staff – university teachers and the coordinators for students with special needs;

- Lack of inclusive pedagogical strategies based on the student-centred approach
- Attitudinal barriers of the academic staff not able to accept students with disabilities in some cases.



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2

INCLUSIVE METHODS

2. Inclusive Methods

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Some recent demographic and social phenomena require the need to develop new design approaches that foster social inclusion and enhance human diversity. A synthetic definition of these phenomena contextualizes the description of the most widespread design approaches for inclusion, highlighting their common points and differences.

Inclusion: Why?

The social theme of inclusion in recent years has assumed increasing value. This is also due to social and demographic phenomena that appear to be emerging, sometimes even with dramatic implications, precisely because of their size and speed of development.

We refer, for example, to an **aging population**. This is a phenomenon that manifests itself above all, but not only, in Western societies. Some data in this regard are even alarming. The world population of 9 billion people expected for 2050 (UN, 2009), in fact, will consist of about 2 billion from “over 65” (Lee, 2003). In particular, it is estimated that in Europe and in China in 2050 the “over 65” will reach 30% of the population, while in Japan the “over 80” will represent even 40% of the population (Lee, 2003). This phenomenon, internationally known simply as “aging” (Magnus, 2008), is fundamentally due to two factors: on the one hand, the increase in life expectancy, which will increase from the current 65 years, as a world average, to 74 years in 2050 (In Italy, first country in Europe, it is already 82 years); on the other, the parallel decrease in the average global fertility rate, which will fall from the current 2.7% to 2% in 2050 (Lee, 2003).

The drastic reduction of people of working age that will derive from this demographic dynamic will entail the need to revise the traditional welfare systems widely to support a growing “old” society, in search of new solutions to favour the temporal extension of active living conditions. The second consequence of aging will be the increase in pathologies, even partially disabling, linked precisely to the aging of the population (chronic degenerative diseases and mental illnesses, reduction of sensory capacities, reduced mobility, etc.). In fact, most observers³ expect a society marked by disability for the coming decades: a great increase in non-self-sufficiency, with all the economic, social security, welfare and anthropological consequences that this entails.

A second **demographic and social phenomenon** that is being witnessed on a global scale is the migration from the poorest to the richest areas of the world. The greatest effects are felt especially in strongly urbanized areas, where the concentration of individuals favours the formation of multicultural and multi-ethnic social groups. In this context, diversity of religions and life styles, as well as ethnic and linguistic ones are emerging, and that often are also a source of strong social tensions, especially if they occur in times of economic crisis. Moreover, foreign immigrants in the rich-

³ “The demand for assistance is destined to increase exponentially in the coming decades with significant impacts not only on welfare systems but also directly on citizens” (Italian Ministry of Labor, 2010).

est countries will also probably be the main agents of the new urban development dynamics that in the coming decades will be able to upset even the micro and macro economic and social structures of the entire planet.

Finally, a third but important demographic phenomenon now widely known is the depopulation and abandonment of rural and mountain areas and, more generally, of areas without those infrastructural systems that technological development associated with well-being would require. In fact, more and more new generations are struggling to find incentives and interests in these territories for real life and professional investments, and therefore there is a strong tendency towards professional and often also housing migration, as soon as they drop out of school. This takes away vital resources to the populations of specific territories, depriving them of the capacity for endogenous economic and social development, and therefore in turn promoting, in a dangerous chain effect, also the slow decline of their already fragile and limited local infrastructural systems.

Aging, disability, multi-ethnicity and multiculturalism, migration and abandonment of territories without infrastructure: these are therefore some of the most relevant phenomena that characterize contemporary society and which will presumably increase in intensity in the coming decades, especially in countries with more mature economies.

Moreover, the economic crisis of recent years has in many cases exacerbated the effects of the underway socio-demographic phenomena, highlighting tensions and conflicts between groups, cultures and territories.

The sociologist Bauman (2000, 2005), on the other hand, has for some time proposed a different (and in some respects positive) interpretation of contemporary society, characterized by what he calls "social liquidity"⁴, which more and more probably will be expressed as multiculturalism, multi-ethnicity, multi-ageing, multidimensionality, multitasking, in which social inclusion will be a necessity, if not a new opportunity, to develop new visions, new strategies, new tools and approaches aiming at health and wellbeing.

⁴ See, from Zygmunt Bauman: *Liquid Modernity*, 2000; *Liquid Life*, 2005.

Therefore, it can be assumed that the issue of inclusion has primarily **political implications**: President Obama already a few years ago, during his mandate, proposed the fight against social inequalities as a necessary step also to relaunch the economy; the European Union, in the Horizon 2020 program, has assigned a central role to the strategies aiming at strengthening the equality and participation of all people in society, as well as the accessibility to environments, products, services and opportunities of everyday life.

Design for Inclusion: How?

In this complex and sometimes contradictory framework are placed the **different design approaches** related to and aimed at social inclusion. Actually, the expression "Design for Inclusion" was used for the first time just in 2016, for the "First International Conference on Design for Inclusion"⁵, when they were looking for an expression to collect all these different approaches (Di Bucchianico and Kercher, 2016). Being inspired from the difficulties and therefore the needs expressed by people with disabilities (which in large part still today are satisfied by extremely specialized design areas referred to aids, prostheses and adapters for specific disabilities), they have developed with their own identities, starting from early 80s of the last century, to enhance human diversity, considering it a resource rather than a constraint, useful to obtain solutions that are richer, innovative and therefore more attractive.

Actually, the interest in this issue began as early as the 1950s, with a new sensitivity towards disability. In Europe, Japan and the United States, attention has been paid to the "barrier free" design, i.e. the removal of those barriers that represent real obstacles to the autonomous use of the built environment for people with physical disabilities, who finally started to exit from institutional structures (mainly marginalized) to integrate into wider social contexts. So, in the 1970s, parts of Europe and the United States began to overcome the idea of developing "special and disabled" design solutions,

⁵ AHFE 2016 First International Conference on Design for Inclusion, July 27-31, 2016, Orlando, FL, USA.

focusing instead on integrated and standardized solutions. In fact, in those same years, an American architect, Michael Bednar, introduced the idea that the functional capabilities of each can be improved when the environmental barriers are removed, suggesting that it is necessary to introduce a new, broader and **“universal” concept of accessibility** (Bednar, 1977).

So, if the **Universal Design and Human Centred Design** were the first approaches to be developed with respect to the expanded accessibility theorized by the 1970s, a subsequent extension of those same principles allowed the subsequent development of new design approaches, such as the Inclusive Design and Design for All. They, on the whole, define a rather articulated system of principles, methods and tools, but aimed at a common goal: the wellbeing and dignity of individuals, communities and peoples, considered a strategic and indispensable topic for the sustainable development of contemporary societies, in which everyone should have the same possibilities for using environments, products and services.

These are approaches that have evidently had different evolutionary paths, and therefore have numerous points in common (especially in the objectives and goals) but also different and distinctive features and characteristics, not only for their geographic location, but above all for the relationship that through them are established between the designer, the development of the design process, the project stakeholders and, obviously, its final recipients.

2.1 Human-Centred Design

The Human Centred Design (HCD) can actually be considered as the most important goal achieved by the scientific community of ergonomics for what concerns the design of environments, products and systems. This is primarily a concept, but it has been ratified in its meanings and application protocols also by a series of ISO standards, which are the result of an evolution that has been historicized in almost thirty years.

Since the end of the 1980s, in fact, thanks to the scientific community of ergonomics, a true methodology has been developed, defined precisely as **User Centred Design** (UCD). It was useful to design taking into account the point of view and the needs of product users. The UCD proposed a structured process based on the use of different tools for analysis or observation, planning and subsequent verification of the results achieved.

The process, initially defined and described by various research groups in the context of international ergonomics conferences, has been standardized successively through some standards. Among them is the famous ISO13407 (Human-centered design processes for interactive systems), defined in 1999, and initially referred mainly to the IT development of digital products, but later also extended to the design of industrial products. Basically, the ISO 13407 articulated the **UCD process in four main activities**:

1. Understand and specify the context of use;
2. Specify the user and organisational requirements;
3. Produce designs and prototypes;
4. Carry out user-based assessment.

The importance given by the standard to two phases of analysis before the development of design solutions is evident. The context of use is in fact considered necessary to identify who will use the product, in what way and under what conditions; the product requirements, on the other



hand, focus on both the tasks that users will have to complete and, on any business, and marketing objectives. Only at this point the traditional design activity begins, through a series of steps ranging from early brainstorming and sketches on paper to models and prototypes.

But the really innovative concept introduced in the UCD design process is the verification of the product, in particular with real users, through usability tests, which can be articulated in rather complex activities that use **different techniques and tools**, such as interviews, questionnaires, inspections, cognitive simulations and observations in the field or in the laboratory, often requiring the involvement of special skills for each of them.

It is only recently, with the standard ISO 9241-210: 2010, entitled "Ergonomics of human-system interaction - Part 210: Human-centered design for interactive systems" (published in 2010, but reviewed and confirmed only in 2015) that the transition from the "User" to the "Human" Centered Design is carried out.

The new standard defines the **Human Centered Design** as *"... an approach to interactive systems development that aims to make systems usable and useful by focusing on the users, their needs and requirements, and by applying human factors/ergonomics, and usability knowledge and techniques. This approach enhances effectiveness and efficiency; improves human well-being, user satisfaction, accessibility and sustainability; and counteracts possible adverse effects of use on human health, safety and performance."*

In particular, from the first notes of ISO 9241 it is specified that: "the term 'human-centred design' is used rather than 'user-centred design' in order to emphasize that this part of ISO 9241 also addresses impacts on a number of stakeholders, not just those typically considered as users. However, in practice, these terms are often used synonymously."

Apparently, therefore, the new standard (ISO 9241) is officially considered only as a technical revision of the previous one (ISO 13407). Actually it is not like that. If, on the one hand, it takes up the structure, making mainly changes in terminology, sometimes seemingly derisory and formal, on the other hand such changes are the result of a substantial cultural change: from

the terminological point of view, in fact, moving the focus **from the user to the person**, it means considering the recipient not only as a user, but as a carrier of needs, desires, emotions that go beyond the most functional aspects.

2.2 Universal Design

Both the UCD approach and the next HCD, in their laws declinations are not explicitly and programmatically focused on inclusion issues. On the contrary, by their nature, they tend to refer to the “standard” user/individual, unknowingly putting partially aside the value and the opportunities that can derive from an appreciation of human diversity.

In the same years, however, a basis of awareness began to be formed on the need to deal with this concept, which only in recent years has assumed a central, strategic and transversal role in all project practices.

The first steps in this direction have taken place with the **Universal Design** (UD): that was coined in 1985 by architect Ronald L. Mace, coordinator of a research centre at the North Carolina State University that took the name of “Center for Universal Design”. His research group consisted of architects, designers, engineers and researchers in the field of environmental design⁶. With this term, Mace intended to summarize the concept of ideal design of all artificial products and environments, such that they are enjoyable and usable, as far as possible by everyone, regardless of their age, ability and/or social condition. In fact, he defined Universal Design as “... *the design of products and environments that can be used by everyone, in the greatest possible extension, without the need for adaptations or special aids.*” Mace also pointed out that Universal Design “... *is not a new science, a style, and it is not unique. It requires only knowledge of the needs and the market and a common sense approach because we all design and produce goods that can be used by as many people as possible.*” (IHCD, 2016)

Actually, Universal Design emerged from the slightly earlier concepts promoted by the US “barrier-free” movement mentioned before, referring to the accessibility of living environments and new technologies that in those years began to spread to all levels of daily life.

⁶ Among the main collaborators and colleagues of Ronald Mace are mentioned: Bettye Rose Connell, Mike Jones, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story and Gregg Vanderheiden.

The initial methodological approach, thanks to a loan from the US Department of Education's National Institute on Disability and Rehabilitation Research, assumes in 1997 its own structuring, with the definition of **Seven principles of Universal Design** (NCSU, 1997) developed within the research centre at the North Carolina State University, coordinated by Mace. Each of them can be associated with a group of design guidelines:

- **Principle 1 – Equitable Use:** the design is useful and marketable to people with diverse abilities:
 - a. Allows the same use to all users: identical when possible, otherwise equivalent;
 - b. Avoids exclusion or penalization of any user;
 - c. The conditions of privacy, security and safety should be equivalent for all users;
 - d. Makes the project attractive to all users.
- **Principle 2 – Flexibility in Use:** the design accommodates a wide range of individual preferences and abilities:
 - a. Allows the choice of the method of use;
 - b. Allows access and use with left hand and right hand;
 - c. Facilitates accuracy and precision of the user;
 - d. Provides adaptability to the characteristics of the user.
- **Principle 3 – Simple and Intuitive Use:** use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level:
 - a. Eliminates unnecessary complexities;
 - b. Corresponds to the expectations and intuition of the user;
 - c. Provides a great variety of reading and comprehension alternatives;



- d. Structures the information consistently with their importance;
- e. Provides suggestions and signals during and after user actions.

- **Principle 4 – Perceptible Information:** the design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities:

- a. Uses different methods (visual, verbal, tactile) for a redundant presentation of the essential information;
- b. Provides adequate differentiation between essential and secondary information;
- c. Maximizes the readability of essential information;
- d. Differentiates the elements so that they can be described (facilitating the issuance of instructions and directives);
- e. Provides compatibility with a variety of techniques and devices used by people with sensory limitations.

- **Principle 5 – Tolerance for Error:** the design minimizes hazards and the adverse consequences of accidental or unintended actions:

- a. Places the elements to minimize risks and errors: the most used elements are more accessible; the most risky elements are eliminated, isolated or protected;
- b. Provides warnings on risks and errors;
- c. Provides elements of protection;
- d. Discourages unintentional actions or requiring alertness.

- **Principle 6 – Low Physical Effort:** the design can be used efficiently and comfortably and with a minimum of fatigue:

- a. Allows to maintain a neutral position of the body;
- b. Requires a reasonable activation effort;

- c. Minimizes repetitive actions;
- d. Minimizes the physical effort supported.

● **Principle 7 – Size and Space for Approach and Use:** appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility:

- a. Provides a clear view of the important elements for any seated or standing user;
- b. Makes comfortable achieving all the components for any user sitting or standing;
- c. Allows variations in the size of the hands and the handle;
- d. Provides adequate space for the use of assistive devices or personal assistance.

Starting from the North Carolina State University, Universal Design has rapidly spread, especially in the Pacific Rim Countries⁷, both for the strong message that it brought with itself, and for the apparent simplicity of application, through the limited and clear series of design "principles", applicable in the widest number of design areas and verifiable through a checklist.

Universal Design therefore expresses a fundamental objective of good theoretical and design practice: responding to the needs of the greatest number of possible users. In fact, this design methodology does not express a set of dimensional requirements, conforming to codes, norms or special characteristics of specific users with disabilities, but expresses the tension to a "value" objective, to general principles of design, which are simple to be applied and verified. Universal Design, in fact, does not focus only on people with disabilities, but for the first time it defines the user extensively and suggests to make all products and spaces accessible and usable by people to the greatest extent possible. Not everything must necessarily

⁷ "Pacific Rim" is a term used by political geography to indicate the set of all states and dependent territories whose coasts are located along or within the "edges" of the Pacific Ocean.

be completely usable by everyone: the term “universal” refers more to the methodological attitude than to a rigid and absolute assumption.

Universal Design provides pragmatic solutions. The didactic reduction of the approach to seven design principles is of simple application and therefore of rapid diffusion throughout the world. Universal Design is criticised that sometime it tends to schematizing of the design activity and above all not to take into account participation of the individuals in the design process. Moreover, the definition of project verification tools, often constituted by simple checklists, if on the one hand are useful for guiding the design process and for educating designers on the characteristics that products and environments should have, on the other hand they prepare to a simple action of evaluation and verification “a posteriori”, on existing projects or in any case already in an advanced stage of development, rather than representing an inspiring concept. Architects and designers also tend to consider that Universal Design is something ancillary and not integral part of the concept. Ostroff (2011, p.34) emphasizes that: *„Contrary to the assumption that attention to the needs of diverse people limits good design, the results of imaginative designers around the world reveal a wide range of applications that delight the senses and lift the human spirit when “universal design” is integral.“*

Steinfeld (2014), together with his colleagues, believes that a stronger acceptance of Universal Design in practice can be achieved by placing greater emphasis on social participation, focusing on health and well-being, recognizing the role of the context of the environment, and conceptualizing universal design as a process rather than as a set of rules. Therefore, they propose the following definition: *“Universal Design is the process that empowers diverse people by improving their performance, health, well-being and social participation in the environment.“*

2.3 Inclusive Design

The term Inclusive Design was used for the first time in 1994, during the Ergonomics congress in Toronto, Canada (Coleman, 1994) and since then widely used mainly for the design implications deriving from the aging of the population and disability, where these are considered as mainstream for new design challenges oriented towards unprecedented market opportunities.

Actually the **Inclusive Design** has its main centre of development in the United Kingdom and indeed its first steps coincide with the establishment of a major research centre in London, the Helen Hamlyn Centre of the Royal College of Art. Subsequently, this approach has widespread especially in the countries of English influence, with major research centres in Canada and Australia.

Unlike Universal Design, Inclusive Design does not set specific design principles, but defines a careful approach to human diversity and is based on the idea that no criterion, principle or guideline can be absolute but must always be confronted with the multiplicity of users, contexts and objectives. Inclusive Design, in fact, considering the widest range of skills, languages, cultures, genres, age and all the other possible forms of difference between users, bases its approach simply on **three “dimensions”**:

- **Dimension 1 – recognize diversity and uniqueness among individuals.**

Inclusive design always considers the diversity and uniqueness of each individual. The statistics has made us generally refer to the average values of a given parameter, but the same statistic actually teaches us that considering a given population, those that correspond exactly to the average value represent only a small minority: it is also true that, if we consider the set of needs and desires that a community can express as a whole, most people move away from the average in some aspect of their needs or aspirations. This means that a “standard” design solution can actually satisfy only a few individuals. On the contrary, **flexible or adaptable solutions** respond better to the needs expressed by human diversity. However, this does not



mean pursuing individual and specialized solutions (with the risk of being segregating as well as expensive and inefficient). In fact, inclusive design pursues self-determination and the enhancement of self-consciousness, in the idea that diversity is a value.

- **Dimension 2 – inclusiveness of design tools and methodologies.**

The design process and the tools used in it are inclusive. Diversity is the strength of inclusive design teams, which should **include individuals** with the experience of “extreme users”⁸ (Donovan, 2012) which the projects are intended to. People with disabilities must therefore play an active role in the design process (also with reference to the motto “nothing about us without us”), and not limit them to the task of research subjects or symbolic participants in design exercises (Eikhaug et al., 2010). To facilitate the diversified and at the same time proactive **participation** of everyone in the design process, design and development tools should also become as accessible and easy to use as possible without reducing or limiting the professional role of the designer.

- **Dimension 3 – extent of the impact in terms of benefits.**

Being aware of the real application context of an inclusive project, it makes possible to extend its positive impact and benefits well beyond the target to which the project initially is referred. Inclusive Design, in fact, should trigger a virtuous circle of inclusion, eliminate any physical and cultural limits and enhance the **interconnection between users and systems**. Extending the principles of Inclusive Design to all dimensions of the project and to all aspects of society contributes to making the society itself richer and healthier (Wilkinson and Pickett, 2009).

On this basis, however, various bodies and organizations have defined their own set of project principles to be followed. For example, the UK Commission for Architecture and the Built Environment defined the following **Inclusive Design Principles** (CABE, 2006):

⁸ Term was coined by Rich Donovan, a world expert in business economics related to disability.

1. Inclusive Design places **people at the heart of the design process**: in order to design spaces and environments accessible to entire dynamic and sustainable communities, the greatest number of people involved in the planning phase must be involved. This will help to promote personal well-being, social cohesion and enjoyment for all.

2. Inclusive Design acknowledges **diversity and difference**: good design is achieved only if the environment created satisfies as many people as possible.

3. Inclusive Design **offers choice** where a single design solution cannot accommodate all users: an inclusive environment does not try to satisfy every need. However, considering the diversity of people, it is possible to break down barriers and exclusion and often to obtain more interesting and beneficial solutions for everyone. Taking account of the needs of people with disabilities within the design process, even in their lack of homogeneity, it is possible to guarantee benefits for everyone.

4. Inclusive Design provides for **flexibility in use**: satisfying the principles of inclusive design requires an understanding of how the building or space will be used and who will use it. Places must be designed so that they can adapt to changing uses and demands.

5. Inclusive Design provides buildings and environments that are **convenient and enjoyable** to use for everyone: making environments easy to use for everyone means also considering signage, lighting, visual contrast, materials, referring to all parts of the building or space, including access roads and entrances.

Following these principles, in the perspective of the inclusive design, it will be possible to identify solutions that are:

- **Inclusive**, in the sense that everyone can use them safely, simply and with dignity.
- **Reactive**, compared to what people say they actually need and want.
- **Flexible**, to be used in different ways by different individuals.



- **Suitable**, to be used by everyone without too much effort or marginalization, regardless of age, gender, ethnicity, motor skills and cognitive or momentary conditions.
- **Welcoming**, that is without disabling barriers that could exclude some people.
- **Realistic**, in the sense that offering more than one solution allows us to intercept the needs of all and therefore recognize that a single solution may not work for everyone.

2.4 Design for All

Design for All (DfA) has been briefly defined as the “*design for human diversity, social inclusion and equality*” (EIDD Stockholm Declaration, 2004). It represents the concrete application both of a philosophical, social and **political assumption** (according to which everyone must have equal opportunities for participation in every aspect of society), and of a **scientific assumption** (“Good design enables, bad design disables”, P. Hogan). DfA, in fact, intends to improve the quality of life of individuals through the enhancement of their specificity and diversity. Therefore, DfA proposes a **holistic approach** to the processes and methods of the design of environments, equipment and services, usable “in conditions of autonomy” by people with diversified needs and abilities.

A first innovative aspect of DfA is certainly not the passive application of design rules and regulations, which respond to a pure performance logic, but which risk generating further and more subtle discriminations. Instead, it is up to the designer to face the design challenges using these rules in a creative and inclusive way, to pursue the quality of the performances and the design innovation. In this, and therefore in the rejection of design principles or dogmatic and absolute guidelines, DfA can be considered extremely close to the approach and practice of Inclusive Design.

Even the transition from an interest in “use” to an attention to the “fruition” of environments, products and services can be considered a second innovative aspect shared by DfA and Inclusive Design. The **transition from the user to the individual**, in fact, aims to pursue above all the satisfaction of aspirations and desires, as well as basic needs and needs. Not only, therefore, the search for simple accessibility/usability/enjoyment of environments and products (which remains the “starting” basic condition), but also the pursuit of **well-being for all**, through active, comfortable and enjoyable use by the most a wide variety of individuals, different in social and cultural terms as well as perceptive, motor and cognitive skills.



The origins of the DfA are practically contemporary with those of Inclusive design. They can be traced back to at least December 1993, when the United Nations General Assembly adopted the “Standard Rules on the Equalization of Opportunities for Persons with Disabilities”. In fact, although they were not a legally binding instrument, the “Standard Rules” represented a strong moral and political commitment by governments to act to achieve equal opportunities for people with disabilities. In addition to representing a useful tool as a basis for technical and economic cooperation and for defining policies of equality among all individuals, the “Standard Rules” defined by the UN have in fact inspired the development of the principles of the DfA, which therefore puts before any design action the need for development of a cultural, social and political process.

So already in April 1993, in parallel with the drafting of the “Standard Rules” that would be officially adopted a few months later, the EIDD (European Institute for Design and Disability) was set up in Dublin on the initiative of Paul Hogan. However, they immediately realized that it was necessary to overcome the barrier, especially cultural, of “disability”, in order to extend the design action to the multiplicity of the human race, with its physical, cultural and abilities and attitudes.

Shortly after its establishment, the EIDD aims to “*improve the quality of life through the Design for All*”, which becomes the claim of the association (1998) and finally in 2006 the name of the association is transformed directly in “EIDD – Design for All Europe”. Its Member Organizations are still different bodies and organizations (universities, research centres, professional associations of designers, public administrations and NGO’s, etc.) established in most European countries. Meanwhile, already in October 2003, the Commission of the European Communities, in a communication to the Council of Europe and the European Parliament on “Equal opportunities for peoples with disabilities”, for the first time included the **concept of “accessibility for all”** with a direct reference to the principles of “Design for All”. A few months later, in May 2004, during the EIDD General Assembly in Stockholm, the “Stockholm Declaration” was drafted. It provides a precise definition of the DfA and describes its purposes:

“Design for All is design for human diversity, social inclusion and equality. This holistic and innovative approach constitutes a creative and ethical challenge for all planners, designers, entrepreneurs, administrators and political leaders. Design for All aims to enable all people to have equal opportunities to participate in every aspect of society. To achieve this, the built environment, everyday objects, services, culture and information – in short, everything that is designed and made by people to be used by people – must be accessible, convenient for everyone in society to use and responsive to evolving human diversity. The practice of Design for All makes conscious use of the analysis of human needs and aspirations and requires the involvement of end users at every stage in the design process.” (EIDD Stockholm Declaration, 2004)

In the following years, it was also possible to define some methodological principles for DfA, which however have only an orientation and clarification character. Thus, for example, the DfA Italia Association, which during its annual meeting held in Rome in May 2009, defined **eight inspiring principles**:

- Enhance human diversity;
- Promoting social inclusion and equality;
- Making the use of products, environments, systems or processes easy and pleasant for all possible end users;
- Avoid psychological and physical stigmas;
- Making products, aesthetically “beautiful”;
- Produce products, environments, systems or processes socially, environmentally and economically sustainable;
- Enhance the quality of life of end users;
- Include potential end users in the design process.

On this basis, the same Italian association has been able to start a virtuous process of dissemination of the DfA approach between companies and some institutions more sensitive to the issues dealt with. This led to some



initiatives involving clusters of companies belonging, for example, to the Milan Chamber of Commerce, or to the Confartigianato (General Federation of Italian Artisans and Craftsmen) of Vicenza, and above all led to the assignment of the **“DfA Quality Label”**, which every year, on request of companies that apply, after a severe evaluation of a jury of specialists, is assigned with a public event to those products or achievements that meet the guiding principles of DfA. With the same spirit of dissemination, other initiatives in Europe have arisen during the last years, such as, for example, the annual **“Innovation for All”** event in Norway, organized by the DOGA (Design and Architecture Norway) or the annual **“Design for All Foundation International Awards”** in Barcelona, Spain. These are initiatives of public dissemination of the philosophy and principles of DfA, which often directly involve political or economic decision makers, both private and public.

This is probably the most distinctive and innovative feature of DfA which distinguishes it from other design for inclusion approaches: extreme and obsessive attention to the **“process”** that is, to the design development path, up to the last stages of promotion and dissemination, during which all the actors of the “design chain”, such as designers, architects, producers/developers, users and, above all, “decision makers”, participate in various forms and moments. This is the idea that in order to carry out truly “inclusive” projects, the designer’s skills and experience are not enough and the project can not be limited to a simple comparison between the client, the designer and expert collaborators, but the solution must come from a widespread social conscience of participation, involving in different ways also other social, economic and above all political “decision makers”.

Therefore, a DfA project can be defined as such when it foresees or even relies on moments of official comparison and dissemination of results, even partial, in order to encourage the development of a collective growth through public events (conferences, debates, etc.) which, starting from specific occasions, offer the pretext to promote social progress on the themes of inclusion, equality and human diversity.

2.5 Inclusive Methods for Higher Education

All the above-mentioned inclusive methods are not focused merely on the application of accessibility standards and legislation, but their aim is to provide effective tools that lead to the creation of an accessible, safe, and people-friendly environment for a wide spectrum of individuals. Moreover, these methods enable **all people to participate actively** in the creation, monitoring and assessment of the environments, as well as their active involvement in education process.

Some of the methods provide a more social and policy approach, while others focus on the definition of concrete steps that need to be implemented in order to achieve inclusive environments, products, information and communication technologies and services. Usually, the building design requires implementing more legislative requirements, standards and other strict rules, while product design provides greater opportunity to participative planning and reflection of individual needs. Therefore, when designing environments for higher education we can consider the Seven Principles of Universal Design as a good tool to draw attention to many aspects that should be applied by architects and civil engineers to create universally accessible environments that are flexible and adaptable to various people.

Also, when renovating the buildings, there is necessary to **identify the barriers** at first, and then to propose solutions. Therefore, some guidelines with specific requirements need to be worked out that will help to identify all obstacles and unsatisfactory solutions, so to prepare such project that will not create discriminative solutions. Of course, **participatory planning** should be included in urban planning and building design as well, so that various people with different needs, views and limitations are included in the design process.



To achieve inclusive higher education, there is a need to create an inclusive environment, not only physical/architectural, but also to take into account other aspects such as inclusive study materials, services, information and communication technologies, as well as inclusive educational strategies.

2.6 Universal Design for Learning

Nowadays, higher education embraces a big diversity of students with various characteristics and differences that should be reflected in the teaching and learning processes. Burgstahler (2008a, p. 5) summarizes **student differences** as follows:

- Physical differences,
- Visual differences,
- Hearing differences,
- Learning differences,
- Attention differences,
- Communication differences.

Students also have differences in the pace of their work and learning. Some people achieve significantly better results when they have enough time to deal with the tasks rather than be forced to work quickly, so it is necessary to respect the differences in learning and working abilities of individuals. Therefore, the **student-centred methods**, such as **Universal Design for Learning or Universal Design for Instruction**, should be applied in the learning and teaching processes.

At the end of 20th century, the theory of Universal Design extended from the architectural and design scope to the field of education with aim to provide inclusive educational methods for heterogeneous group of people with different skills and capabilities (Scott et al., 2008, Ostroff, 2011). According to Erkilic (2012, p. 199), Universal Design *“shares the similar vision of valuing diversity with inclusive education, relies on the ideas of design for all diverse users, and underlines the issues of equality, inclusion, and social justice through design.”* Moreover, he states that teaching program must address the diverse learner needs by offering students to choose the best way



to express themselves in a flexible way, which respects a variety of learning styles, sensory demands, background knowledge, and skills (Erkilic, 2012).

In the United States, **student-centred methods** for education, such as Universal Design for Learning (UDL) and Universal Design for Instruction (UDI), have been developed. UDL is stipulated in **Higher Education Opportunity Act**, approved by US Government in 2008. This Act (Sec. 103, Item 24) **defines UDL** as “scientifically valid framework for guiding educational practice that:

A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and

B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.”

UDL method was developed by Rose and Mayer in connection with cognitive psychology, taking into accounts various learning and communication styles, abilities and needs of students (Burgstahler, 2008a, Edyburn, 2011, Hehir and Katzman, 2012). UDL method is based on understanding of individual differences connected with three **networks of human brain activities** (Hehir and Katzman, 2012, p. 103):

- *Recognition network* – serves to receive, identify and interpret the various information perceived by the sensory organs (vision, touch, hearing, smell, etc.),
- *Strategic network* – determines how we plan, implement, and monitor our activities,
- *Affective network* – relates to motivation and interest in the activities.

Based on these three networks, Rose et al. (2008, p. 46) propose three **basic principles of UDL** method to achieve accessible pedagogy:

- *Multiple means of representation* – by using multisensory ways of presentation to reflect various sensory perception abilities,
- *Multiple means of expression* – by providing students to choose mode of elaboration and presentation of the tasks and outputs (e.g. written, oral, audio-visual, graphical, etc.),
- *Multiple means of engagement* – by using different forms of engaging students in various activities, for example in the form of individual or group work, hands-on and interactive work, etc. (Behling and Hart, 2008, Edyburn, 2011, Ceresnova and Rollova, 2015, Ceresnova et al., 2017).

UDL method provides solutions that are **flexible and adaptable** to various abilities or disabilities, sensorial limitations and learning style preferences of each student. Every person prefers a certain learning style, sometimes a combination of multiple learning styles, depending on sensory preferences or dominant type of intelligence based on Gardner's theory of multiple intelligences (Burgstahler, 2008b). Learning outcomes are closely related to the level of how teaching instruction respects various learning styles. Therefore, it is important to use **multisensory and interactive forms** of presentation of the subject, including several ways of sensory perception and **active involvement** of individual participants. In this way, it is possible to include a number of learning styles and to enhance the quality of teaching and learning.

The progress in education and enforcement of UDL method can be achieved also by using ICT that provides greater flexibility and adaptability to diverse requirements and individual abilities, for example by enabling the transformation of visual formats into audio or tactile formats, enabling the multisensory presentations and outputs. Interactive technologies can also help to achieve more active engagement of learners by using interactive whiteboards, models, simulations, and other innovative methods. The goal of the UDL method is to involve and activate all participants in the educational process in order to achieve the efficiency, attractiveness and accessibility of education for all (Ceresnova and Rollova, 2015).



Testing the UDL Method

The UDL method has been tested and implemented at the Faculty of Architecture, the Slovak University of Technology (STU) in Bratislava, mainly within the subject Universal Design (UD). Teaching UD at STU has a long tradition (since 1995) and UDL method has been implemented mainly from 2011. The framework of UDL method consists of the selection of tasks and the elaboration forms, as well as the active engagement of students by using empathetic exercises to simulate selected types of disabilities, such as physical disability or visual impairment (Ceresnova, 2014, Ceresnova and Rollova, 2015).

Within the UNIALL project we tested UDL method during the winter semester 2017. At the beginning of the semester, students passed the **VARK questionnaire** on modal preferences of learning, based on sensory perception. The VARK was developed by Neil Fleming (Fleming and Baume, 2006) and VARK is an acronym for Visual, Aural, Read/write and Kinaesthetic. According to Fleming and Baume (2006, p. 4): *“VARK above all is designed to be a starting place for a conversation among teachers and learners about learning... thinking about strategies for teaching different groups of learners can lead to more, and appropriate, variety of learning and teaching.”*

Some students have **preference** for written information, others prefer graphic information (maps, charts, diagrams, pictures), and some of them are **multimodal** as they prefer to use several perception/communication modes. The test results of the modal preferences of 96 students of the Faculty of Architecture STU are as follows:

- **V**isual = 20.75% of students,
- **A**ural / Auditory = 38.68% of students,
- **R**ead/write = 5.66% of students,
- **K**inaesthetic = 34.91% of students.

To reflect this diversity, the various tasks in different modes of presentation and elaboration were offered to students. Moreover, there was a possibility to choose individual or group work when elaborating the selected

tasks. The active involvement of students was based on simulation exercises at the beginning of the semester. These exercises provided the students with the opportunity to experience the built environment from the position of persons with disabilities.

According to **UDL principles on multiple modes** of presentation and expression, there were three tasks to be chosen: (1) a graphic poster that represents Universal Design, (2) a written essay on selected topics, and (3) a video-document of accessibility survey from the position of various users, including people with disabilities. The first task is suitable for students with visual modal preferences, and second task fits to students with read/write and auditory preferences. The third task reflects the kinaesthetic preferences of the students, who learn more by using a body movement. Therefore, UDL method is very useful and effective in responding to this variety of perception and communication to achieve better students' motivation and finally better learning outputs.



2.7 Universal Design for Instruction

The seven principles of Universal Design, defined by the Center for Universal Design at the North Carolina State University in 1997, were transformed to educational process by the method Universal Design for Instruction (UDI) and supplemented by two additional principles (Burgstahler, 2008b). Then, the **nine principles of UDI** are as follows: (1) *equitable use*, (2) *flexibility in use*, (3) *simple and intuitive use*, (4) *perceptible information*, (5) *tolerance for error*, (6) *low physical effort*, (7) *size and space for approach and use*, (8) *a community of learners*, and (9) *instructional climate* (Scott and McGuire, 2008, p.137,138).

Equitable use provides instruction that is equally accessible to students with diverse abilities. *Flexibility in use* makes instruction flexible and adaptable to individual requirements and offers choice in methods of use (e.g. differentiated forms of learning). *Simple and intuitive use* is focused on the solutions that eliminate unnecessary complexity and respect wide spectrum of skills, experiences and state of attention. *Perceptible information* recommends to use multisensory information and to maximize their legibility. *Tolerance for error* means to provide feedback to identify errors to be corrected and to anticipate variations of learning pace and skills. *Low physical effort* considers the best way to sustain student attention and to eliminate exhaustive physical effort. *Size and space for approach and use* provide all students with sufficient space, comfortable reach distances and good visibility and sightlines in learning spaces. *Community of learners* promotes interactions among students together with the instructor. *Instructional climate* provides welcoming and inclusive learning environment that respects diversity of students (Scott and McGuire, 2008, Ceresnova and Rollova, 2015).

The aim of UDI method is to prefer inclusive teaching methods for a wide range of users rather than simply apply a support service model designed exclusively for students with special/ specific needs (Ostroff, 2011). UDI method builds on the basic principles of Universal Design, emphasizing

the need for accessible learning for all students, as well as promoting **interaction and communication** among students and teachers to achieve optimal learning outcomes (Scott and McGuire, 2008).

2.8 Monitoring and Evaluation Methods

Monitoring the accessibility of the higher education environment is one of the steps to be taken in the process of improving the conditions for the study of students with special needs (SN). The aim of monitoring is to identify existing barriers and limitations in the accessibility of physical environment, educational programs, services for students, but also the accessibility of various social and sporting events to all students.

In the academic environment, the following basic groups of barriers which need to be gradually eliminated can be identified:

- **architectural barriers** that are characterized by the restriction of free movement of persons in the building environment – in the outdoor environment of campuses, school buildings, accommodation facilities, libraries, sports facilities and other facilities where the services are provided to students,
- **barriers to education process** that do not accept individual differences of students, such as their dominant learning style and perception mode, dominant type of intelligence, type of temperament, personal work pace, and other characteristics, in line with inclusive education strategies,
- **information barriers** limiting access to information provided by the university to students, applicants for studies and the public; mainly related to information at the university's web site or in the academic information system,
- **communication barriers** that limit student communication, for example, with teachers and service providers for students, but also barriers in social, cultural or sporting events by not accepting different ways of perception and communication of people with sensory impairments,
- **barriers in people's attitudes** that are related to reluctance, low empathy or lack of willingness of people to accept diversity and create an inclusive environment.

People who perform monitoring and evaluation must understand correctly the consequences of barrier existence to the use of the environment, products and services, so it is important to **involve students and teachers** in a real situation related to the context of use in accordance with the principles of participatory planning. For example, field studies, interviews, web-based communication, workshops, user trials, and observations are the suitable methods (Eikhaug, 2010, Nussbaumer, 2012). Active student participation methods (including students with SN) can provide a better understanding of barriers in real contexts.

Methods can be grouped according to their purpose (Aragall, Montana, 2012, p. 52):

- monitoring use, wishes and needs,
- monitoring complaints,
- monitoring reputation and satisfaction.

According to Edelstein (2016, p.271), **two basic methods** for the building evaluations exist: (1) **pre-design research evaluation (PRE)** to test and experience the design before build begins, e.g. using immersive virtual simulations, and (2) **post-occupancy evaluations (POE)** to assess and evaluate the efficacy of built solutions by users/experts with various abilities and limitations. POE is used to assess completed projects (Nussbaumer, 2012) through on-site surveys or questionnaires to collect data concerning the usability, accessibility, and safety of new products or space.

As an example of creation of **accessibility monitoring systems**, the following are the basic principles for creation of accessibility audits of the building environment and the website environment.



Access Audit System – Built Environment

Auditing of building accessibility is not new in building practice. However, the quality of existing systems needs to be distinguished. Many of the access audit systems examine only basic information which provides an overview of whether the accessible spaces or building elements exist in a building, however, they do not provide detailed information about the details and the correctness of each solution. In order for spaces to be really suitable for persons with disabilities, emphasis must be placed on every detail. Therefore, it is not enough when an accessibility audit of dormitories reveals that an accessible bathroom exists, it is also necessary to examine whether it is well-designed and user-friendly. For example, if bathtub, shower or toilet is incorrectly placed in the space, or if the space is not equipped with the required accessories in the reach of the sitting person, this is an imperfect solution and, finally, the bathroom can only be used by the person with an assistant. In creating the environment by human-centred method, it is especially important for students, including students with SN, to use all the spaces and building elements comfortably and as much as possible independently.

When creating a system for assessing the accessibility of the university environment, it is necessary to compile the **evaluation checklists** so that they are as clear as possible and that even the evaluators without a building education are able fill in the checklists. The aim of the checklist is to highlight all the details to be met in order for the environment to be used by students with disabilities without dependence on other person (in terms of ability).

CEDA FA STU (Rollova et al., 2015) has created the Access audit system based on the results of several years of research in collaboration with various groups of users. CEDA FA STU has compiled the structure of the evaluation checklists into tables according to the particular types of spaces, and in the particular rows of the table, there are the sentences – statements to be filled in (see Tab. 2.1). These sentences must be clearly answered (4th column of the table). The help for correct evaluation of the answer is the clue in the third column of the table. The fifth column of the table provides space for notes, which are a useful tool for drawing up the final report, which should be supplemented by photographic documents. To illustrate

the accessibility requirements for classrooms to be used independently by the students with physical and sensory limitations, an example of the part of the table follows (see Tab. 2.1).

	Requirements	Clue	Conclusion	Notes
E1	Learning spaces are accessible to persons using a wheelchair.	<input type="checkbox"/> lecture halls <input type="checkbox"/> classrooms <input type="checkbox"/> laboratories <input type="checkbox"/> others	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partially	
E2	In classrooms with fixed built-in furniture, a place for a student on a wheelchair is reserved (e.g. lecture hall, laboratory).	<input type="checkbox"/> table height 75 cm <input type="checkbox"/> maneuvering space in front of the table Ø 150 cm	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partially	
E2	The space for the lecturer is also accessible for the person using a wheelchair.	<input type="checkbox"/> entrance from other floor <input type="checkbox"/> access using a ramp <input type="checkbox"/> access using a platform lift	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partially	
E3	The passages between furniture are at least 90 cm wide or there is movable furniture in the classroom.		<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partially	
E4	The door to the classrooms is well designed and equipped.	<input type="checkbox"/> width of the wing is min. 80 cm <input type="checkbox"/> threshold height is max. 2 cm <input type="checkbox"/> the handle is placed from the corner min. 40 cm <input type="checkbox"/> easy opening of fire doors <input type="checkbox"/> room signage with embossed lettering	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partially	
E5	The classroom is equipped with a sound amplification system for persons with hearing impairment.	<input type="checkbox"/> built-in induction loop <input type="checkbox"/> portable induction loop <input type="checkbox"/> FM system or others	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> partially	

Table 2.1 Access Audit Checklist – table examples E – Classrooms

After completing the evaluation checklist, the evaluation committee (composed of experts and users) will prepare a final report. It is recommended to invite an expert for the accessible built environment as well as different users for the preparation of evaluation checklists and for the evaluation process.



Access Audit System – Web Applications

The web application is considered accessible when can be used by every user without help from other person. Regardless of the amount of users, it is necessary to take into account their medical condition and specific needs. Currently, the technology level is so much advanced that people with disabilities are able to fully **access web content** and are able to **use web applications**. The process of creating websites and web application assumes conformance of the website with valid standards. Failure to comply with the valid standards results in a decrease of accessibility level of the websites and/or the application.

Persons with disabilities use various **assistive technologies** depending on their medical condition. The most frequent users of assistive technologies are persons with visual or hearing impairments, persons with physical disabilities and persons with specific learning disorders.

The testing of the web application accessibility of Slovak universities was done in 2016 by the Support Centre for students with special needs at Comenius University in Bratislava. The objective of testing was to identify the situation of information accessibility⁹ at selected higher education institutions in Slovakia. Identification of the situation on the information accessibility was conducted by fulfilling partial objectives (Stankovicova M. et al., 2016, p.7):

- to identify situation on accessibility to various components of an application by the screen reader (assistive technology for blind users),
- to verify intuitiveness and logical arrangement of components of the application when operated by a keyboard,
- to propose recommendations in cases with decreased level of information accessibility.

⁹ In testing the information systems, WCAG (Web Content Accessibility Guidelines) and „Standards on accessibility to and functionality of webpages stated in Annex No. 1 to Ordinance of Ministry of Finance of the Slovak Republic on Standards for information systems for Public Administration were the key documents.

The situation on information accessibility was verified by testing the websites of selected universities and libraries and by testing the academic information systems of the higher education institutions. The testing of the websites did not require access privileges creation. The selected webpages of the faculties were first tested by automatic tools:

- web interface <http://wave.webaim.org/> (Google Chrome web browser)
- Web Developer Toolbar (add-on for Mozilla Firefox web browser).

In case of need, the automatic testing results were verified manually using the assistive technology (screen reader NVDA 2016.1).

The testing results were logged in a form whose items were created following rules stated in the Standards on accessibility to and functionality of webpages. In case of failure some of the rules, penalty points were awarded. Their number depended on point occurrence frequency. The system for assessment of the rules is defined as follows:

- **Significant failure** does not allow access to information for users with disabilities in the same extent and quality as for users without impairments. Practical user accessibility is breached.
- **Minor failure** has no major influence on practical accessibility. It is usually technical insufficiencies of standard failure without major failure of information access.
- The assessment conclusion **complies**, means compliance with the monitored point and no identified discrepancy with its interpretation.
- **No failure** means that there is no identified discrepancy with the compulsory point, as the assessment subject on the webpage does not exist.
- For optional points (standards), the assessment conclusion is **not assessed**, whereas these standards are not included in accessibility ratings.



Personal cooperation with university employees expanded awareness on information accessibility. However, the disadvantage was the time limitation and impossibility to repeatedly verify some actions.

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