



Minimizing the influence of coronavirus in a built environment

MICROBE

O1/A3. Framework for the partner country reports on current state of higher education and its relationship with humans' behaviour on influence of coronavirus and negative emotions in a built environment (v1)

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Integrating education with human behaviour relevant to influence of coronavirus and negative emotions in a built environment (MICROBE)

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1 INTRODUCTION TO THE MICROBE PROJECT

The International Monetary Fund expects the global economy in 2020 to suffer its worst financial crisis since the Great Depression. Pope Francis has said the fight against COVID-19 is now considered to be the most important in the world at this age.

The broader objective of the project – to upgrade the curricula with 3 new harmonized multidisciplinary, personalized MOOC modules on minimizing the influence of coronavirus and negative emotions in a built environment by applying behavior change (MICROBE) to increase cooperation for innovation and strategic partnerships for higher education, enhance the quality and relevance of knowledge of students to the global market needs and to ensure international cooperation.

Main objectives of MICROBE project:

1. To upgrade curricula of MSc by adding 3 new multidisciplinary personalized, recognised and certificated MOOC modules on consumer behavior change related to MICROBE education, to enhance the quality and relevance of education in participating universities to global issues.

2. To develop world-wide innovative MICROBE System. It comprises the following components: Video Neuroanalytics, Web-based opinion analytics and Recommender System for the Protection against COVID-19 and Depression Reduction in Built Environment and 3 new harmonized multidisciplinary personalized MOOC modules.

3. To strengthen educational and scientific networking among EU universities in the MICROBE education.

The partner consortium represents all key stakeholders relevant to the project topic – 3 public universities with rich experience in MICROBE education and research (LT, EE and ES), 2 municipalities (LT and IT), 1 adult education providing organizations founded by universities, private companies and local authorities (BG) and 1 Foundation for Urban Innovation (IT). All Partners will play an important role in the realization of the project. The leading partners of the different activities are determined according to the partner's competences and capacity to carry out the work.

The MICROBE project activities and applied methodology involves the following stages:

IO1: Personalized MOOC Modules on minimizing the influence of coronavirus and negative emotions in a built environment by applying behavior change (MICROBE):

- 1. Stakeholders' workshops.
- 2. Development of MICROBE education framework.
- 3. Development of guidelines and accreditation rules for the quality assurance of MOOCs.
- 4. Preparation of the framework report for the common MICROBE curricula.
- 5. Preparation of the report on common grounds for teaching and learning.
- 6. Training of teaching staff and public employees.





7. Development of the MICROBE personalized MOOCs content and teaching materials.

IO2: Development, testing and improvement of the MICROBE Method:

- 8. Formulation of the research problem and goals.
- 9. Analysis of former concepts, models, methods, and theories of MICROBE.
- 10. Completion of a Data Protection Impact assessment.
- 11. Portrayal of the Big Picture of the MICROBE.
- 12. Development of the MICROBE Method.
- 13. Testing and improvement of the MICROBE Method.

IO3: Development, testing and improvement of the MICROBE System:

- 14. Formulation of the Research Problem.
- 15. Literature Review.
- 16. The Big Picture.
- 17. Scanning a Human-Centered Built Environment and Collecting Data.
- 18. The Integrated MICROBE Method (see IO2).
- 19. Development of the MICROBE System.
- 20. Multiple-Criteria Analysis of Alternatives.
- 21. The MICROBE System Correlation Subsystem.
- 22. Real-time negative emotions and possible COVID-19 indices in Vilnius

23. Assessing the Accuracy of the MICROBE System through verification and validation. The main results and impact envisaged will be achieved as follows:

- 3 new, personalized MOOC Modules developed;
- development of the MICROBE Method and System; -
- education of 120 students and 21 training staff and public employees;
- real-time negative emotions and possible COVID-19 indices in Vilnius.

The influence of COVID-19, environment, and climate goals are closely related and are included in the MICROBE System.

The main users of the MICROBE System are EU students, training staff, public employees, residents, governmental institutions and business companies. Dissemination of the project results will promote developments of sustainable built environment in EU countries.

The project partnership expects that the successful project implementation will produce the following main longer-term benefits on European level:

cover the needs for new, modern, experience-oriented and user-friendly approaches for the MICROBE field training for entrepreneurs and managers;





- improvement of the competitiveness of the target groups on Single European market in the -MICROBE field:
- improvement of the attractiveness and use of MICROBE System products through setting up a good example and development of closer connections with the stakeholders ("multiplication effect").





2 INTRODUCTION TO PATNER REPORT

The purpose of this series of country reports is to obtain general philosophical, pedagogical and practical understanding on the status of higher education and its impact on minimizing the influence of coronavirus and negative emotions in a built environment by applying behavior change in partner countries. It will also provide a basis for understanding and evaluating the capabilities of partner institutions on integrated education for influence of coronavirus and negative emotions in a built environment. The results of these reports will inform a capacity building framework, which will form the basis for development of modules on influence of coronavirus and negative emotions in a built environment during the MICROBE project. The reporting approach is based on the Capacity Needs Assessment Methodology (CAPNAM) proposed by the United Nations (2013).

The report includes chapters on the following:

- Methodology. This section describes the methodological approach used to collect and analyse the data that informs the findings presented in this report.
- Context. Provides an overview of the regulatory, socio-political, and cultural factors that shape policy on the human behaviour relevant to influence of coronavirus and negative emotions in a built environment in the country in general, and education in particular.
- Scope and coverage of education policies on influence of coronavirus and negative emotions in a built environment by the Higher Education Institution (HEI). Examines the illustrative policy and planning issues relevant to integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment.
- Description of capacity types. Evaluates the existing state of capacities of HEI in the field of integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment. As defined by the CAPNAM analytical framework, the four types of categories are institutional, organisational, individual, and the knowledge base.

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3 METHODOLOGY

Different methodological approaches were used to collect and analyze data for preparation this report.

- The Project Kick-off Meeting, originally planned in Bulgaria, was held online on December 16th 2020, due to the COVID-19 restrictions, and was highly successful and fruitful. Needs, gaps and possibilities for common curricula development were identified.
- An extensive literature review was conducted to gather information on education system, education policies, educational gaps and needs, staff trainings, curriculum development which are the required/ identified information based on the Capacity Needs Assessment Methodology (CAPNAM) proposed by the United Nations (2013) in levels of country, organizational and individual.
- Based on the requirements for the report, many web sites were referred including websites which are belonged to government ministries, different universities, University grant commission, non-government organizations etc.
- Interviews and rounded table discussions were conducted in the institutional level according to requirements of information for the report and academic staff (including professors, senior lectures, lectures), non-academic staff (including deputy registers, senior assistant registers academics/examination, scientific assistants, industrial placement officers, directors of units), technical staff (including research assistants, demonstrators, technical staff) and students were intervened through the process.
- The collected information was used to develop the report by the reporting committee with the consultants who are engaged with the project.





4 BRIEF INTRODUCTION OF PARTNER INSTITUSIONS

In total 7 European Institutions from Lithuania, Estonia, Spain, Bulgaria, Italy participate in the MICROBE project.

Partner 1

Vilnius Gediminas Technical University (VGTU)

Vilnius, Lithuania

Vilnius Gediminas Technical University is a leading higher education institution located in the heart of the Baltic region in Vilnius, Lithuania. Established in 1956 Vilnius Tech currently has over 9 600 students and carries out studies at 10 faculties: Antanas Gustaitis' Aviation Institute, Architecture, Business Management, Civil Engineering, Creative Industries, Electronics, Environmental Engineering, Fundamental Sciences, Mechanics, Transport Engineering. Research is carried out at 13 research institutes, 3 research centres and 22 research departments. The University has a longterm experience in international research and studies projects and has a tradition of teaching in English. 112 study programmes based on three-cycle structure: undergraduate (BSc), graduate (MSc) and post-graduate (PhD) studies. 29,5% of Vilnius Tech study programmes are taught in English. Vilnius Tech is the leader in Lithuania by the number of students, studying abroad and the teaching staff teaching abroad under the Erasmus+ Programme. Having more than 500 foreign HEIs partners, Vilnius Tech offers good opportunities for wide international studies and internship. The institution holds the Erasmus Charter for Higher Education 2014-2020. The Quality Management System has been currently introduced, as well as the Key Performance Indicators (KPI), which help measure the academic staff's performance in research and study projects, scientific papers, teaching abroad, other international activities, etc. Vilnius Tech has coordinated and participated in international programmes, including EU-Asia-link, ALFA III, Tempus, ERASMUS+, Framework 6-7, H2020, Eureka, etc. Vilnius Tech is a partner or coordinator of about 30 international educational projects and over 20 international research projects.

Partner 2

Vilnius city administration

Vilnius, Lithuania

During the recent years City of Vilnius has been focused on wellbeing - as a desired outcome of planning and policy which increases citizen's quality of life and which can be achieved by tackling challenges in the areas of sustainable environment, public health, community, economic opportunity. (in any order or combination). Quality of life and wellbeing can be affected in many ways (as right now it's becoming extremely important facing COVID 19 situation). The wellbeing





strategy is based on the Vilnius City Strategic Direction Vilnius2IN (2019), which aims to create Intelligent and Integrated Community. Since 2018 we are implementing Horizon 2020 largest EU Research and Innovation programme ROCK project together with partner -Vilnius Gediminas Technical University, where using Intelligent video neuroanalitical solutions we automatically performing human behavior analysis. By combining this data with other available and collected data, it is possible to determine in which district and what factors have influence on people's satisfaction and wellbeing. We have clear goals to digitize and collect as much data as possible from the environment using the Intelligent technology, which will help to listen to the needs and expectations of the citizens in an innovative way. The next step is to create as much as possible accurate data models to understand how the satisfaction and wellbeing of the population is determined by the provided quality of services, as well as environmental conditions that we can change. This information would help to plan and implement urban management in a targeted and consistent manner, to seek the continued involvement of citizens in the improvement of certain areas and to monitor changes of economical and social value of the city.

Partner 3

The Institute for Training of Personnel in International Organizations (ITPIO)

Sofia, Bulgaria

The Institute for Training of Personnel in International Organizations (ITPIO) is a private non-profit organization – NGO with the status of Association, established in 2010. Members of the Association are currently 5 leading Bulgarian universities and colleges, the most powerful trade union in Bulgaria, one of the 6 national employers association, the Bulgarian Construction Chamber, local and regional authorities, 7 SMEs, 2 corporations, 1 private hospital, 3 adult education providers, 7 centres for vocational training, 6 NGOs active in the education and youth fields, 2 regional educational inspectorates, many schools, 3 language schools, school teachers associations and many individuals – prominent experts in the education, training, social, economic and academic spheres.

The main activities of ITPIO are: research and analyses in education and training areas (primary, secondary and higher education system and VET sector); support to development of educational, VET, employment and youth policies at national, regional and local level; development of innovative curricula and learning contents based on ICT methods; implementation of innovative approach for development of modular training programmes and curricula; organizing and conducting of trainings, including training of educators, mediators, students; development and implementation of elearning platforms, portals, networks etc.; elaboration of strategic documents, concerning secondary and higher education, VET and youth; impact assessment of funding programmes and educational and youth policies; strengthening the dialogue between different stakeholders in all areas of social life with an emphasis on human resources development through dissemination of information, organization of trainings, discussion forums and by improving the interrelations among national, regional, local authorities and the non-governmental sector, while following the modern





trends in civic society development, respecting the different positions and points of view of the key actors in society – citizens, NGOs, youth organizations, educational institutions, local and national authorities, professional associations, trade unions, enterprises.

Partner 4

Tallinn University of Technology (TalTech)

Tallinn, Estonia

Tallinn University of Technology (TalTech) is a modern university of engineering and technology, the strength of which lies in the synergy of engineering, natural, exact, social and health sciences. Teaching is based on internationally recognised research work and the graduates are highly rated on the labour market. TTU is a motor of economic development in Estonia; the nearly 70,000 alumni of the university have shaped the economic landscape of today's Estonia. The university has 700 lecturers and more than half a thousand research staff. The TTU campus, which is situated on more than 50 ha, includes 72 buildings and accommodates more than 200 high-tech companies. The students are offered superb student and cultural life; the 7 accommodation and sporting facilities are one of the best in the Baltic Sea Region. TTU's history dates back to 1918. More than 11,000 students are studying at Tallinn University of Technology. Foreign students constitute more than 13% of the students of the university. Of all the foreign students studying at Tallinn University of Technology.

The Building Lifecycle Research Group within the Department of Building and Architecture is responsible for the fulfilment of the civil engineering curricula. It is a leading provider of higher education and research services to the Estonian construction industry not only in terms of full-time graduate courses but also through distance learning, lifelong learning and continuous professional development courses. The Building Lifecycle Research Group has established long-term partnerships with construction and property organizations in Estonia and is an active partner in universities' network internationally. This ensures that research and education programs maintain close alignment to the current needs of the construction industry and promote improvements in industry practice through innovation. The research field: multivariant simulation modelling of management strategies in construction, impact of climate change, disaster resilience, big data analytics, smart buildings, BIM, nearly-zero energy solutions, etc.

Partner 5

University of Granada (UGR)

Granada, Spain

The UGR (1531) is a public comprehensive research university with approx. 56,000 students, 3,600 academics, 1,900 administrative and support staff. Its 27 Faculties and Schools and 124





Departments offer 62 undergraduate degrees, 106 master's degrees and 28 doctoral programmes organized in 3 overarching doctoral schools. It has 15 research institutes and over 400 research teams working in all disciplinary fields.

The UGR is currently ranked 3rd in Spain according to the Shanghai ranking (2019) and is the leading regional university in the south of Spain, with 34 disciplines appearing in the top

500. As a public higher education institution it is committed not only to quality and excellence in education, learning and research but also to activities targeting the transfer of scientific, technical and artistic knowledge to society, the betterment of society and a sustainable environment.

The UGR has played a leading role in the longest-standing European university network, the Coimbra Group, which it chaired from 2010 to 2017. It is also a member of other networks such as UNIMED, EUA, IAU or AUF. Key partner institutions are to be found in Latin America, China, Morocco, Togo, and the United States, where the UGR has a strategic partnership with the Ivy League Consortium for Advanced Study Abroad (CASA) led by Brown University. Currently, UGR is a leader parnet in the European University project ARQUS. The UGR regards internationalization as a policy priority. It is a leading participant in the Erasmus mobility scheme from its outset, in recognition of which it received the Erasmus Gold Star Award in 2007. It also has a large worldwide mobility programme for students and staff financed by the UGR's own Internationalization Fund. Furthermore, it is also very active in E+ KA2 and predecessor programmes (currently >50 EU active projects). One of its latest achievements is the coordination of the Arqus European University Alliance, one of the first 17 European Universities funded under the Erasmus+ programme.

Partner 6

Foundation for Urban Innovations (FIU)

Bologna, Italy

Founded in 2018, the Foundation for Urban Innovation (FIU) is a private law entity founded by the City of Bologna and the University of Bologna. It is a not-for-profit Foundation that represents the new legal framework of the former Urban Center Bologna Committee. FIU works as an "open and widespread lab" holding a systematic users' co-creation approach to transform the city into a more livable and resilient organism. It integrates research and innovation processes in real-life communities and settings by opening up the co-design and co- creation phases to the different and critical stakeholders of this city. In order to involve the wider number of actors, through the District Labs process, it physically goes within the territory to concretely investigate challenges, necessities and willing of citizens. One of its main goals is to enhance public participation and to transform the relationship between the Municipality and citizens by experimenting with new forms of collaboration and research, with particular reference to urban regeneration, urban planning, economy, technological innovation, sustainability and resilience themes.

The staff counts on 8 professionals working under contract, and about 20 external consultants having different areas of expertise.





Partner 7

Municipality of Bologna

Bologna, Italy

Bologna is the seventh largest city in Italy as far as the number of inhabitants is concerned (almost 400,000), and sixth in economic importance. The metropolitan area of Bologna (more than 900,000 inhabitants) ranks second after Milan. Important features of Bologna are its high level of economic development and extensive pre-school, educational, social, cultural and sport services.

Bologna is the seventh Italian city for number of inhabitants that became around 1 million with the passage to the metropolitan authority with 55 municipalities. With its strategic location, stable economy, a modern and efficient public administration, the oldest University in Europe and its research institutes, well established and emerging sectors, as well as all its urban transformations, Bologna is a vibrant area with excellent opportunities for investment despite the international economic downturn.

The metropolitan area of Bologna is characterised by high social and health standards and economic vivacity, with 32.662 operating enterprises; more than 30% of start-up registered in Emilia Romagna are located in Bologna. What's more, each citizen of Bologna can enjoy 18 m2 of public green space (one of the highest ratios in Italy) and centuries-old wine and food traditions which are renowned and savored all over the world.

Bologna is strategically situated at the heart of freight and passenger traffic transiting between Europe and the

Mediterranean. With its growing city airport, one of Europe's largest intermodal platforms, five railway lines and four motorways which connect it with Milan-Turin and France to the North-West, Padua-Venice and Eastern Europe to the North East and Austria to the North, as well as two coastal routes, one along the Adriatic the other along the Tyrrhenian, linking it with the South of the peninsula, Bologna is the biggest national motorway and railway hub and an ideal point of access to Italian markets. It is soon to become a transit point for the trans-European intermodal corridor I and will be within easy reach of corridor V. Bologna is the cultural, administrative and commercial capital of the Emilia-Romagna region, and one of the areas with the highest social and economic standards in Europe.

Bologna's industrial system stands out for the presence of certain clusters. The most consolidated sectors in the area – automatic machinery, motor industry, electronics, fashion, agro- food – owe their success to the ongoing innovation of production lines, industrial processes and services, and to the fact of having been capable of adapting to the constantly changing demands of clients and markets. The Municipality also works actively towards the goal of urban sustainability.

The Municipality of Bologna has a wide experience in the participation in European projects and currently participates (or has participated) as co-ordinator, main contractor or partner in many European projects. The





commitment of Bologna in international activities is also confirmed by the participation of the City in the Steering Committee of important international networks such as EUROCITIES, European Digital Cities, Global Cities Dialogue, ICLEI (Bologna was a founder member), Creative Cities Network, WHO-Healthy cities network and has adopted the Charter of European Cities and Towns Towards Sustainability (The Aalborg Charter).

The total number of people employed by the Municipality of Bologna is around 4.000.

The two main Departments which will be involved in the project are the Information Technologies and Digital Agenda and the Human Resources Department.

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		Ms	Pamela Lama

MICROBE Team





5 CONTEXT

This section provides an overview of the regulatory, socio-political, and cultural factors that shape policy on the human behaviour relevant to influence of coronavirus and negative emotions in a built environment in the country in general, and the education in particular. Since the World Health Organization declared the COVID-19 pandemic, countries and cities had been forced to adopt social isolation measures very quickly. The 2019–20 COVID-19 pandemic has affected built environment and educational systems worldwide, leading to the widespread closures of schools and universities. According to UNESCO monitoring, over 200 countries have implemented nationwide closures, impacting about 98% of the world's student population. Today, the world's cities face many challenges for the built environment, city infrastructure, and planning improvements that need to be solved. Mainly, this section is based on the current context of Lithuania, Estonia, and Spain and as a view of partner universities from those countries, coupled with the context from a local authority in Bulgaria and a municipality and private law entity in Italy.

5.1 Socio-political and cultural context

The socio-political and cultural contexts providing the framework for educational policy planning in the field of the human behaviour relevant to influence of coronavirus and negative emotions in a built environment in the countries and regulations and plans to support them are discussed under this topic.

5.1.1 Lithuanian context

COVID-19 cases have increased significantly in Lithuania. At the beginning of December, Lithuania is one of the first countries in Europe in terms of COVID-19.



Fig. 1. Total coronavirus cases in Lithuania (Worldmeter, 2021)

Lithuania tightened lockdown from December 16, 2020. The majority of shops, with the exception of those selling food, was closed in Lithuania. People are allowed to leave their homes only for serious reasons but families will be allowed to go for walks in open spaces within their municipality, without meeting with other people.

The Government of the Republic of Lithuania has created an official source of published information on the situation of Covid - 19 in Lithuania, which also publishes information and recommendations for the educational community (<u>https://koronastop.lrv.lt/</u>).



5.1.2 Estonian Context

According to Worldmeter (2021), total coronavirus cases in Estonia are 52 827, deaths - 501, recovered - 41 461 as of the date of 15.02.2021. Estonian Government has set a target to hold down the number of infection cases to 500 per day. Figures 2 and 3 show the linear trajectory for Estonian coronavirus cases.



Fig. 2. Total coronavirus cases in Estonia (Worldmeter, 2021) as of the date of 15.02.2021



Fig. 3. Total coronavirus deaths in Estonia (Worldmeter, 2021) as of the date of 15.02.2021





The first lockdown and the beginning of distance learning for educational institutions (hobby clubs, kindergartens, schools, universities) is dated 16th of March, 2020. As of 25th January 2021, contact learning has been permitted on all levels on educational institutions. We have now faced a year of rapid disruption of the way we live, learn and work.

Estonian Government has initiated a separate web-portal <u>https://www.kriis.ee/</u> (available in Estonian, English and Russian languages) to collect and disseminate updated information concerning COVID-19 spreading situation and restrictions that apply locally.

5.1.2.1 HOIA mobile app

It was decided that additional help is needed with tracing the infected contacts and the Health Board has a team tasked with calling everyone infected with the coronavirus, finding out with whom they were in close contact and in turn informing those close contacts about a possible infection. This work is very important to limit the transmission of the infection, but it has certain natural shortcomings. Not every infected person may be able to remember all the people they were in close contact with: some people tend to forget and some cannot easily identify them. For example, most people do not know who they were sitting next to on a bus. Therefore, HOIA (<u>https://hoia.me/</u>) creates significant added value to the work of the Health Board, as it can also identify those close contacts that the infected person does not know or remember.



Fig. 4. HOIA mobile app functioning scheme (<u>https://hoia.me/</u>)

Viruses such as COVID-19 can spread before symptoms occur, therefore, an infected person may spread the disease without the knowledge of themselves and others. This means that by the time the symptoms appear, the virus may have already spread to others, and it is not enough for symptomatic people to stay at home to stop the virus from spreading. Through the HOIA app, an infected person can quickly inform all people with whom they have been in close contact during the infectious period. In this way, the app users can find out about a possible infection early on and take steps to protect themselves and the health of others. By using the HOIA app, you



contribute to reducing the number of infections in Estonia, regardless of whether you are infected or in close contact.

5.1.3 Spanish context

COVID-19 showed us from the beginning of the pandemic that it does not understand ideologies, gender or borders. The Emergency's State was approved on 14 March 2020 and on 21 June 2020, once the Emergency's State ends the orders derived from it lapse, the whole country entered into what was called "new normality". From that moment on, a series of urgent prevention, containment and coordination measures had to be adopted to continue controlling the pandemic and to be prepared for an upsurge in cases.



Fig. 5. Daily reported cases of COVID-19 from the Ministry of Health

The State Strategy against the second wave describes the criteria, instruments, indicators and actions shared by all public administrations. It is the framework for action; the Spain's Government and its Regions make decisions jointly. This Strategy is developed on three bases:

a) Common criteria and indicators, through the methodology proposed in the document on Coordinated Response Actions.





- b) Coordinated actions to bend the curve and keep the pandemic under control. The main ones are those in the field of public health approved by the Interterritorial Council of the National Health System and the declaration of the Emergency's State in force.
- c) Shared monitoring and evaluation of results, both bilaterally between the Ministry of Health and each of the Region, and jointly within the Interterritorial Council of the National Health System.

First, the Government approved the Royal Decree-Law on "new normality" on 9 June, agreed with the Region and supported by a majority in the Plenary of Congress on 26 June. The main measures, it contains and which are in force are related:

- Prevention and hygiene in different areas.
- Early detection of cases and contacts for clinical follow-up, isolation and guarantine.
- Guidelines to ensure the supply of medicines and medical devices.
- The protection of residential centres for the elderly or disabled. •
- The obligation of the Regions to continue providing epidemiological information to the Ministry of Health.

To organise this response in an effective and coordinated manner, the Ministry of Health designed the Early Response Plan in a COVID-19 pandemic control scenario, which technically makes up the National Pandemic Control Plan, with contributions from several ministries, as well as from all the Regions and Cities. It was approved on 16 July by the plenary session of the Interterritorial Council of the National Health System. The fundamental objectives of the Plan are threefold:

- 1. To design the bases for preparedness and response in the current scenario and possible future scenarios for the control of the disease.
- 2. To establish a risk assessment framework associated with the available information.
- 3. Recommend public health interventions commensurate with the level of risk. This Plan includes the following elements:
 - The setting up of a strategic stockpile of protective equipment and medicines.
 - The reinforcement of influenza vaccination, which is currently underway.
 - Contingency plans to strengthen the healthcare and public health capacities of the Regions.
 - The definition of epidemiological and healthcare indicators to raise the level of risk • in a territory and propose, when necessary, additional measures in coordination with the Regions.

Measures adopted by the Regions, the epidemiological context shows, that very different transmission scenario have coexisted and continue to coexist in the different territories, which may require different control measures. Therefore, each Regions has adopted different actions based on these different scenarios, by the Early Response Plan and with the support of the Ministry of Health. Despite this, all of them coincide in limiting the number of people at meetings and in a limited capacity. Moreover, almost 95% have opted for the limitation of movement at night, while almost 74% have determined the perimeter closure of the Region. Concerning the hotel and catering industry, we generally find a greater diversity in the measures, although all of the Regions have





opted to reduce opening hours and some of them (30%) have decided to close the hotel and catering industry. The main measures implemented in each Region are:

- Perimeter closure of the Regions. •
- Perimeter closures are smaller than those of the Regions are. •
- Limitation of night-time movement.
- Limitation of people at meetings.
- Limitation of capacity.
- Total closure of the hotel and catering trade.
- Reduction of night-time opening hours for the hotel and catering trade.

Since August, five packages of Coordinated Public Health Actions have been approved:

- 1. The first was agreed on 14 August by the Plenary of the Interterritorial Council of the National Health System. It contains eleven control measures in seven different areas, three recommendations and an indication of compliance with the points included in the Early Response Plan, with aspects related to the closure of nightlife, the ban on smoking in outdoor spaces and the reinforcement of the protection of homes for the elderly. The first region to apply the eleven measures was La Rioja, where they came into force the following day.
- 2. The second was approved on 27 August, with a view to the start of the school year, following the joint meeting of the Interterritorial Council and the Sectoral Conference on Education. It includes a total of twenty-nine measures and five recommendations for implementation by the competent administrations.
- 3. The third was agreed on 9 September and consists of measures in four areas: COVID's vaccination, screening, coordination with Local Entities and the implementation of new rounds of the national seroprevalence study.
- 4. The fourth package of these measures was adopted on 30 September, with coordinated public health actions aimed at municipalities with incidences of the disease well above nationally and internationally acceptable risk thresholds, with increasing pressure on the health care system and populations of more than 100,000 inhabitants. When the epidemiological situation has so required, the Ministry of Health has exercised its coordinating role, proposing the adoption of coordinated public health actions based on the shared work being carried out with the Regions.
- 5. The fifth package of coordinated actions was approved on 28 October to respond to the special risk situation arising from public attendance at international professional sporting events.

Two measures were adopted in the State Strategy against the second wave in the event of a risk situation. On the one hand, on 22 October, the Plenary of the Interterritorial Council of the National Health System agreed by a very large majority, and without any votes against, on the document on Coordinated Response Actions, developed and agreed upon by the technical heads of all the Regions and the Ministry of Health. On the other hand, and since this was also requested by several Regions, on 25 October the Government approved the Royal Decree declaring an Emergency's State to





contain the spread of infections caused by SARS-CoV-2, the extension of which was supported by a large majority in the Plenary Session of the Congress of Deputies on 29 October.

The Coordinated Response actions document for the control of the transmission of COVID-19 technically extends the Early Response Plan, which establishes a framework of common criteria, based on scientific evidence, for the interpretation of the combined epidemiological indicators and the adoption of pandemic containment measures according to four alert levels, from one to four, with four being an extreme level. The common framework of actions aims to ensure sufficient coordination between territories, without preventing the Regions from taking the complementary measures they deem appropriate. Since the coordinated response, process is adaptable to the situation and the demographic, mobility or social vulnerability context of each territory (Regions, province, island, municipality, department, health area, basic health area or equivalent), both in scenarios of increased or reduced risk of transmission. In other words, the Regions have a wide margin to apply the measures they consider most appropriate in their territories. However, it should be noted that 74.9% of the Regions agree on the application of the same measures mentioned above. The document is based on technical-scientific foundations, taking into account the available evidence, national and international experience in pandemic management. The opinion of experts and technicians from all the territories, that of the Scientific's Committee, and the international recommendations of the World Health Organisation, the European Centre for Disease Prevention and Control, and the Member States of the European Union through multilateral meetings coordinated by the European Commission. This document is intended as an evolving guide, which will be adjusted as more information becomes available or as new national and international scientific evidence is generated. It establishes thresholds for main indicators and complementary indicators that classify the outcome of each of them as low, medium, high or very high risk: epidemiological indicators on the level of transmission (cumulative incidence, positivity and traceability) and indicators of health service utilisation (hospital occupancy), as well as complementary indicators that help to assess and characterise the situation.

Despite the measures adopted, Spain is suffering the third wave. Broadly speaking, the third wave of the pandemic in our country has been stronger than, the second and the peak of infections occurred sometime between 20 and 24 January, depending on the evolution of each territory. However, 18 provinces have had a lower peak incidence than in November.

The number of deaths in this third wave is 19,200 people have lost their lives to COVID-19 between December and February, according to data provided by the National Epidemiological Surveillance Network (RENAVE), through the Ministry of Health. In two months, almost the same number of citizens died in around six months of the second one.

Three events have been the driving forces behind the third wave: *Black Friday*, the long weekend in December and Christmas. These events were directly related to the social and travel spheres, which served to facilitate the nationwide spread.

The December holiday period served as fuel for the coronavirus: crowds in shops and hotels, increased gatherings in homes, illegal parties and travel between Regions and provinces. Furthermore, Christmas celebrations and gatherings were the latest triggers.





The hope, in this third wave transition, has been the arrival of vaccines. The current challenge is to vaccinate more than 30 million Spaniards (70% of the population) by summer, while the country gradually increases the pace of inoculations.

5.1.4 Italian context

Since the spread of the coronavirus (COVID-19) in Italy, started in February 2020, many people who contracted the infection died. The number of deaths amounted to 87,381 as of January 28, 2021. On December 3, 993 patients died, the highest daily toll since the start of the pandemic. The region with the highest number of deaths was Lombardy, which is also the region that registered the highest number of coronavirus cases and is the epicenter of the outbreak in the country.

Italy's death toll was one of the most tragic in the world. In the last weeks, however, the country started to see the end of this terrible situation: at the end of December 2020, the administration of the first doses of COVID-19 vaccine began.



Fig. 6. Daily infection trend in Italy since the beginning of Covid-19 pandemic (source: Civil Protection Department COVID-19 Italy)

After the second wave of Covid-19 pandemic that hit Italy over last autumn, since the beginning of the 2021 we've been witnessing a slow decline of the curve. Nevertheless restrictions are still severe and applied nonuniformly all across the country, according to a combination of various factors.

In fact in Italy the government, due to the worsening of the epidemiological situation, has decided to apply a colour for each region (white, yellow, orange or red) by combining factors such as risk analysis, weekly incidence of cases and actual reproduction index Rt (also called infection index).

On the basis of these indicators, every Friday the control room of the Ministry of Health has attributed the color to the region and the respective restrictions.

This system has been updated and currently Italy has been divided into RED, ORANGE and YELLOW zones, depending on the seriousness of the situation. The territories or regions that enter the orange or red band must stay there for at least 14 days, then they will be re-evaluated, again on the basis of monitoring of scientific and non-discretionary data.





The Minister of Health will update the bands periodically. The assignment is based on the scientific data provided by the Technical-Scientific Committee.



Fig. 7. The classification of a Region according to the three scenarios (source: Civil Protection Department COVID-19 Italy)

The classification of a Region in one of the three scenarios indicated above is decided by the Ministry of Health on the evaluation of 21 criteria such as the Rt contagion index, the presence of outbreaks, the occupancy situation of hospital beds and places bed in intensive care. The monitoring capacity will also be taken into account, the so-called contact tracking. Then there are 6 other parameters that describe the ability to diagnose, investigate and manage contacts. For example, the percentage of positive swabs excluding the second and third tests on the same people, or the time from symptoms to quarantine and diagnosis.

RED AREA, HIGH RISK: The following shops and businesses remain open in the red area: bookstores, flower shops, computer and electronics shops, sporting goods, bicycles, car and motorcycle dealerships, shops selling cleaning products, hardware stores, toy and children's clothing stores, newsagents, pharmacies, perfumeries and herbalists and bookstores. In general, all food stores and supermarkets, as well as those that sell and basic necessities, from linen to soap, continue to be open. In addition to laundries and dry cleaners, hairdressers and barbers are also open. Industries, crafts, construction are also open. As for the catering, however, only home delivery is allowed.

ORANGE AREA. INTERMEDIATE RISK: This is called "scenario 3", with an Rt between 1.25 and 1.5 and a sustained and widespread transmissibility with risks of maintaining the health system in the





medium term. All the limitations of the yellow zone are foreseen, with slightly less restrictive interventions than the red zone.

YELLOW AREA, AT MODERATE RISK: In the yellow band all the Regions that have a risk index compatible with scenario 2, where the RT is between 1 and 1.25 only nationally valid measures will apply here. That is, distance learning for high schools, ban on leaving home from 10pm to 5am and closing of all activities at night, stop for museums, closing of shopping centers on weekends, total closure for bingo halls and betting centers. Furthermore, competitions are suspended, smart working is strongly recommended and the maximum capacity for local transport, from buses to regional trains, drops to 50%.

As far as education system is concerned, as a result of the last months trend of the spread of the coronavirus in Italy, the Government has decided to move the education of all grades online, with the exception of early childhood education.

Scholastic Autonomy, introduced in the national order more than twenty years ago, is a privileged tool to elaborate a strategy for the restart of the school year that responds as much as possible to the needs of the territories of reference in respect of the above mentioned health indications. The Regulation of March 8, 1999, n. 275, laying down rules on the autonomy of educational institutions, gives institutions the ability to build training courses functional to the realization of the right to learn and educational growth of all students, through the definition of precise areas of organizational intervention.

Therefore, in this context, it remains the opportunity for educational institutions to take advantage of additional forms of flexibility arising from the instrument of Autonomy, based on the space available and the needs of families and the territory, which contemplate, for example:

- a reconfiguration of the class group into more learning groups;

- the modular articulation of groups of students coming from the same or different classes or from different course years;

- school attendance in differentiated shifts, also varying the application of solutions in relation to the age groups of pupils and students in the various school grades;

- for secondary schools of the second degree, a use for students, appropriately planned, of didactic activities in presence and, in a complementary way, integrated digital education, where the context conditions make it a preferable option or the technological opportunities, age and skills of students allow it;

- the aggregation of disciplines into areas and subject areas, where not already provided for by recent innovations in the school system;

- a different weekly modulation of school time, by resolution of the competent collegial bodies.

The educational institutions will take care to ensure, for each student, the same educational offer, without prejudice to the opportunity to adopt different organizational solutions, to achieve educational activities or training in parallel or alternative to traditional teaching.





The local authorities carry out, therefore, in the territories of their competence, the reconnaissance of existing school spaces, also with the collaboration of the schools, to know data or to deepen specific situations of context; they prepare the adaptation of spaces never (or no longer) used as school buildings (data available in the information dashboard mentioned in the introduction), also proceeding to the assignment in use to the schools of spaces usually intended for citizenship, to be readapted for the purpose of school attendance, as well as the realization of external solutions of suitable size to accommodate classes, in internal spaces or even outside the school grounds.

The school managers will constantly communicate to the local authorities and to the bodies identified in this document the data related to the direct scholastic institutions.

On the basis of the actions to be carried out and the relative costs to be faced, the territorial body of reference will take charge of the works considered necessary, following a joint assessment carried out with the single headmaster or during a special conference of services, agreeing with the school institutions the eventual economic co-participation or technical expertise of the project. For the widest realization of school service in the conditions of the present scenario, local authorities, public and private institutions operating in various ways in the territory, the Third Sector and schools can sign specific agreements, such as "Educational community pacts", subject to the availability of adequate financial resources. The involvement of the various public and private actors, in a logic of maximum adherence to the principle of subsidiarity and educational co-responsibility, takes place through the instrument of the conference of services mentioned above, called to evaluate the individual proposals for cooperation and the methods of implementation, through the abovementioned agreements, which define the aspects of implementation. Thus implementing those constitutional principles and values, for which all components of the Republic are committed to ensuring the realization of education and upbringing, and strengthening the educational, civil and social alliance of which school institutions are necessary, but not unique, interpreters, this conference is also convened at the request of the same school institutions, in order to

- encourage the provision of other facilities or spaces, such as parks, theaters, libraries, archives, cinemas, museums, in order to be able to carry out educational activities complementary to the traditional ones, however aimed at educational purposes;

- Support the autonomous schools, taking into account the different conditions and criticalities of each, in the construction of collaborations with the various territorial actors that can contribute to the enrichment of the educational offer, identifying purposes, roles and tasks of each on the basis of available resources.

The ultimate goal is to provide unity of vision to an organizational, pedagogical and didactic project also linked to the specificities and opportunities of the territory.

It is also essential to have the active collaboration of students and families, who will have to continue to put into practice the general behaviors required to combat the spread of the epidemic, in the context of a shared and collective responsibility.

In this regard, the strengthening of the school-family alliance can be further concretized in the updating of the "Educational Co-responsibility Pact" which, where necessary, can be recalibrated in





a form more responsive to the new cultural needs of sharing between school and family, becoming the place where adult educators recognize themselves, formally and substantially, in the achievement of the same objective.

https://www.miur.gov.it/documents/20182/2467413/Le+linee+guida.pdf/4e4bb411-1f90-9502f01e-d8841a949429

As for staff training, as provided by both private companies and public institutions, each Regional Authority is entitled to issue specific regulatory Acts. For example, in the Emilia-Romagna area, training courses can only take place remotely, with the exception of one-to-one activities (for example, in the field of music or foreign language lessons, etc.). These can take place in person, only in compliance with the protocol approved by the Regional Governor's Act no. 87 of 23 May 2020 subsequently amended by the Governor's Ordinance no. 109 of 12 June 2020.

It's to be noticed how covid is currently affecting nursery and high schools choice made by parents and adolescents in Emilia-Romagna region, who usually make a decision on which school to be attended over next scholastic year at the beginning of the year.

Analysing data some trends can be glimpsed: as for nursery schools, those ones located in the hill and those ones that prioritize outdoor educational activities are being preferred.

As far as high schools are concerned, trends show that thos ones offering more chances to get a job, in view of an uncertain future and probable economic crisis, are mostly picked, such as technical and professional schools. Among them information technology schools subscriptions raised by over 10%, most likely linked to the phase we're experiencing.

A problem concerning rooms enough for all the students expected to attend next scholastic year has raised: the risk is that classes will be too crowded and possible safety measures might not be accomplished.

5.1.5 Bulgarian context

COVID- 19 cases have increased significantly in Bulgaria.



Fig. 8. Total coronavirus cases in Bulgaria (Worldmeter, 2021)





It was decided, on an extraordinary government meeting (26.01.2021), the emergency epidemic situation to be extended to April 30, 2021. The Government of the Republic of Bulgaria has created an official website for information on Covid-19 situation in Bulgaria: <u>https://coronavirus.bg</u>

The COVID-19 pandemic constitutes the largest global public health crisis in a century, with daunting health and socioeconomic challenges. Trying to control the pandemic, EU governments have put in place a series of restrictive measures, including 'social distancing', school closures and then effective lockdown. Young people are already among the most affected by the socioeconomic impacts of the coronavirus response, according to the survey conducted in April 2020 by Eurofound among 85,000 citizens across all EU countries. The results show how young people in Europe are struggling to respond to the crisis, reporting poorer mental wellbeing and greater loneliness than other age groups – coupled with job loss and a dramatic decrease in working time and overall insecurity about their professional and financial future. Young people, especially socioeconomically disadvantaged ones are more likely to suffer from infection control measures and to be hit particularly hard by the economic ramifications of COVID-19.

For young people, the COVID-19 crisis poses considerable risks in the fields of education, employment, mental health and disposable income.

According to Eurostat, in May 2020, a third month marked by COVID-19 containment measures in most Member States, some 2.815 million young persons (under 25) were unemployed in the EU, of whom 2.267 million were in the euro area.

The survey also found that some 15% of the respondents aged 18-34 reported feeling downhearted or depressed most of the time, 20% reported feeling lonely, and 21% reported feeling particularly tense. The survey indicates that more than half (53%) were at-risk of depression.

5.2 Status of education

This section describes the current state in education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment and the importance of the education in this field to the partner countries.

According to analysis results, it can be stated that there are neither BSc nor MSc studies related to MICROBE topics in the world. There are several universities with disciplines related to MICROBE topics. At present, it have not been found separate undergraduate or graduate studies in higher education related to the impact of coronavirus on national economies. However, there are published programs on this topic. This is the Oxford University Business Economics Programme "The Economics of Post-Crises Recoveries" (https://www.economics.ox.ac.uk/article/new-expertseminar-series-to-explore-economics-of-post-crisis-recoveries#/). The London School of Economics "Shaping and Politics а conference post-COVID World" is organizing the (https://www.lse.ac.uk/International-History/Events/2021/learning-from-history-for-a-post-covidworld). The conference will discuss the direction the world can and should take in the aftermath of





this crisis and the policies to be pursued by national and global actors. Conference topics: the macro economy; environmental sustainability and climate change; health, social care and others.

Nevertheless, it's to be mentioned a project for monitoring and controlling the spread of covid-19 in the city of Ferrara (Italy), which it's locally promoted and developed by the University of Ferrara, Engineering department.

This initiative has been part of a wider project of an international network of University Research Centers directly involved in the health emergency. It's actually a laboratory which has both a scientific and engineering approach meanwhile keeping technical, building, environmental, planning, infrastructural, commercial, and economic aspects into consideration.

The highly innovative character of this research project lies in the ability to systematize and connect health data and analysis with urban planning, control and supervision of the territory, management of public space. The latter is also to be understood as public order and security, and therefore involving also civil protection issues.

It starts from the observation and tracing of the spread of the contagion, meaning with it the observation of all the variables considered significant, and from its subsequent linking to the territorial databases known in the planning field: national, regional, local infrastructures, settlement models, density housing, network of the main production systems and their connection, public and private transport network, commerce, daily and occasional commuter flows, economic flows.

Typically the strategic planning that the laboratory deals with is aimed at the "concentration" of people in a place, to "amplify" the local population density values (low for Ferrara) by "capturing" the transit of people, tourists, commuter workers, citizens of other neighborhoods; these studies are aimed at optimizing of the operation of these strategic places, public transport, widespread commerce, activities.

5.3 Funding

This section is given overview for sufficiency of funding allocation for partner countries on integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment at a country level.

5.3.1 Lithuanian and Estonian context

According to country reports from Lithuania and Estonia:

- The main funding covers only teaching activities. In this field, the sciences of medicine (study programs on epidemiology) and the built environment (its development, management) are financed.
- Research and development funding is mainly via grants and projects;
- No sufficient special funding for curriculum development.





5.3.2 Spanish context

The pandemic caused by the COVID-19 coronavirus is causing unprecedented health, economic and social emergency worldwide. Since the World Health Organisation elevated it to an international pandemic on 11 March 2020, the Spanish Government, making use of the powers granted by Organic Law 4/1981, of 1 June, on Emergency's States, exception and siege, by Royal Decree 463/2020. The 14 March, declared an Emergency's State to manage the health crisis caused by this virus, which includes, among other issues, restrictions on freedom of movement, with the effects this entails for workers, companies and citizens.

The pandemic is having severe health, social and economic impact and its stabilisation and possible eradication will involve a long and costly process, especially in the health field. Faced with this situation, the Government is responding by adopting measures aimed at reinforcing the health system and counteracting the effects that the paralysis of economic activity is causing in many areas, with the resulting loss of income for families and workers, as well as for the different companies and sectors of the spanish economy.

The main action of the Government, in order to allocate extraordinary funds to alleviate the consequences of the pandemic, has been the aforementioned Royal Decree-Law 22/2020, of 16 June, which regulates the creation of a COVID-19 Fund and establishes the rules for its distribution and disbursement. This fund, endowed with 16,000 million euros, allocates 2,000 million euros to education. Of this amount, 80% (1.6 billion) is earmarked for non-university education and is distributed among the Regions according to the population aged 0 to 16 (according to census figures as of 1 January 2019), with each of the Ceuta and Melilla being allocated 7 million euros. From the COVID-19 Fund, the Andalucía's Government allocates an extra 61 million euros to the Universities.

A second immediate intervention to alleviate the effects of the pandemic is the measures to support families, approved in Royal Decree-Law 7/2020 of 12 March, which adopted urgent measures to respond to the economic impact of COVID-19, and which includes the basic right to food for children in vulnerable situations who are affected by the closure of educational centres. This aid was a redefinition of the existing aid and was intended to try to maintain the service for the families of children receiving a grant or canteen aid during the 2019-2020 school year who were affected by the closure of educational centres.

In the wake of the COVID-19's pandemic, the Ministry of Education and Vocational Training is developing a Digitalisation and Digital Skills Plan. The "*Educa en digital*" programme complements the Plan and aims to promote the digital transformation of education in Spain in several areas. Firstly, it aims to make connected computer equipment available to students who require it, an action designed to close the digital divide in access to technology that became more evident after the closure of educational centres. On the other hand, it envisages addressing the digital training of teaching staff in order to adapt teaching methodologies to a virtual context. It also involves the implementation of platforms to assist teachers, students and education authorities through the application of Artificial Intelligence. By 2020, up to 260 million euros will be allocated to equip schools with devices and connectivity. Of this, 190 million euros will come from Red.es (184 million from the European Regional Development Fund, ERDF) and 70 million from the Regions. The centres will make available to the most vulnerable students, by means of loans, devices that facilitate digital





education both in person at the centre and at home. This emergency action aims to reach 500,000 devices.

The Ministry of Education and Vocational Training allocates 2,090 million euros for scholarships and study grants and another 58 million euros for the "Investments in educational centres and other educational activities" programme of an ordinary nature.

5.3.3 Italian context

Various grants from the Ministry for education, university and research have been allocated to the school in recent months, a first part in summer 2020 during which the economic resources allocated financed various measures and structural works which made it possible in September to give lessons in full compliance with the distancing of students: adaptation and functional adaptation of the spaces and classrooms, purchase of single-seat desks, purchase of protective devices and material for individual hygiene or environments.

Further funding from the same ministry then made it possible this autumn to finance interventions in favor of teaching for female students and students with disabilities, specific learning disabilities and other special educational needs, to enhance digital teaching. And then, again, to adapt the internal and external spaces of the institutes (including the rental of new spaces) to ensure the conduct of lessons safely or to purchase professional services, training and technical assistance for safety on workplaces, for medical-health and psychological assistance, for the removal and disposal of waste, to increase the workforce, for new furnishings, masks, sanitizing gels, school transport, replacement of fragile workers, schools in earthquake areas.

The Ministry of Education, University and Research has also communicated that in order to give psychological support to educational institutions to respond to the hardships and trauma deriving from the Covid-19 emergency and to prevent the onset of forms of distress or psychophysical discomfort, a supplementary allocation of funds already disbursed to educational institutions has been envisaged pursuant to art. 231, paragraph 1, of the D.L. 34/2020.

One of the measures, in particular, envisaged the financing of the first psychological-school first aid service, a sort of listening desk, which through a holistic approach, aims to offer education to professionals (teachers and managers) and students an articulated specialist consultancy. The intent is to promote well-being at a psychological and didactic-managerial level, orienting towards the definition of targeted strategies and methodologies functional to the resolution of school problems

In Italy, unlike other European countries, the school lacks psycho-pedagogical teams and specific services to support professionalism. Great attention was paid to the definition of an antivirus prophylaxis to be implemented to avoid contagions, however, an equally important and necessary prophylaxis for the management of stress, anxiety, fears and the inevitable frustrations that wind more or less manifest between the school staff, polluting the fundamental professional commitment with inadequate emotional experiences.

The trade unions, however, denounced the insufficiency of the resources allocated and the unequal distribution of these for which some regions were penalized compared to others.





Specifically, the protest concerns the impossibility of being able to recruit school staff in a number suitable to manage the current situation which requires an expansion of the staff both in terms of teachers, janitors, alternates, and in terms of extra-curricular staff addressing the covid-19 crisis and its psychological impact on students and school staff.

5.3.4 Bulgarian context

- There is not sufficient special funding for curriculum development in Bulgaria;
- There are not funding procedures for education on human behavior relevant to influence of coronavirus and negative emotions in a built environment, in Bulgaria;
- Funding in the field of research is mainly via grants and projects.

5.4 Educational needs

This section is assisted to identify the needs in integrated education on human behaviour relevant to the influence of coronavirus and negative emotions in a built environment. According to the the partner country reports, the global trends, needs and gaps were analized, as the situation is new and international, proposed suggestions are applicabale to every country and elaborate on literature reviews prepared by each partner.

5.4.1 Lithuanian context

The 2030 Agenda for Sustainable Development provides many of the necessary signposts and guidelines. The International Commission on the Futures of Education-established by UNESCO in 2019 and composed of thought leaders from the worlds of academia, science, government, business and education—presents nine ideas for concrete actions today that will advance education tomorrow (UNESCO2020):

- 1. Commit to strengthen education as a common good. Education is a bulwark against inequalities. In education as in health, we are safe when everybody is safe; we flourish when everybody flourishes.
- 2. Expand the definition of the right to education so that it addresses the importance of connectivity and access to knowledge and information. The Commission calls for a global public discussion—that includes, among others, learners of all ages—on ways the right to education needs to be expanded.
- 3. Value the teaching profession and teacher collaboration. There has been remarkable innovation in the responses of educators to the COVID-19 crisis, with those systems most engaged with families and communities showing the most resilience. We must encourage conditions that give frontline educators autonomy and flexibility to act collaboratively.
- 4. Promote student, youth and children's participation and rights. Intergenerational justice and democratic principles should compel us to prioritize the participation of students and young people broadly in the co-construction of desirable change.





- 5. Protect the social spaces provided by schools as we transform education. The school as a physical space is indispensable. Traditional classroom organization must give way to a variety of ways of 'doing school' but the school as a separate space-time of collective living, specific and different from other spaces of learning must be preserved.
- 6. Make free and open source technologies available to teachers and students. Open educational resources and open access digital tools must be supported. Education cannot thrive with ready-made content built outside of the pedagogical space and outside of human relationships between teachers and students. Nor can education be dependent on digital platforms controlled by private companies.
- 7. Ensure scientific literacy within the curriculum. This is the right time for deep reflection on curriculum, particularly as we struggle against the denial of scientific knowledge and actively fight misinformation.
- 8. Protect domestic and international financing of public education. The pandemic has the power to undermine several decades of advances. National governments, international organizations, and all education and development partners must recognize the need to strengthen public health and social services but simultaneously mobilize around the protection of public education and its financing.
- 9. Advance global solidarity to end current levels of inequality. COVID-19 has shown us the extent to which our societies exploit power imbalances and our global system exploits inequalities. The Commission calls for renewed commitments to international cooperation and multilateralism, together with a revitalized global solidarity that has empathy and an appreciation of our common humanity at its core.

COVID-19 presents us with a real challenge and a real responsibility. These ideas invite debate, engagement and action by governments, international organizations, civil society, educational professionals, as well as learners and stakeholders at all levels (UNESCO 2020).

There are certain trends that are likely to take center stage in the field of education in the coming years. These are (AnalyticsInsight.net 2020):

- Personalized Learning Environment;
- Contactless Attendance;
- Gamification;
- Augmented Reality/Virtual Reality.

According to the search for coronavirus in a built environment in other universities' MSc programmes, no similar study programs and modules were found. There is some Masters of Science in Epidemiology programmes. For example, Master in Epidemiology and Biomedical Data Science at the University of Oulu, Master in Epidemiology at Utrecht University, MSc in Clinical and Psychosocial Epidemiology at the University of Groningen, Infectious Diseases MSc at The University of Edinburgh - College of Medicine & Veterinary Medicine, etc. More MSc programmes in this field could be found by this link: https://www.healthcarestudies.com/MSc/Epidemiology/Europe/. Furthermore, only a few universities have offered epidemiology as a course of study at the undergraduate level. One notable undergraduate program exists at Johns Hopkins University, where students who major in public health can take graduate-level courses, including epidemiology, during





their senior year at the Bloomberg School of Public Health. These study programs are focused on the analysis of the epidemiological situation, statistics, management. However, they are not specifically targeted at COVID-19 or pandemics. The influence of COVID-19, environment, and climate goals are closely related and are included in the MICROBE learning material and MOOCs development. Personalized MOOC Modules, the MICROBE Method, and the system will analyse relationships between COVID-19, environment, and climate change aspects on the world-wide scale.

Currently, many countries face many challenges and needs for the housing improvements that need to be solved. Micro-, mezzo- and macro-environments in housing pertinent to COVID-19 involves numerous aspects. Working from home is on an upswing; thus, suitable environments must be enabled. COVID-19 is bound to bring new requirements to future homes. These will involve resource-efficient throughout a building's life-cycle, larger lots along with smart bathrooms and bidets. There will be new aspects to multigenerational homes, which will now require unique spaces, such as those designed for package delivery. Future homes cannot be simply smart homes — they must be healthy and energy-efficient homes. Floor plans will contain less open space. Creative locales within home can be designed for office use. Management teams will be designated for infrastructural facilities and different, smaller teams for technical facilities. Daily hygienic needs must be on-site in simplified designs. Checklists must be generated for daily health and safety needs. BIM and other digital means need to fight with COVID 19, e.g., by digital risk monitoring on construction sites and in work sites. Relevant systems would include data analysis, alerting, video surveillance, IoT and non-invasive temperature monitoring. Plans should include reporting on health on a daily basis and the ability to diagnose remotely. Proptech would change facilities management on a step-by-step basis by employing workplace wellbeing, efficient energy consumption, optimal use of available space and data management.

Depending on the coronavirus situation and educational needs, the MICROBE MOOC modules can focus on the following topics (United Nations 2020, Chevallier, Enders 2020, OECD 2020a,b, Kennedy 2020, CHEC 2020, Ekberg 2020, Abbott et al. 2018, Oxford Martin Programme... 2020):

- Redesign of public spaces to adapt to the uncertainties: •
 - adaptive reuse;
 - suburban revival;
 - rebuilding plans;
 - accelerated technologies use;
 - o redesigning streets.
- Social, personal and contextual behaviour change and its stages.
- Behaviour change at macro, mezo and micro levels. •
- Behaviour change design wheel implementation. ٠
- City policy responses to COVID-19:
 - Social distance and confinement;
 - Workplace practices and commuting patterns;
 - Targeted measures for vulnerable groups;
 - Local service delivery;
 - Support to business and economic recovery;





- Communication awareness raising and digital tools;
- Sustainable development with respect to COVID-19:
 - No poverty. Loss of income, leading vulnerable segments of society and families to fall below poverty line.
 - Zero hunger. Food production and distribution could be disrupted.
 - Good health and well-being. Devastating effect on health outcomes.
 - o Quality education. School for many closed; remote learning less effective and not accessible for some.
 - Gender equality. Women's economic gains at risk and increased level of violence against women. Women account for majority of health and social care workers who are more exposed to COVID-19.
 - Clean water and sanitation. Supply disruptions and inadequate access to clean water hinder access to clean handwashing facilities, one of the most important COVID-19 prevention measures.
 - o Affordable and clean energy. Supply and personnel shortages are leading to disrupted access to electricity, further weaking health system response and capacity
 - Decent work and economic growth. Economic activities suspended; lower income, 0 less work time, unemployment for certain occupations.
 - o Sustainable cities and communities. Population living in slums face higher risk of exposure to COVID-19 due to high population density and poor sanitation conditions.
 - o Climate action. Reduction commitment to climate action; but less environmental footprints due to less production and transportation.
 - Pease, justice and strong institutions. Conflicts prevent effective measures for 0 fighting COVID-19; those in conflicts areas are most at risk to suffering devastating loss from COVID-19.
 - Partnership for the goals. Aggravate backlash against globalization; but also highlight the importance for international cooperation on public health.
- COVID-19 Framework. The purposes of the COVID-19 Framework is to inform national, multilateral and global responses and to shape the recovery response and future recommendations - with an emphasis on Building Back Green and strengthening Public Health as a key component of health systems.
- COVID-19 impact, relief measures and possible long-term distortions.
- Analytics tolls (economic modelling, machine learning, predictive analysis, network analysis, system dynamics, quantitative analysis) and trade (leverage trade and investment agreements, evaluation and monitoring performance, supply chain management, competitive benchmarketing, support C-Level execs in global strategy, map market access).
- Supply chain resilient to the current pandemic situation.
- Measures to combat COVID-19 by hindering its propagation and by reducing its effects.




5.4.2 Estonian context

During the past several months the higher education landscape in Europe, as well as around the world has seen major transformation in many forms - in delivery, assessment and recognition of knowledge and competencies. The sudden changes have affected the lives and realities of many students and it is globally foreseen that a changed blended reality will persist during the upcoming academic year, if not even longer (ESU, 2020).

In 2019 UNESCO launched "the Futures of Education: Learning to Become" initiative with the aim of rethinking education and reimagining how knowledge and learning can shape the future of humanity and the planet. The pandemic has forced a massive shift away from learning and teaching in traditional settings with physical interactions. In the renewal of education, human interaction and wellbeing must be given priority. Technology—particularly digital technology that enables communication, collaboration and learning across distance—is a formidable tool, not a panacea but a source of innovation and expanded potentials.

In consideration of the mandate to reflect on alternative and possible futures, UNESCO's International Commission on the Futures of Education has decided to focus on ways to be helpful at this unprecedented moment in history, one that is causing a severe disruption in educational opportunity around the world. They offer the guidance (UNESCO, 2020) in a spirit of humility and in an effort to illuminate the ethical dilemmas and choices in front of us now.

In addition to the report of the International Commission on the Futures of Education, established by UNESCO in 2019, that have proposed nine ideas for concrete actions today that will advance education tomorrow (UNESCO, 2020), ESU (2020) has organized a webinar series focusing on the possibilities that e-learning offers, assessment in e-learning, as well as the quality and recognition of e-learning. Generally it can be concluded from the webinar series that emergency online learning developed during the pandemic highly differs from 'real', strategically implemented e-learning. Therefore, ESU (2020) wanted to look beyond the pandemic and see which challenges and opportunities come with e-learning and which obstacles need to be overcome in order to sustainably develop e-learning throughout and beyond the next academic year. There are many factors to take into account for successful e-learning - fully or partially (combined with on-site courses):

- students and teachers need to be trained in digital literacy,
- privacy and data protection need to be taken into account,
- accessibility needs to be guaranteed for all and changes need to be made to transfer the feeling of community into an online learning environment.

E-learning and blended learning offer many opportunities for accessibility, lifelong learning and short cycle education, but we need to ensure to find suitable alternatives in terms of social connection, interactivity and student-friendly environments as provided in face-to-face learning.

The European Students' Union (ESU) came up with recommendations for the E-learning process in the academic year 2020-2021.





Universities across Europe are preparing for different scenarios for the 2020-2021 academic year. Only a few of the higher education institutions' plans for the preparation of the upcoming semesters include creating a blended approach for physical campus attendance and virtual learning from home, looking into the quality assurance of this approach, ensure timely communication about this to students, and in short thoroughly developing quality blended learning solutions.

Below, points that are of utmost importance for planning a sustainable and effective use of e-learning in the upcoming semesters are address. Summary of recommendations:

→ Communicate clearly: Communication between all stakeholders is crucial to find common ground and solutions acceptable for all. Constant sharing of information and good practices amongst HEIs is extremely important to make e-learning a success

→ Act for accessibility: Guaranteeing accessibility to all students is the starting point of successful e-learning.

 \rightarrow Involve students in decision making: Involvement of stakeholders, especially students, already in the planning and policy making process can increase the acceptance and support for elearning.

→ Guarantee privacy and data protection: Privacy and data security should be guaranteed and transparently communicated.

→ Support teachers : Teachers need to be trained and supported to be successful teachers in elearning

→ Remember co-creation: Extra efforts should be made to create a lively and open learning community.

→ Be interactive: Interactivity with and towards the students is even more important in an online learning environment.

→ Focus on the learning outcomes: It is important to carefully redefine the learning outcomes where needed to ensure they truthfully reflect what students have achieved through their learning.

 \rightarrow Apply diverse assessment methods: In online learning there are many different assessment methods possible. In order for students to truly obtain the learning outcomes defined in the programs multiple assessment methods should be applied.

→ Remember to do QA: Quality assurance is key to successful learning and should be applied taking into account the unique elements of e-learning.

 \rightarrow Start and end with recognition: Recognition procedures should be already taken into consideration during the planning process in order to ensure smooth performance

→ Don't discriminate against the international students : International students should be given equal opportunities to study in a university. As long as they can not physically come to campus, online alternatives have to be offered by the university.





→ Don't call internationalization at home a virtual mobility : mobility comes with diferent challenges and opportunities for students than an online experience. Internationalization at home could therefore not be called mobility.

 \rightarrow Prepare your support services : Exchange and support structures are essential to promote interactivity and identification of needs for support.

5.4.3 Spanish context

Educational needs are based on all those actions that are necessary to achieve the objectives that the Education Centres have set themselves. In specifying the actions, the agents involved, the procedures are foreseen and the necessary resources will be taken into account. All these needs and actions should be grouped around the elements of the European Framework for Digitally Competent Organisations or Infrastructure, such as technological equipment, connectivity, digital services and the necessary maintenance, among others. We must analyse the technological means and resources that schools can count on to plan teaching and learning processes, incorporating not only those of the institution itself, but also a situational analysis of the resources of families/pupils for learning at home, and their real availability for the learning process (devices and connectivity). In general, the educational needs of most of the Centres share the following shortcomings:

- Reinforcement programmes to address those pupils who are disadvantaged by the digital divide: Lack of infrastructure (particularly in rural areas), lack of accessibility of platforms, content and teaching processes themselves, lack computer literacy and skills needed to participate in the information society, as well as the ability to use this technology for learning and content production. All of these difficulties are exacerbated in the case of the most vulnerable students for social, cultural and economic reasons, furthermore to digital reasons, as well as personal circumstances arising from disability.
- Social guarantee programmes that ensure educational continuity for all students living at risk of poverty and vulnerability. In this circumstance, the so-called digital divide is a major handicap, which must not be allowed to exclude pupils. In order to overcome the initial differences between families and regions, there must be a crash plan in which the different administrations - central, regional and local - coordinate their efforts, and in which NGOs with proven experience in the use of technologies can join in. This plan should include investments that promote the necessary social protection policies so that families in situations of precariousness and poverty have future prospects for their children.
- Specific Information and Communication Technologies (ICT) training plans, in line with the professional competence model for teachers, which is currently being adapted to the Common Framework for Digital Competence in Teaching MCCDD developed by the Ministry of Education and Vocational Training and the Regions.
- Administrations should improve and increase educational resources on free digital platforms, as well as promote and encourage teachers to contribute and exchange experiences, good practices, resources, content and materials for the use of the entire educational community.
- The implementation of a "digital scholarship" for pupils so that they can incorporate devices (tablets, laptops) in their homes to carry out their homework and follow the teaching at the



same time as the pupils who attend classes, as well as the provision of "social Wi-Fi" for particularly disadvantaged areas.

• The creation of a free and open software platform that is simple to use, allowing its use by the entire educational community, guaranteeing training for its use by teachers, students and families. This will require the development of appropriate materials for distance learning and corresponding reliable assessment tools for such online learning.

MICROBE

- Coherent measures should be provided that do not replicate the school model (timetables, textbooks and homework) that do not take into account either the limitations of confinement or online digital opportunities or students' own capacity to construct knowledge. Likewise, a transitional system should be guaranteed that consolidates good practices, understood as successful experiences in specific contexts and circumstances, and later generates the foundations for a change in a more personalised and digital educational model. Always in the knowledge that face-to-face teaching, socialisation and group learning in educational centres are essential for the development of girls and boys.
- It is considered especially important that all teachers receive all the technological means and materials. As well as, the necessary training to be able to carry out their work, in the conditions that an education system based on the principles of quality, equity and inclusiveness requires, in the exceptional situation of no return in digital education in which we find ourselves while maintaining their working conditions and remuneration. Similarly, in order to carry out their work, teachers must have the support and trust of society, as well as a high degree of autonomy and freedom in the exercise of their profession.

In Spain, the Ministry of Education and Vocational Training (MEFP) will provide 20,000 Movistar mobile lines by sending SIM cards of 40 GB per month per line to students with difficulties to continue their education telematically during the Emergency's State, thanks to the collaboration of Telefonica, Cisco and IBM.

The MEFP, based on the number of students weighted by income levels, has proposed that the Regions distribute the cards to the students with the greatest difficulties in accessing technological resources, according to the criteria established by the Regional Ministries of Education and, where appropriate, Social Welfare. In this way, their impact in terms of equity is guaranteed. At these educational levels, moreover, students can take greater advantage of tools that facilitate access to videoconferencing, multimedia or interactive material.

Furthermore, Cisco is contributing to this project with Cisco Webex, which opens in a new window, a collaboration tool that connects teachers and students in real-time, including features to create a virtual classroom: videoconferencing and desktop sharing, among others. The Cisco Webex Teams version, which opens in a new window, facilitates collaboration between teachers and students.

IBM, for its part, provides the teaching community with support for the process of adopting and using the technological platform. Nearly 600 professionals have signed up as volunteers to advise teachers on how to get the most out of their interaction with students. They will also provide real-time telematics support to resolve any queries.





Among the proposals related to the completion of the course with guarantees of sufficiency is the avoidance of the digital and social divide for vulnerable students. To this end, the Andalucía's Government instructed the schools to develop a reliable register of the most socially vulnerable families and pupils, and the administration provided them with the technical means to enable them to carry out the activities or classes online (Wi-Fi, computers, mobile devices, etc.).

5.4.4 Italian context

According to the UN, the pandemic caused "the greatest disruption of education systems in history, affecting nearly 1.6 billion students in more than 190 countries on all continents"; it's estimated that the closure of schools and other learning spaces has impacted 94% of the world's student population. Even children, adolescents and families have found themselves living in a new era: distance learning, lessons filtered from a computer monitor, homework downloaded and sent via email, whatsapp study groups, school from dining room at home. In addition to that also the measures taken to ensure the safety of the environments have changed the face of the school institution caught the school community in many ways unprepared.

In Italy pandemic soon had repercussions in the education system, thus schools and universities have been heavily affected as were closed since the first weeks. The schools have therefore implemented new ways and approaches of doing school to maintain contact with students and families as well as to continue with educational activities.

In particular, when it was widely clear that the health crisis would not be short-term and quick to resolve, the schools moved in the direction of the implementation of distance learning activities (henceforth Dad) of various kinds, sometimes to pursue didactic continuity and maintain contact with pupils and families. In this unprecedented scenario for Italy, the observation and analysis of the processes and conditions that have arisen in the educational field can be considered relevant for three main reasons, concerning: 1) the role of education in facing the crisis ; 2) the emergence of old and new inequalities in the school system; 3) the renewed centrality of school-family collaboration in remote schooling.

In this context, the role played by the digital divide must be taken into consideration. On the one hand, digital inequalities - both dependent on the more or less wide possibilities of material access to technological resources and connected to digital skills, possessed or absent, necessary to maximize the benefits for personal and social development (Hargittai, 2002) - are associated with traditional forms of inequality and contribute to their reproduction also in the school field (Hargittai, 2008; Cabrera et al., 2020). On the other hand, technology has long been considered an independent source of resources, privileges, relationships and power (Castells, 1996), which amplifies inequalities to the extent that the control of technologies and strategic skills to use them are distributed unequally among the population (Van Deursen & Helsper, 2015; Van Deursen & Van Dijk, 2010; 2014). To the extent that we talk about unequal access and use of digital media, greater importance is attributed to the school system (Gui, 2019) which, with its own approach to information and communication (generally speaking Communication and Information Technology) and through its infrastructures and teaching staff, appears to be one of the most strategic and





effective factors in reducing unequal digital opportunities and promoting digital inclusion (Argentin et al., 2013).

The outbreak of the pandemic has highlighted the fragility of school system, especially in terms of social inclusion. The first element of fragility is constituted by the socio-economic status of origin: in 2018 in Italy there were more than 3 million minors at risk of poverty or social exclusion and 1.6 million those who lived in conditions of absolute poverty. Material poverty is significantly correlated with educational poverty, evidenced by both lower cognitive performance and less access to the cultural offer.

Foreign origin also has a clear disadvantage: foreign students have significantly lower levels of schooling in high schools than their Italian peers (65.8% versus 79.7%). The children most at risk are part of the first generations (about 47% of the total) and find it more difficult for linguistic and cultural reasons in reaching minimum learning levels.

Faced with the interruption of face-to-face teaching, they are potentially more at risk of dispersion. A final condition that requires special attention and care is that of pupils with disabilities or specific learning disorders, for whom the presence of the teacher and the sociability that is established in the classrooms are even more irreplaceable.

The coronavirus emergency, moreover, has reiterated (and made it evident) needs that already existed. In particular, those related to the digitization of the country. One of the main education gaps can be seen, from this point of view, as a distance between those who had the tools to communicate, work, study, being able to react to the moment of crisis, and those who did not.

Istat data and Censis surveys witnessed dramatic inequalities emerged all cross Italy: between 12 and 20% of pupils (depending on the geographical area) didn't have access to lessons due to the lack of a device; the educational gap between equipped students and those ones are not has increased by 75%; early school leaving was over 5% in 40% of schools.

It has thus become evident that the development of the digital agenda is and will be increasingly linked to the fight against educational poverty. The digital divide is in fact added to the already existing factors of inequality: from social status to place of residence.

The digital divide is another dimension of educational poverty: 5.3% families with a child who before the crisis declared that they could not afford the purchase of a PC.

The digitalization process is not yet inclusive enough for minors and families. This is shown, among other things, by the share of families who, before the crisis, didn't have internet at home for economic reasons, particularly in the south. And even more the level of digital skills of young people, very far from the European average. An educational gap with other EU countries that cannot be compensated only with more computers and tablets.

As many researches showed it's not only about technological gaps, but it's also a matter of deepseated social inequalities, for which a long-term strategy is needed, in synergy with that for combating educational poverty. When investing in digital school equipment, in fact, it must be remembered that the presence of a PC or tablet at school is a necessary premise, but not sufficient for a true digital school. The fault of the digital divide has gradually shifted from the possibility of



accessing technological devices to the modality and capacity of use. In summary, an educational investment, as well as a technological one, is essential.

As a result of the quarantine, over 8 and a half million children and young people who previously attended different levels of education, from nursery to high school, have remained at home in recent months.



Fig. 9. Number of pupils by level of education

SOURCE: Openpolis - Istat and Miur data processe (last update: Friday 29 May 2020)

This resulted in a number of practical issues for them and their families to resolve. The need to reconcile the times of family life with those of work. The importance of having adequate equipment and fast connections to carry out the different activities: following online lessons, doing homework, work needs, etc.

An inclusive digitization for children and young people

It is this social framework that we must take into account when we point out that the emergency has imposed (or reaffirmed) certain needs, in terms of digitization.

Before the Covid emergency arose, the percentage of families with children who declared that they could not afford the purchase of a PC or internet access was by no means marginal.

A difficulty that is also confirmed in the recent publications of the Istat. 12.3% of school-age children don't have a computer at home, close to 20% in the south. We are talking about about 850 thousand young people between 6 and 17 years old. 57%, even in the presence of a PC in the house, doesn't have their own personal device, and must share it with the other members of the family.

Only 6.1% of children aged 6-17 live in families where at least one computer is available per component. Besides, over a quarter of people live in overcrowded conditions, the share rises to 41.9% among minors

The coronavirus emergency imposes, for the safety of all, physical distancing rules. The challenge to be faced, from institutions to social organizations, from families to schools, is that physical distancing doesn't become social distancing. The real risk is in fact that this crisis, even once it is over, will impose a model of social relations made up of non-communicating "bubbles". By legitimizing, behind real health needs, the already existing inequalities, as if they were inevitable.



And above all by making them increasingly acute, in a country with already profound territorial imbalances.



Fig. 10. Percentage of families with children in potential economic hardship (2011) SOURCE: Openpolis - Istat data (last update: Saturday 31 December 2011)



Fig. 11. Percentage of households reached by landline with download speeds of 30 Mbps or higher SOURCE: Openpolis - Agcom data (last update: Tuesday 29 October 2019)







Fig. 12. Percentage of pupils attending a school where there is no PC or tablet (a.s. 2018/19) SOURCE: Openpolis - Miur data (last update: Saturday 1 September 2018)

When the more interactive forms of Dad have been activated in Italian schools, the fundamental role of so-called parental involvement has emerged, i.e. the collaboration of the family as a strategic resource in influence the scholastic and biographical trajectories of children (Macià Bordalba & Llevot Calvet, 2019).

According to the opinion of the Italian school administrators (Censis, 2020), parents have devoted much more time than usual to the school support of their children, especially those who attended primary and kindergarten, with an almost constant coaching of pupils which is essential to continue teaching. The ability, availability, commitment and competence of the parents has in fact depended on the possibility of following the teachers' proposals, evidently with many differences based on the aforementioned different resources, characteristics and opportunities enjoyed by families in Italy.

The socio-economic and cultural disadvantage certainly has direct repercussions on learning, as the sociological literature has amply demonstrated (Barone, 2006), but it also translates into other collateral effects, which in turn have more or less direct consequences on learning. Fragile families, in fact, have the immediate need to obtain the essentials to live, necessarily placing aspects concerning the school of their children in the background, or they have living spaces unsuitable for study, which can become even more cramped in periods of confinement.

The schools, also using the funds allocated by the government, provided, upon request, technological equipment (PC, tablet and Internet connection) to students and teachers in support of Dad. According to the Censis survey (2020), 84.2% of the school directors interviewed said they had provided equipment to allow students to make the Dad (and 23.5% to teachers); but what it's worrying most is that 6.6% admitted that they had not been able to reduce the technological gap because, despite the need, the school didn't have the possibility to provide them with devices.





Having a PC/tablet and a stable Internet connection certainly had an impact on the possibility of reaching all pupils and students with the educational offer. Also according to Censis (2020), 11.2% of school heads involved in the survey stated that all students of their school were involved in Dad, while cases of dispersion: at the national level, 49% of managers report, at the end of April, that they have not reached a share of students of their schools not exceeding 5%, 21.8% between 5 and 10% and 18% declared a percentage of pupils missing due to Covid-19 greater than 10%. In the south of Italy the largest share of pupils is not reached by Dad.

The digital inequalities just described, however, it's not only around the question of access to tools, thus distinguishing between those who have and those who have not, but it's also a matter of being able to profitably use these technological equipment, thus placing the emphasis on having the digital skills necessary to use the devices properly (Kenner & Lange, 2020). In fact, sufficient digital skills are also needed to guarantee children to participate in Dad; in the case of primary school pupils this is translated into support, at least initially, by an adult figure.

As for adolescents, if we take into consideration distance learning that involved over two and a half million girls and boys from secondary schools, a critical picture emerges bringing with it a risk of early school leaving. In fact, 28% of students declare that at least one of their classmates would have stopped attending classes since the lockdown this spring (among them, a quarter believe that even more than 3 children no longer participate in classes). According to the adolescents interviewed, among the main causes of absences from DAD, there is the difficulty of connections and the difficulty in concentrating in following the teaching behind a screen. Difficulties that seem to have a severe impact on their school preparation: more than one in three students (35%) feel more unprepared than when they went to school face-to-face and 35% this year have to recover more subjects than last year. Nearly four out of ten students report having had a negative impact on their ability to study (37%). Teens report feeling tired (31%), uncertain (17%), worried (17%), irritable (16%), anxious (15%), disoriented (14%), nervous (14%), apathetic (13) %), discouraged (13%), in a kaleidoscope of negative feelings that they mainly talk about with family (59%) and friends (38%), but which for more than 1 in 5 remain a heavy burden to keep inside, without sharing it with anyone (22%).

These are some of the data that emerged from the "Young people in the time of Coronavirus" survey, conducted by IPSOS for Save the Children - the organization that has been fighting for over 100 years to defend children at risk and guarantee them a future - on a sample of adolescents aged 14 to 18 who were interviewed to understand their opinions, moods and expectations. A voice, that of boys and girls that highlights the real impact, often underestimated, of the closure of schools and their operation in fits and starts. Starting from the phenomenon of prolonged absences which quite often bring forward dispersion: from the data collected, Save the Children estimates that about 34,000 secondary school students could be added to the missing school students at the end of the year.

Children feel excluded from the choices to combat the spread of Covid, which have seen them penalized by the interruption of school activities in the presence: 65% are convinced that they are paying firsthand for the inability of adults to manage the pandemic , 43% feel accused by adults of





being among the main spreaders of the infection, while 42% believe it is unfair that adults are allowed to go to work, while young people are not allowed to go to school.

Tiredness (31%), uncertainty (17%) and worry (17%) are the main states of mind that adolescents have reported experiencing in this period, but also disorientation, apathy, sadness and loneliness.

Istat (National Statistics Institute) highlights the problem of digital access: 1 in 8 children or young people (12.3%) between 6 and 17 years of age, around 850,000 very young people, has no PC or tablet available, fundamental tools for staying in step with distance learning (2018-2019 data); in the South this share rises to less than 1 in 5 (19%). A very high share of 6-17 year old students (almost half: 45.4%, over 3 million 100 thousand children and teenagers) have difficulties with distance learning, due to the lack of IT tools in the family, or because they have to share them with other brothers and / or sisters, or because they have not sufficient skills. A share of 39.7% of 6-17 year old students, in fact, live in families where there are other students who should use the technological equipment at the same time to follow the lessons, but do not have a sufficient number available for everyone. They are joined by an additional 5.7% who live in families where there are no other students, but who do not have any technological tools available.

In addition to the difficulties relating to the availability of technological tools, a further issue is the availability of adequate living spaces. In fact, this aspect greatly amplifying the differences in the learning process of younger people. In 2018 in Italy, according Istat, over 4 out of 10 minors (41.9%) lived in conditions of overcrowding. This factor, in a period of lockdown, unabled young people to leave the house and forced them sharing with the rest of the family of the limited space available, greatly affects the ability of children and young people to concentrate on their studies, to follow with due attention the online lessons, to be able to do their homework with the due tranquility.

Further deepening the data of the IPSOS research, regarding the presence of cases of Coronavirus at school, more than 7 out of 10 children report positive cases among students and / or teachers: in 4 cases out of 10 they are classmates (41%), in 1 case out of 4 (26%) of their teachers. Although the presence of Covid cases at school among students and / or teachers generated concern in 74% of the interviewees, positive children were supported by classmates in the vast majority of cases (82%); in some cases (14%), however, the interviewees report that the infected children have turned in on themselves and in some cases, even if limited (8%), unfortunately they have been blamed by their classmates.

In general, the main difficulty experienced in the use of distance learning is represented by the difficulty in concentrating to follow the lessons online (cited by almost one out of 2, 45%) and by the technical problems due to the internet connection / network coverage of one's own or of teachers (41 and 40% respectively); technical problems due to the lack of digitization of teachers and boredom (33% each) follow. Looking at children's equipment, almost 2 out of 10 teenagers (18%) say they have a device shared with others and almost one in 10 (8%) find themselves attending classes in a room with other people.

More than 7 in 10 teens (72%) believe that learning new things and socializing with peers are more difficult with DAD. A slightly lower share (68%) considers it more difficult to concentrate during lessons and 1 in 2 (51%) finally believes that it is more difficult to comply with the school program.





There is no agreement as regards the distance / presence comparison on the difficulty of taking an oral question (the sample is more or less equally distributed among those who believe that with DAD it's easier/more difficult/equal than classroom teaching).

As for the way of teaching, the students' judgment is particularly interesting. Over a third of the students, 37%, say that all of their teachers continued to lecture in the exact same way as before, "as if we were in the classroom" instead of behind a screen; 44% maintain that most of the teachers have behaved this way, but some teachers have introduced some new features; 19% of students, on the other hand, say that most of their teachers have experimented with new ways of teaching. Among the innovations introduced, the students report, in order, the enrichment of the lessons with videos and films (65%); use of "asynchronous" mode, digital lessons uploaded by teachers to the platform and then freely usable by students (49%); use of interactive exercises, educational games and tests (40%); use of App (27%), and so on, up to a 3% of "role-playing games".

The social sphere is also negatively impacted by being away from school: for almost 6 out of 10 students (59%) their ability to socialize has suffered negative repercussions, as well as their mood / state of mind (57%) and a share not much less (52%), say that their friendships have been tested. For 18%, relations with their families have also worsened, although an almost corresponding percentage (19%) instead records an improvement in family relations during this period of forced cohabitation (more among 16-18 year olds, 21% compared to 15 % of 14-16 year olds).

Almost one in 4 children (24%) thinks that being dropped from school is also having negative repercussions on their health. Difficulties also in terms of extracurricular activities, suspended for most of the children who practiced them: on average almost 1 interviewee in 20 declares that they will no longer resume the activities that they had to suspend (individual or team sports, music and singing courses, theater, oratory and more).

Although the vast majority of young people have been led to reflect and recognize the importance of being together "physically", a non-negligible share (23%), on the other hand, affirms that they have understood in this period that in reality it is not so important to get out of home because thanks to new technologies one can stay in contact with other people. The absence of physicality (83% of young people report having seen their friends less often in person, a percentage that rises to 88% for 14 and 15 year olds) has been replaced by the digitization of contacts (71% increased the use of Chat and messages and 50% of videocalls).

Distance teaching has generated new initiatives aimed at providing teachers in difficulty with various types of support, a sort of offer of "digital solidarity". Dedicated platforms of institutions, museums, publishing houses, etc. they made available in-depth material, contents and operational cards, audio, video, maps and powerpoint lessons that teachers were able to experience in their daily work.

We have seen how there is no single perception on the value of Dad on the part of parents and students: a fact like this must lead us to reflect on how to integrate Dad in everyday school, making it a value for learning.

The question, debated on several fronts, remains open whether the Dad has contributed to accentuating the pre-existing inequalities among students to the point of questioning their full





enjoyment of the right to study. The political decision-maker and the whole of society will have to question themselves on this issue in the near future and identify the most appropriate solutions.

Overall, what emerges is that distance learning has caused tensions and difficulties between teachers, parents and students but, at the same time, has given the opportunity to reflect and build new unexpected ways to create bonds, ensure socialization and reconfigure the school in its dual role as a channel for the transmission of knowledge and as a training ground for the citizens of the future.

5.4.5 Bulgarian context

Bulgarian government has created Recovery and Sustainability Plan of the Republic of Bulgaria-October 2020. The main goal of the Recovery and Sustainability Plan is to promote economic and social recovery from the crisis caused by the COVID-19 pandemic. In pursuit of this goal the government groups a set of measures and reforms, which would not just restore the growth potential of the economy, but develop it by ensuring resistance to negative external impacts. This will allow in the long term the achievement of the government 's strategic goal of convergence of the economy and incomes to the Central European ones. At the same time, the plan lays the foundations for a green and digital economy, in the context of the ambitious goals of the Green Deal.

Based on UNICEF research (<u>https://www.unicef.org/eca/rapid-assessment-covid-19-impact-education-bulgaria</u>) there might be listed several educational needs in Bulgaria:

- 1. Financial measures
- 2. Educational modules
- 3. Digitalization

UNICEF data also indicates the need for financial and flexible employability measures for families, so that they better support their children at home, especially now with an increase in online studying.

The research validates the need for specially designed online learning resources, tailored to the needs of children with disabilities. These and other recommendations are reflected in the development of an interactive platform in support of children with disabilities, a joint intervention of UNICEF and the MoES. Last, but not least, the evidence will support the discussion on the need for a blended learning national strategy, in Bulgaria.

The Republic of Bulgaria is among the first countries which signed in 1999 in Bologna the Joint Declaration for European Higher Education Area.

The higher education governance is performed at state and institutional level. The state is responsible for the development and the implementation of a long-term national policy and establishment of conditions, which guarantee the academic autonomy of higher education institutions, the quality of education, and the provision of adequate conditions for performing scientific research.





The institutional management is performed according to the rights for an academic autonomy of the higher education institutions, but the state assists for development of modern institutional governance through distribution of resources on a competitive basis.

Bulgaria works actively towards building up of a favorable environment for modernization of higher education, in line with the needs of the society and of the business. Good practices are studied and multiplied. Possibilities for introduction of new models, which are related to application of modern approaches for institutional governance leading to better financial management, are studied.

5.5 Educational gaps

This section is assisted to identify the gaps in integrated education on human behaviour relevant to the influence of coronavirus and negative emotions in a built environment. According to the the partner country reports, the global trends, needs and gaps were analized, as the situation is new and international, proposed suggestions are applicabale to every country and elaborate on literature reviews prepared by each partner.

5.5.1 Lithuanian context

Most educational institutions around the world cancelled in-person instruction and moved to remote learning and teaching in March 2020 in an attempt to contain the spread of COVID-19. Parts of the (or the whole) formal education system will not re-open this academic year in some countries, whereas in others (parts of) the formal education system have progressively re-opened (Di Pietro et al. 2020).

Although the adoption of distance learning is key to ensure the continuity of education following the physical closure of schools, students are, on average, likely to experience a learning loss during the lockdown. Several arguments can be put forward to explain this. First, there is evidence showing that quarantined students tend to spend less time in learning compared to when schools are open. Second, many students confined at home due to COVID-19 may feel stressed and anxious, and this may negatively affect their ability to concentrate on schoolwork. Third, physical school closure and the lack of in-person contact may make students less externally motivated to engage in learning activities. 'Conservative' estimates for France, Italy and Germany suggest that students will suffer a weekly learning loss of between 0.82 and 2.3% of a standard deviation. Such loss reflects the reduction in test score students would be experiencing because of less time spent in learning compared to the amount of time they typically invest when they are in school. For a test which is scaled to have a mean of 500 and a standard deviation of 100, the implied learning loss over the whole period of lockdown would mean a reduction in scores of between 6.5 and 14 points (Di Pietro et al. 2020).

The learning loss, in the short and long term, is expected to be great. Researchers in Canada estimate that the socio-economic skills gap could increase by more than 30 per cent due to the pandemic. The World Bank identifies three possible scenarios for the loss of learning: a reduction in average learning levels for all students, a widening of the distribution of learning achievements due to highly unequal effects of the crisis on various populations, or a significant increase of students with very low level of achievement due in part to massive dropouts. This suggests 25 per cent more students





may fall below a baseline level of proficiency needed to participate effectively and productively in society, and in future learning, a result of the school closures only (De Giusti 2020).

Currently, many countries face many challenges and needs for the housing improvements that need to be solved. Micro-, mezzo- and macro-environments in housing pertinent to COVID-19 involves numerous aspects. Working from home is on an upswing; thus, suitable environments must be enabled. COVID-19 is bound to bring new requirements to future homes and urban planning. The urban planning aspects is presented in the table below.

Table 1. Requirements to urban planning.

From the current state of urban planning	To a more resilient planning
Predominantly one zone (residential or commercial)	Integrated/Mixed-use markets (if people are going to work more from home, can we think of mixing sectors)
Few open and green spaces	Easier access to open and green spaces
No or few bike lines	More space for pedestrians on sidewalks, and more and better designed dedicated bike lanes
Low investment in digital infrastructure	Better digital infrastructure across urban and rural both
Inner cities are overcrowded	Potential scenario for suburban revival (city districts, smaller communities)
Urban buzz centralized in city centers	Services coming near to housing
Single use of spaces	A mindset of creating everything as multifunctional. Buildings, green spaces, public space, reads, schoolyards, etc.
Health vulnerabilities are exposed	Focus on a combination of physical health, behavioural health and socio-economic vulnerabilities (knowing different sets of populations in the community)

Measures to combat COVID-19 (Chevallier, Enders 2020):

- By hindering its propagation:
 - By hindering its propagation to self;
 - By hindering its propagation from people to people;
 - By hindering its propagation from things to people.
- By reducing its effects:
 - By mitigating its health effects;





- By mitigating its economics effects;
- By mitigating its social effects (e.g., widespread panic and/or civil unrest).

Sustainable development is also important issue in relation with COVID-19, because coronavirus affecting all sustainable development goals (Kennedy 2020):

- No poverty. Loss of income, leading vulnerable segments of society and families to fall below poverty line.
- Zero hunger. Food production and distribution could be disrupted.
- Good health and well-being. Devastating effect on health outcomes.
- Quality education. School for many closed; remote learning less effective and not accessible for some.
- Gender equality. Women's economic gains at risk and increased level of violence against women. Women account for majority of health and social care workers who are more exposed to COVID-19.
- Clean water and sanitation. Supply disruptions and inadequate access to clean water hinder access to clean handwashing facilities, one of the most important COVID-19 prevention measures.
- Affordable and clean energy. Supply and personnel shortages are leading to disrupted access to electricity, further weaking health system response and capacity
- Decent work and economic growth. Economic activities suspended; lower income, less work time, unemployment for certain occupations.
- Sustainable cities and communities. Population living in slums face higher risk of exposure to COVID-19 due to high population density and poor sanitation conditions.
- Climate action. Reduction commitment to climate action; but less environmental footprints due to less production and transportation.
- Pease, justice and strong institutions. Conflicts prevent effective measures for fighting COVID-19; those in conflicts areas are most at risk to suffering devastating loss from COVID-19.
- Partnership for the goals. Aggravate backlash against globalization; but also highlight the importance for international cooperation on public health.

Another important aspect is behavior change. Drivers of behaviour change could be (Abbott et al. 2018):

- Personal (identity and values, self-interest and knowledge, unknown triggers);
- Contextual (surroundings, information architecture, institutional settings)
- Social (social triggers, identification, social norms)

The stages for behavior changes are (Ekberg 2020):

- Pre-Contemplation (unaware of the problem)
- Contemplation (aware of the problem and of the desired behaviour change)
- Preparation (intends to take action)
- Action (practices the desired behaviour)
- Maintenance (works to sustain the behaviour change)





Behaviour Change could be measured on different levels (Abbott et al. 2018):

- At macro level: fiscal measures, guidelines, environmental/social planning, communication/marketing, legislation, service provision, regulation.
- At mezzo level: environmental restructuring, restrictions, education, persuasion, incentivisation, coercion, training, enablement, modeling.
- At micro level: capability (physical, psychological), opportunity (social, physical), motivation (reflective, automatic).

MICROBE MOOCS may also include behaviour change design wheel. The behaviour change design wheel steps are defined below (Oxford Martin Programme... 2020):

- Define goals and measurable objectives;
- Research to identify target group and motivations behind undesired behaviour
- Strategic based on research or evidence of success:
- Behaviour change model
- Prie-test messages
- Determine channels to deliver message
- Determine useful partnership
- Develop theory of change and determine indicators of success
- Record indicators of success throughout project implementation
- Evaluation to determine of goals have been achieved.

5.5.2 Estonian context

There have been much research conducted on incorporating ICT into the daily educational operations during the pre-Covid situation. The research has shown that thoroughly planned e-learning highly differs from simply moving traditional learning to the online world. E-learning should not just be seen as a mere projection of learning through technological tools, but much broader. Rodrigues et al (2019) have conducted a systematic literature review to examine how studies have analyzed the e-learning concept in the last decade (articles analyzed starting from 2010). Researchers propose a recent definition of e-learning:

E-learning is an innovative web-based system based on digital technologies and other forms of educational materials whose primary goal is to provide students with a personalized, learner-centered, open, enjoyable and interactive learning environment supporting and enhancing the learning processes. (Rodrigues et al, 2019)

Yen et al (2018) provided a comparison of students' academic outcomes and course satisfaction in face-to-face, online, and blended teaching modalities. The blended modality offers more instructors the ability to transition towards a more technologically-mediated classroom, giving them greater opportunities to continue teaching in face-to-face sessions while also selecting the online teaching practices and features that best serve their students. Faculty can exercise greater flexibility and selectivity in designing blended curricula, ultimately allowing them to optimize their teaching for more students (Yen et al, 2018). However, the institutional challenge of student overpopulation and budgetary constraints must be addressed.





Results showed that students performed equally well across all three teaching modalities, allaying traditional concerns about online and blended teaching efficacy. In addition to demonstrating that online classes can be just as effective as face-to-face classes in producing satisfactory student outcomes. The results also highlight the potential for blended modality classrooms to improve student academic outcomes by combining the best features from both face-to-face and online teaching. The use of three-way comparison showed that quality student learning can occur online, offline, and in between.

In order to meet the needs of a growing student body, respect instructors' needs as educators, expand the definition of "good teaching practice", the institutions can support their faculty by offering more opportunities for professional development, technological proficiency skill-building, and providing more pedagogical support. As instructors strive to provide the best learning environments for their students, teachers of all types can benefit from technological tools and practices in order to best support learners of all backgrounds (Yen et al, 2018).

During the early months of the year 2020, faculty around the world had to transition their courses online under circumstances that typical online course development does not have to face. Those circumstances were

(1) a need to rapidly, with little to no preparation, transition instruction online;

(2) execute the transition online and subsequent online instruction under traumatic conditions of a pandemic; and

(3) pursue extended online teaching with little to no information regarding if this transition to online teaching will be temporary or more permanent.

Cutri et al. (2020) assert that these three factors constitute crisis online course transitioning and teaching as opposed to conventional online course transitioning and teaching.

The pandemic also puts under threat the international dimension of education. According to the <u>SchengenVisaInfo.com</u> survey results, 30% of the respondent students said they would cancel their studies in Europe if the online learning is to be chosen as the delivery mode and 22.3% said that they probably would cancel their studies¹. These numbers highlight that the international study experience can't be replaced by internationalization from home strategies, students need physical mobility and even during these challenging times the international dimension of university education should not be compromised.

In response to challenges posed by technological transformations, some schools implemented learning management systems such as e-learning that led to the transition from a traditional learning model to a more innovative and flexible one that allows students to learn in a pedagogical but recreational environment.

However, the successful adoption of e-learning requires adequate infrastructures, an ability to accept change, appropriate digital skills and a suitable program design which meets the students'

¹ <u>https://www.schengenvisainfo.com/news/52percent-of-international-students-very-likely-to-cancel-studies-in-europe-if-they-have-to-take-classes-online/</u>





learning needs. According to the 2018 NMC Horizon Report, it is crucial to provide students with experiences that teach them how to deal with real-world problems and with tools that make them better prepared to solve unexpected problems. This report also draws attention to the relevance of the following topics:

(a) a deep understanding of digital environments, a responsible and appropriate use of technology,

(b) a redefinition of educational roles and institutional hierarchy of organizations,

(c) an equitable access to the broadband internet and (d) increased financial aid to educational institutions.

In short, the process of e-learning adoption requires above all Cutri et al. (2020):

(a) growing acceptance of innovation cultures, including technology as a working tool and a proliferation of open educational resources,

(b) the redesigning of learning spaces,

(c) the introduction of new ways of measuring learning,

(d) a redefinition of educational roles, and

(e) the implementation of online learning programs with a design oriented to meet students' educational needs.

5.5.3 Spanish context

The closure of education and training institutions due to the pandemic, which may take its toll socially and economically in the future. This is the finding of the report Education at a Glance. OECD Indicators of 2020.

Every week that Spanish schools have been closed means the loss of 20 hours of university education per week, according to the organisation. Although face-to-face education was replaced by online education, not all students were able to access it, thus increasing existing educational inequalities.

The OECD, based on evidence from a study by US economists, says in its report that "the loss of learning will lead to the loss of skills, and the skills that people have are related to their productivity, so countries' Gross Domestic Product (GDP) could be 1.5% lower on average over the rest of the century". To prevent this from happening, it is essential to strengthening the education system, "to recover from this crisis and provide young people with the skills and competencies they need to succeed", said the OECD Secretary-General, Angel Gurría, at the presentation of the report in Paris.

The study highlights some aspects in which the Spanish education system has been most affected by COVID-19 and in which it needs to improve. These include the following, some of which are more related to the educational crisis generated by the pandemic and others to the education system in general:

Allocating more public funds to education





The report acknowledges that there is uncertainty about the impact of the pandemic on education spending, but recommends that Spain allocate more resources to the education system, as it needs it to function better and, at the moment, most of the government's investment is being made in the economy and the health sector.

In fact, the country has invested less in education than the OECD average in 2017: the country spent 4.3% of its GDP on primary to higher education institutions, which is 0.6 percentage points less than the rest of the countries analysed in the study.

Improving the digital literacy of teachers

A pending task for teachers in the Spanish education system is to improve their digital training, according to the OECD.

In general, since before the pandemic, teachers in all the countries analysed have recognised the need to improve their digital skills: 60% received training on ICT applied to education and 18% said they lacked training in this area.

Reinventing and digitising schools, universities and training centres

The COVID-19 crisis has reduced international student enrolment at universities and training centres in OECD countries, including Spain, which may affect their educational services and the financial support they provide to domestic students, as well as research and development activities, according to the report.

The organisation, therefore, urges universities and training institutions to reinvent their learning environments to expand the digitisation of their academic offerings and for online education to "complement, but not replace, the relationships between students themselves and between students and faculty". EU member states (769).

5.5.4 Italian context

As the National Council of Architects, Planners, Landscape Architects and Conservators (CNAPPC), health systems should be trying to recover the dimension of the territorial presence. The territorial articulation, at different scales, of the pandemic and the lack of territorialization of policies and interventions for the emergency have shown that only by assuming the variety of settlement, demographic, socio-economic forms of the territories it is possible to act effectively, making also fraught with gaps and inequalities between individuals and social groups.

Several italian cities are looking for adaptation actions - cycle paths, redefinition of public space, dehors, "15 minutes" neighborhoods. In some cases these are the result of solutions already planned and whose implementation has been accelerated, in other cases they are temporary and reversible solutions, but which foreshadow lasting changes.

Some actions are the consequence of what we found ourselves having to face during the lock-down and which however showed the need and potential for a more flexible use of physical space with the function of protection in case of danger, but also of a possible way of life that is more interesting and free: houses that are also places of work and leisure; condominium spaces that can finally be





used for play and relaxation; offices that can free up spaces for different activities; buildings that can change their function to adapt to new needs with a flexibility that has so far been little known; suburban or remote places that may regain interest as places where many remote activities can be carried out effectively.

Looking at this set of elements - what we know now, what is empirically happening in reaction to the crisis, and what it means to prepare - we can begin to see clearly what are the traits of policies and planning forms capable of dealing with situations of radical uncertainty. An uncertainty that can only be tackled starting from the recognition of systems of opportunity, available resources and their combination and by returning value and guidance to public institutions capable of producing, accumulating and circulating forms of innovation and social intelligence.

In that sense the "Open Squares in Milan" project, complies these objectives.

It mainly concerned (but with some important exceptions, such as the forecourt of Porta Genova station) peripheral areas and which brought the paradigm of tactical urbanism to the reduce the weight of cars, but also to conquer residual and generally underutilized spaces for collective use, involving settled communities as much as possible. The "Reinventing Cities" operation, and in particular the projects presented in the 2020 Call for the redesign of Piazzale Loreto, also show a push to re-naturalize spaces that for decades have been subtracted from any use other than the automotive one.

This renewed attention to safe spaces because they are freed from cars, characterized by the flexibility of uses and by strategies of variable appropriation by different populations, is however subject to some risks. The first is that of privatization, highlighted by the often poorly governed proliferation of the dehors of the premises that end up colonizing and occupying the pavements and accentuated by the rules of distancing. The second is that of the ephemeral nature of the interventions, which don't always seem capable of prefiguring permanent spaces, capable of lasting over time. The third is that of the connection between individual interventions and the urban contexts in which they are located, which requires attention not only from the point of view of urban design, but also from the point of view of the social construction of care and uses.

Some recent projects regarding Milan seem to be working to avoid these risks: the pedestrianization project of Piazza Freud, in front of the entrance to Garibaldi station, the first step to reconnect the station and Piazza Gae Aulenti in a pedestrian fabric, shows the importance of linking spaces and routes. The project for the Fossone in via Novara, which aims to reactivate the beds and the system of water gradually disappearing, operates within the framework of a renaturalization strategy that must be continuously measured with respect to the more general design of space and mobility. The progressive and incremental definition of Grande Forlanini, as a metropolitan park strongly connected to the green-blue shoulder of Lambro, offers important indications on the centrality of the policy and management dimension of the projects.

These examples, very different from each other, therefore show how an effective policy of public spaces needs an effective urban design, but also attention to the social dimension of the practices of use of spaces and a capacity for care and management that it must involve the administration, but also the social actors and users.





In Trieste a large group of architects and sociologists met for three days (3-6 September) to dictate the guidelines for a "Charta Trieste", an attempt to elaborate a vision of the future city, updating the Charter of Athens of 1934 by Le Corbusier. Since urban planning will be the number one topic of the 21st century: it will be in the urban ecosystem that our human future and the sustainability of our economic-social model will be decided, given that now 60% of the world population lives in cities. Changing the way we live and organizing cities in an eco-sustainable way will make the difference between destruction and / or survival.

5.5.5 Bulgarian context

Although face-to-face education was replaced by online education due to the COVID-19 pandemic, not all students were able to access it, thus increasing existing educational inequalities.

The COVID-19 pandemic led to the closure of all kindergartens and schools in Bulgaria, as of March 2020. This had an impact on the over 700,000 pre-school and school aged children and their parents. To study the impact, UNICEF commissioned a nationally representative research exploring economic, social, educational, psychological and organizational aspects of the effects of COVID-19 on education. The methodology included: questionnaires for students, parents and teaching staff in pre-schools and schools; interviews with education experts from municipalities and education mediators; and, case studies on good practices to support the most vulnerable children, aiming to improve and enhancing innovation in online teaching.

The most severely affected by school closures were children from families living in poverty, and children whose parents have been unemployed long-term and/or economically inactive. This UNICEF research reveals the overwhelming impact for disadvantaged children and families, as 3.5% of parents have difficulty covering the daily cost of food, and 40% need help raising their child so they can go to work.

At least 50 000 school-aged children were left behind. Although Bulgarian schools switched to remote learning right after the pandemic-related school closures were announced, many vulnerable children could not take advantage of it.

For every third student, the main barrier to access is the lack of devices or internet. 8.3% of students did not participate in distance learning, or did not participate regularly, and 57.9% of parents expect that more children will not participate in the next school year. Only 35% of pre-schools continued the interaction with children through parents and caregivers, as no alternatives were developed. Only 63% of inclusive education specialists worked with children with disabilities during the state of emergency on a regular basis, supporting only less than half of the children with disabilities they normally support.

The learning crisis has deepened, as every fifth student reports worse educational outcomes than before. During the pandemic, monitoring of attendance was insufficient, and important tests and activities canceled. Every second teacher was concerned that students will lose desire and motivation to learn, and 45% of teachers thought the number of children who will not participate in school activities will increase. Another 40% of teachers were concerned that distance learning will have a negative effect on students` educational outcomes.





During the lockdown parents were the main resource for children, particularly for children with disabilities. However, only 20% of all parents felt fully prepared to support their children during distance learning, while 50% of parents shared their failure to support their children in education.

Half of all students felt lonely, insecure and angry.

In addition to learning loss, another key aspect of the negative impact of the pandemic on education is the social-emotional one toll. Half of students reported experiencing negative feelings, such as loneliness, insecurity, irritability, and anxiety due to reduced social contacts. Over 35% of parents assess their children's mental health as worse than before the pandemic. Likewise, 60% of teachers share that their work commitments increased significantly during distance learning, and 44% of them reported their mental health to be worse than before. This clearly indicates the need for phyco-social support in education, for students and teachers, in the coming years.

Evidence from the research influenced the development of the National Framework for the reopening of schools. To further strengthen the resilience of the education system and support the Ministry of Education is developing innovative measures to fulfil the gaps and address the increasing inequalities, the evidence was used to develop a Guide for education provision in situation of COVID-19 pandemic, with practical checklists, tools, and promising practices to build-back better schools. Special attention is paid to the social-emotional wellbeing of students and teachers, also incorporated in the UNICEF and MoES joint program for creating a safe school environment.

UNICEF data also indicates the need for financial and flexible employability measures for families, so that they better support their children at home, especially now with an increase in online studying. The research validates the need for specially designed online learning resources, tailored to the needs of children with disabilities. These and other recommendations are reflected in the development of an interactive platform in support of children with disabilities, a joint intervention of UNICEF and the MoES. Last, but not least, the evidence will support the discussion on the need for a blended learning national strategy, in Bulgaria.

The pandemic is an opportunity to fill in the missing educational needs in terms of dealing with the negative impact of the COVID-19 crysis.

The new approach is connected with innovative modules and methods in the field of research, development, etc.

There is not an educational initiative on human behavior related to COVID-19 impact by this time.

6 POLICIES RELEVANT TO HIGHER EDUCATION, AND THEIR RELATIONSHIP WITH HUMAN BEHAVIOUR ON INFLUENCE OF CORONAVIRUS AND NEGATIVE EMOTIONS IN A BUILT ENVIRONMENT

This section examines the illustrative policy and planning issues relevant to integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment. Gaps in policy planning have also been highlighted on the global scale. Trends, needs and gaps were analized and hightlighted, as the situation is new and international, proposed





suggestions are applicabale to every country and elaborate on literature reviews prepared by each partner institution.

6.1 Policy and planning

6.1.1 Lithuanian context

Epidemics have transformed our built environment because of the fear of infection. The current health crisis should develop our built environment to increase the security layers that help to prevent the spread of infections and diseases. In this context, there are multiple areas of research needed regarding COVID-19 (Fig. 2.) (CGTN 2020). From the temporary breakdown of global supply chains to the hollowing out of once bustling city streets, COVID-19 has caused a seismic change in the way we navigate our urban environments. COVID-19 has brought with it many state-sanctioned directives for how European city-dwellers must navigate their built environment. The pandemic has painfully highlighted the cracks in parts of the urban infrastructure on a continent where people spend on average 90 percent of their time indoors even though nearly one in five Europeans live in overcrowded dwellings (CGTN 2020).

Few examples highlighting redesign of public spaces to adapt to the uncertainties

- Adaptive reuse. Austria, Canada, Spain, Sweden, US, UK: convention centers, hotels, sports facilities, dormitories converted to temporary medical facilities and shelters for homeless.
- Suburban revival. US: People moving back to (suburbs) as work from home trend is going on.
- Rebuilding plans. Paris: plans a 15 minute city underpinning a self-sufficient community. Amsterdam: using a doughnut model to seek what is needed by people to thrive without harming economy.
- Accelerated technologies use. South Korea: tracing apps helped South Korea track many cases indicating digital technology integration with resilience.
- Redesigning streets. US: parking lots being used by restaurants to ease virus restrictions. New Zealand: funding Pop-up bike lanes and widening sidewalks.

COVID-19 is bound to bring new requirements to urban planning. The urban planning aspects is presented in the table 1.

Commonwealth Human Ecology Council endorsed the InterAction Council COVID-19 Framework. The COVID-19 Framework purposes are (CHEC 2020):

- To inform national, multi-lateral and global responses to address the COVID-19 Pandemic now, with a view to enhancing co-ordinated global, regional and national responses; the framework provides a comprehensive multi-sector response that can potentially be adapted for national and multi-lateral planning processes.
- To shape the recovery response and future recommendations with an emphasis on Building Back Green and strengthening Public Health as a key component of health systems. These are intended as initial recommendations to shape the recovery process and





stimulate further discussion, and will inform the InterAction Council Plenary session later this year.

The COVID-19 Framework also includes initial recommendations for future pandemics and emergency responses. The eight recommendations show areas where things can be improved moving forward. The recomendations are (CHEC 2020):

Build Back Green – as part of the recovery process, invest in solutions that address the climate 1. crisis and enable progress towards the Sustainable Development Goals including: nature based solutions, renewable energy, low carbon infrastructure, climate change adaptation.

2. Enable the Digital Transformation – continue the rapid digital shift during the pandemic to create connected communities that are able to share learning, find solutions and respond at scale to building back green; ensure digital governance to prevent misinformation, hacking and scams; and enhance efficient ways of working, with reduced travel, with the creation of digital health systems for Planet, Place and People for a common future for all.

3. Courageous and Collaborative Leadership – for the wellbeing of future generations, in order to apply learning from the pandemic, re scaling up emergency processes and unified efforts to address the climate and environmental crisis; empower young people with the skills and experience required to address emergencies and to secure a healthy planet for all.

Establish an Independent Global Emergency Mechanism – tasked with enhanced surveillance and monitoring, risk assessment and detection, with rapid alert and response systems; such an organisation needs to be able to establish a global and multi-sector response at speed, communicate freely, have independent governance and be able to collaborate and mobilise action across the international community.

5. Invest in Emergency Preparedness and Response – the Commission for a Global Health Risk Framework for the Future recommends an annual global investment of \$4.5 billion for pandemic preparedness, including public health preventative measures and research. Such an organisation could have wider responsibilities, including relevant aspects to address the Planetary Emergency.

6. Strengthen Public Health and Health Protection – invest in and enhance essential public health operations and services within every country- a weak link anywhere is a weak link for us all ensure that this is embedded within national health systems to enable national, regional and local coordination and surge capacity during outbreaks.

Enhance links with multi-sector emergency mechanisms – ensure that health risks and planning, including for pandemics are incorporated across global, national, regional and local emergency planning systems and governance mechanisms – building upon the Sendai Framework for Disaster Risk Reduction.





8. Increase Research into Prevention and Preparedness – the Commission for a Global Health Risk Framework for the Future recommends an annual global investment of \$1 billion for research into pandemic preparedness; investing in research on the effectiveness of preventative and health protection measures provides the most scope for reducing avoidable deaths, whilst maximising economic savings, and reducing global security impacts.

Construction strategies used in healthcare systems during the pandemic is presented by Megahed, Ghoneim (2020). Researchers suggest using modular constructions, adaptive reuse and lightweight architecture:

- Modular constructions. Increasingly popular before COVID-19, the modular construction • strategy is effective to face pandemics or natural disasters and to create less expensive and more quickly constructed buildings. It is important for meeting health services' diverse requirements with prefabricated standardized components. These components could help buildings adapt to requirements or enlarge their spaces for treatment and quarantine.
- Adaptive reuse. This strategy is a sensitive and sustainable approach to create emergency facilities. During a pandemic, sports facilities, parking lots, and other buildings are converting into medical facilities and temporary hospitals. There will be a requirement for more efficient, effective, and flexible reuse plans for future crises. This strategy is beneficial when integrated with other advanced technologies in the construction sector.
- Lightweight and adaptable structures. When responding to the pandemic, lightweight and adaptable structures are often preferable for their speed and portability. Designers are developing and assembling these temporary structures to create field hospitals that can be easily transported and erected for COVID-19 patients.

Architectural and urban spaces, as they relate to infectious disease epidemics, are not only about quarantine based on immediate and precautionary measures but also refer to design and planning problems and challenges in all building types and urban spaces as illustrated in Fig. 1. The pandemic of COVID-19 has caused serious consequences that can be an opportunity to review individual and collective choices and priorities. Most architecture today shows evidence of how humans have responded to infectious diseases by redesigning our physical spaces (Megahed, Ghoneim 2020).

Given the current situation in the field of HEI, there is a significant lack of modules for stakeholders to acquire the knowledge and skills needed to plan the built environment during a pandemic.

Education

With the further spread of COVID-19 infection, in 2020 December 14 The Government of the Republic of Lithuania announced the quarantine and the Coronavirus Prevention Group decided that all activities at the university should be continued remotely until 31 January.

2020 August 17 No. V-1837 The Minister of Health of the Republic of Lithuania issued a decision "On the Prerequisites for Higher Education, Vocational Training and Non-Formal Adult Education"

Urban planing





The Ministry of Environment of the Republic of Lithuania informs that a new general plan of the territory of the Republic of Lithuania is currently being prepared, which integrates sustainable development and urban planning by 2030.

Negative emotions

The Ministry of Health of the Republic of Lithuania has prepared a plan on how to mitigate the impact of coronavirus on mental health.

The ROCK project team of Vilnius City Municipality and Vilnius Gediminas Technical University (Vilnius Tech) evaluates the quality of services in Vilnius Municipality through emotions (<u>https://vilnius.lt/lt/2020/02/03/naujove-is-ateities-paslaugu-kokybe-vilniaus-savivaldybe-vertins-per-emocijas/</u>)

6.1.2 Estonian context

COVID-19 and the impact of built environment (BE) in transmission.

The built environment (BE) is the collection of environments that humans have constructed, including buildings, cars, roads, public transport, and other human-built spaces. Since most humans spend 90% of their daily lives inside the BE, it is essential to understand the potential transmission dynamics of COVID-19 within the BE ecosystem and the human behavior, spatial dynamics, and building operational factors that potentially promote and mitigate the spread and transmission of COVID-19. BEs serve as potential transmission vectors for the spread of COVID-19 by inducing close interactions between individuals, by containing fomites (objects or materials that are likely to carry infectious diseases), and through viral exchange and transfer through the air. The occupant density in buildings, influenced by building type and program, occupancy schedule, and indoor activity, facilitates the accrual of human-associated microorganisms. Higher occupant density and increased indoor activity level typically increase social interaction and connectivity through direct contact between individuals as well as environmentally mediated contact with abiotic surfaces (i.e., fomites). (Dietz et al, 2020)

When the World Health Organization (WHO) declared the fast-spreading COVID-19 as a pandemic, citizens around the globe hastened to go home. This global pandemic significantly influenced our personal and professional lives and has a direct bearing upon the very foundations of urban planning and architecture theory and practice. Consequently, the pandemic has led to questions of how architects and planners could present and install antivirus-related ideas or update the existing spaces, as well as at what stage can the pandemic affect our physical and built environment. To extend the scope of research needed from the academic community, Table 2 reviews certain required research areas affected by COVID-19 and highlights their related questions. Professional and extensive research is required on all levels and scales in these areas to prevent the virus from spreading. The answers to these questions could help in predicting the post-pandemic style and visualizing the required antivirus system.



Scope	Research Areas	Research Questions
Post-pandemic urbanism	 Digital transformation and telecommuting Centralization and decentralization Density of cities Walking, cycling, and public transportation 	 The COVID-19 crisis has changed the face of many of our cities and questioned how we should manage urban life in the wake of a pandemic. Would the pandemic inspire more urban improvements? Can we design cities that reduce infections? Would the post-pandemic era generate new urbanism based on social distancing? More specifically, could COVID-19 be a catalyst for decentralization and walkable cities?
Post-pandemic public spaces	 Design, use and perceptions Design and disease transmission Street design and furniture Shared facilities and services Flexibility and transformation 	 There is no doubt about how COVID-19 will impact future public buildings and spaces. However, how long will these impact and reflection last for future? What about their furniture materials, shared facilities and services? What is the future of commercial buildings? Can air- conditioned shopping malls continue? Will the pandemic teach us new lessons to incorporate into our public buildings and spaces designs?
Post-pandemic housing	 Housing layout Space and density Shelter and safety Indoor air quality 	 What is the future of our houses? Should they adapt to better accommodate workspaces? Should they be self-sufficient? Should our terraces, balconies, and roofs be planted? More specifically, could COVID-19 be a catalyst for healthy housing and sustainable buildings?
Post-pandemic office space	 Layout and design solutions Working and waiting spaces Shared facilities and services Density in offices Building heights 	 What is the future of co-working spaces and open-plan offices? Could COVID-19 alter their design? Would they need new design criteria? What is the future of high-rise buildings? Can skyscrapers continue? What happens when nobody wants to use elevators?
Building and construction technology	 Modular construction Prefabricating standardized components Lightweight and adaptable structures Artificial intelligence 	 What is the future of construction strategy? Could COVID-19 alter its techniques? Should we adopt a more modular construction strategy? If so, will the future witness more prefabricating and standardized components? Could the pandemic speed up the digitalization and automation of our cities? Will our smart devices control everything around us?

Table 2. Post-coronavirus architecture and urbanism: Research areas and questions (Megahed and Ghoneim, 2020).

Megahed and Ghoneim (2020) argue that we must install an antivirus-built environment that incorporates a multi-layered approach of protection into its defense system. Architects and planners should design our built environment such as to stop the virus from spreading by creating an antivirus-enabled paradigm. This paradigm must improve new tools, options, and strategies that are more flexible, holistic, and responsive to better address the pandemic response at all levels and scales from interior design to city planning. Based on the lessons learned from this crisis, Fig. 13 shows the proposed vision about how nature and advanced technology approaches help in visualizing antivirus-built environments to stop the virus from spreading. However, selecting the best antivirus strategy depends on many factors, posing new challenges to choose that could be used or planned as long-term reforms. We must be proactive, not reactive, and continue to update this antivirus-enabled paradigm and install new approaches within its framework.





Fig. 13. The proposed vision about the future of the antivirus-built environment (Megahed and Ghoneim, 2020)

Emotions and wellbeing of the students during the pandemic crisis.

In these times of rapid change and disruption, such as we experienced with the COVID- 19, HE institutions have an obligation to their staff to promote innovation by supporting them in the transition period (Naylor and Nyanjom, 2020).

Aristovnik et al (2020) conducted a comprehensive and large-scale study to date on how students perceive the impacts of the first wave of COVID-19 crisis in early 2020 on various aspects of their lives on a global level. With a sample of 30,383 students from 62 countries, the study reveals that amid the worldwide lockdown and transition to online learning students were most satisfied with the support provided by teaching staff and their universities' public relations. Still, deficient computer skills and the perception of a higher workload prevented them from perceiving their own improved performance in the new teaching environment. Students were mainly concerned about issues to do with their future professional career and studies, and experienced boredom, anxiety, and frustration. The pandemic has led to the adoption of particular hygienic behaviours (e.g., wearing masks, washing hands) and discouraged certain daily practices (e.g., leaving home, shaking hands). Students were also more satisfied with the role played by hospitals and universities during the epidemic compared to the governments and banks. The findings also show that students with certain socio-demographic characteristics (male, part-time, first-level, applied sciences, a lower living standard, from Africa or Asia) were significantly less satisfied with their academic work/life during the crisis, whereas female, full-time, first-level students and students faced with financial problems were generally affected more by the pandemic in terms of their emotional life and personal circumstances.





Fig. 14. Emotions most frequently expressed by students during the COVID-19 pandemic (% of students who felt emotion often or always).

The quick and radical changes in teaching and learning processes have produced significant consequences for students' mental health, i.e., feeling specific emotions and worries. The analysis of the emotions felt by the students showed they were frequently feeling bored, anxious, and frustrated, but also hopeful and joyful.

In order to protect students' mental health as effectively as possible, governments, health professionals, higher education institutions, student organizations, and NGOs should all collaborate intensively on the process of designing timely and efficient psychological and financial support services for students.

6.1.3 Italian context

Urban and territorial planners and policy makers, considered the impact of covid-19 on the public and private spaces and by critically reflecting on their tools, can make a significant contribution so that communities are better prepared to face that challenge and its consequences.

There is an urgent need to rethink some characteristics of spatial planning and urban policies and to do so in a conscious perspective of a state of growing instability.

We now know that we are facing a condition of profound uncertainty, irreducible to risk and therefore not calculable or insurable. As the issue of climate change has amply demonstrated, we must therefore act in a context that challenges the usual models of risk management. Therefore, we were unprepared. Planning really means preparing, but since it is not clear what to prepare for, it is a very different planning activity from what we know, or that we think we know. Within these





observations, therefore, the theme of the role of planning and its relationship with conditions of extreme uncertainty emerges.

Within a framework of experimentation 'forced' by the pandemic, different forms of action have been mobilized and some observations on the spatial dimension emerge from these.

First of all is clear the importance of the public (and the central role of some social forces) to address the dramatic problems triggered by the pandemic: the market is unable to offer solutions but the role of the public is fundamental. Public action is necessary. Without an efficient and effective public, without institutions, the market is unable to guarantee the health and safety of citizens, nor to produce fundamental public goods, including space.

In the city of Bologna in the framework of a research and an action plan called "R-innovare Bologna", all the city stakeholders have been involved to reflect on what city will have to be after pandemic, and act as a consequence.

Public administration, together with universities, economic and social bodies, citizens, associations, since, the "COVID-19" emergency has imposed, and continues to impose, to experience the city and its spaces differently, in particularly those intended for social relations and mobility, have reflected on the dimension of "proximity" and the presence of public spaces spread throughout the city: they represent an enormous value in the qualitative dimension of people's lives.

This process has identified different actions for the near future, in order to:

- increase in the quality and quantity of widespread public spaces;
- strengthen proximity and neighborhood networks;
- reduce pollution.

To achieve so, It's been put into practice a sustainable response to mobility by means of an active mobility (cycling and pedestrian): city planners together with citizens and communities are enhancing the pedestrian usability of all areas of the city, places that are widespread and connected to each other by a more dense cycle network, to be created by circulating all the creative and collaborative energies of the city, re-nourishing immediately the civic imagination, thus giving immediate answers to new needs, but starting to build at the same time the Bologna of tomorrow: a more sustainable, more resilient and even more on a human scale.

As for the public space, it's been planned the expansion of the so-called "zones 30", and "residential areas" to give priority to pedestrians and cyclists and limiting the pervasiveness of the car.

New pedestrian areas are conceived as experimental interventions of pedestrianization of road sections now used for car traffic or parking, through creative interventions of tactical urban planning, aimed at creating new large spaces to be used for play / recreational / sporting / cultural functions of proximity.

There will be three categories of pedestrian areas:

• Pedestrian areas near the school entrances (enhancement, safety and expansion of the spaces near the schools: painting on the ground, transformation of driveways or parking areas in pedestrian





areas, widening of the sidewalks, possible insertion of seats e planters, possible movement of the lost stop to another position in the vicinity, speed limitation or other etc.)

• Playground (drawing of games on the ground on asphalted areas already pedestrianized to come declassified in order to be able to manage them consistently with the green spaces that alongside, inclusion of urban furniture, including green and any elements of physical toys (seat, planter, baskets etc.))

• Urban regeneration through tactical urban planning (more complex interventions of transformation of road areas little or badly organized, aimed at obtaining new spaces for socializing, for play, for activities playful and for commerce and with the aim of mitigating the environmental impact of the built city and increase the functional and architectural quality of the urban space).

6.1.4 Spanish context

The health crisis caused by the SARS-CoV-2 virus has altered the development of traditional university academic activity since Royal Decree 463/2020, published on the day the Emergency's State was established in Spain, on 14 March 2020. This Royal Decree provided for the suspension of face-to-face university teaching and the immediate implementation of extraordinary measures, intending to develop non-face-to-face teaching activity for the duration of the Emergency's State.

On 2 April 2020, all the Rectors of AUPA and the Regional Minister of Economy, Knowledge, Business and Universities of the Andalucía's Government issued a communiqué. In this communiqué, it is agreed to maintain online teaching until the end of the course 2019-2020. Furthermore, it is agreed to create a General Contingency Plan that can be applied for the duration of the Emergency's State.

The General Contingency Plan is designed with the main objectives of maintaining the academic quality provided by the University of Granada and without endangering the health of the university community. To achieve the

The joint communiqué of the Rectors of AUPA and the Regional Minister of Economy, Knowledge, Business and Universities of Andalucía's Government of 2 April 2020, agrees to maintain online teaching for the remainder of the academic year 2019-2020. As well as to prepare a General Contingency Plan, defined with a broad perspective in time, not only in what remains until the end of the academic year, but also to take into account the evaluation methods that could be applied if this exceptional situation continues until the final evaluation period.

This exceptional situation entails temporary changes not only in teaching, but also in the university guidelines and regulations that guide the development of teaching. To this end, the necessary adjustments are made so that each degree programme has registered and incorporated the specific regulations to maintain the quality of the degrees. This proposed challenge has been achieved employing vertical and horizontal coordination of all those who have some responsibility in each of the degree programmes.

With the help of the entire university community, the University of Granada was able to draw up a Contingency Plan consisting of six fundamental bases:





- Teaching Activity: Adaptation of the Teaching Guides: The teaching guides of the subjects are adapted to the distance learning modality so that classes can be taught online. The adaptation must be carried out by the teams responsible for the subjects, supervised by the corresponding department and besides, communicated to the degree coordinator in the case of university degrees and by a quality committee in the case of master's degrees. The change from face-to-face to non-face teaching activity requires the adaptation of the Teaching Guides.
- External Curricular and Extracurricular Internships: External curricular and extracurricular internships are adapted to the situation of each student. The possibilities may be:
 - o Curricular and extracurricular academic placements initiated and interrupted by the Emergency's State may be carried out telematically, whenever possible.
 - No new extracurricular placements can be initiated.
 - International placements initiated and interrupted by the Emergency's State may be carried out telematically.
 - In the case that it is not possible to carry out the internship telematically, the 0 University of Granada provides the possibility of postponing it, altering the enrolment or carrying out training activities to compensate for the internship.
- Development of the Final Degree Project (TFG), Final Master's Project (TFM) and Doctoral Thesis: Initially, the tutorials of the Final Master's and Final Degree projects will be carried out telematically. This also applies to the defence of the aforementioned projects. Concerning doctoral theses, their deposit and defence will be done in a non-presential manner following the protocol established in the Resolution of the Vice-Rector for Teaching the of University of Granada, dated 26 March 2020, (https://covid19.ugr.es/noticias/resolucion-deposito-y-defensa-tesisdoctorales).
- Assessment of learning: Assessment of learning is encouraged in a non-attendance-based manner, using telematics tools. For this assessment, the teaching staff will propose written and oral exams, presentations of work and seminars and the completion of practical to their students. Moreover, the teacher can assess class participation and observation of students' interest in class.
- Teacher training: The Emergency's State has forced teachers to make a transition from faceto-face teaching to online teaching. To maintain the quality of teaching and to speed up the process, some initiatives have been put in place to support and train teachers in virtual teaching and teleworking. Furthermore, a website https://covid19.ugr.es has been set up to provide detailed information on virtual teaching. Online training courses, resources for classes, seminars, tutorials, etc. have also been created.
- Attention and support for students: To support students, the University of Granada has taken economic and social measures so that all students can attend classes and no one leaves the University due to problems. The measures are:
 - Suspension of the deadlines for the payment of public prices and their effects (https://covid19.ugr.es/noticias/suspension-plazos-precios-publicos-y-efectos).
 - Extension of the application period for the University of Granada's social financial aid (https://covid19.ugr.es/noticias/ampliado-plazo-ayudas-caracter-social-ugr).





- Creation of a new scholarship and aid plan with new conditions taking into account the Emergency's State.
- Loan of computer equipment and internet connection cards so that all students can attend classes and solve technological poverty.
- A mental health strategy has been created in the Psychopedagogical Office to provide help to the educational community through the creation of tutorials, virtual workshops on study techniques, anxiety or fear of public speaking.
- \circ In the PRADO system, a collaborative virtual space has been created with the assistance of computer volunteers so that students can resolve any doubts generated by the system.
- To make administrative procedures more flexible for students wishing to undertake international mobility programmes, both incoming and outgoing.

Moreover, the measures shown in the Contingency Plan, the University of Granada has taken measures within each faculty to prevent the spread of the virus. Some of the measures are:

- Mandatory use of masks within the faculties: This use can be extended to the rest of the city and failure to wear a mask will result in a financial penalty.
- Creation of circuits to prevent people from crossing paths: Each faculty has drawn up a circuit to prevent the university community from meeting face to face and thus prevent the transmission of the virus.
- Closing university canteens: University canteens have been closed to prevent the transmission of the virus, as these are closed areas, which increase the spread of COVID-19.
- Alternative face-to-face attendance of students: Student groups are created in face-to-face attendance to create safe environments within the classroom.
- Intensified classroom cleaning: Classroom disinfection has been intensified to prevent the spread of the SARS-CoV-2 virus.
- **Encourage online teaching**: Where possible, online teaching is encouraged to avoid the risk of exposure. In some cases, such as laboratory practice, cleaning and disinfection of utensils are intensified.

These measures, together with those provided by the Contingency Plan, make the University of Granada a safe place for the university community. This affirmation is demonstrated by the contagion data, where the infected persons have not been infected inside the university facilities but have been infected outside them.

6.1.5 Bulgarian context

Key recommendations for Bulgaria, according to economic reviews of the Organisation for Economic Co-operation and Development are: fiscal and financial policy to mitigate the effects of COVID-19; improving the business environment and management for a more stable recovery after COVID-19; support for the decarbonisation of the economy; promoting inclusion and improving regional development.

Education





All universities and schools in Bulgaria have closed and continued their activities on-line, due to the COVID-19 pandemic. Medical University in Sofia, for example, gives students the opportunity to apply for financial incentives for volunteering in Covid-19 hospitals' sections.

<u>Urban planing</u>

The Ministry of regional development and public works announced a plan for recovery and sustainability of the Republic of Bulgaria in October 2020. In conditions of high degree of uncertainty caused by COVID-19 pandemic, containment and control its spread, as well as dealing with the extraordinary consequences from it, are the main tasks of the government.

Strategic planning of regional and local development covers a system of regulated documents in order to achieve smart, sustainable and inclusive growth and high employment. The Minister of Regional Development and Public Works gives methodological instructions for the development of the documents for strategic planning of the regional and local development and organizes the elaboration of the National Strategy for Regional Development and the regional development plans. The process of developing and implementing these documents is based on cooperation between regional development authorities, the economic, social partners and civil society.

The Regulation with General Provisions (CPR) for the European Structural and Structural Sciences investment funds - Regulation (EU) 1303/2013 regulates for the first time the implementation of integrated territorial investment (ITI) as an instrument of cohesion policy for the programming period 2014-2020. To emphasize the importance of the territorial dimension for policies, the draft CPR for the new programming period (2021-2027) also introduces a policy objective specifically dedicated to the territorial approach "Europe closer to its citizens by promoting sustainable and integrated development urban, rural and coastal areas and local initiatives'.

One positive trend of the COVID-19 pandemic is that for the first time since 2007, more people have settled in Bulgaria than have emigrated. The mechanical growth is 30,715 people. The second positive trend is that, perhaps for the first time in a century, there is a movement not towards cities but towards villages.

Negative emotions

There is not an official strategic plan for reducing the impact of COVID-19 on mental health, in Bulgaria, by now. Steps are being taken in this direction.

To determine the effects, a national representative study on the economic, social, educational, psychological and organizational aspects of the impact of COVID-19 on education was commissioned by UNICEF, Bulgaria. The methodology included surveys for students, parents and educators in preschool and school, interviews with municipal education experts and educational mediators, as well as good practice cases to help the most vulnerable children, to improve online teaching, and to promote innovation in it.

Half of all students felt lonely, insecure and angry; Every fifth student has worsened their success; UNICEF justifies the need for financial measures and flexible employment for families to be able to better support their children at home, especially as more and more classes and schools move to online learning. The study proves the need for specially developed and tailored online learning





resources for children with disabilities, and the recommendations are reflected in the development of an interactive platform in support of children with disabilities, which is a joint activity of UNICEF and Ministry of Education and Science.

Policy recommendations (Education during COVID-19 and beyond: United Nations, August 2020)

Preventing the learning crisis from becoming a generational catastrophe needs to be a top priority for world leaders and the entire education community. This is the best way, not just to protect the rights of millions of learners, but to drive economic progress, sustainable development and lasting peace. In this regard, decision-makers are encouraged to pursue the following recommendations and actions: suppress transmission of the virus and plan thoroughly for schools reopening; protect education financing and coordinate for impact; strenghten the resilience of education systems for equitable and sustainable dvelopment; reimagine education and accelerate positive change in teaching and learning.

6.2 Gaps in policy and planning

Please describe other, if any, policy issues that are not currently being handled by the HEI but should be considered.

6.2.1 Lithuanian and Estonian context

No information available according to the country reports.

6.2.2 Italian context

As the National Council of Architects, Planners, Landscape Architects and Conservators (CNAPPC), health systems should be trying to recover the dimension of the territorial presence. The territorial articulation, at different scales, of the pandemic and the lack of territorialization of policies and interventions for the emergency have shown that only by assuming the variety of settlement, demographic, socio-economic forms of the territories it is possible to act effectively, making also fraught with gaps and inequalities between individuals and social groups.

Several italian cities are looking for adaptation actions - cycle paths, redefinition of public space, dehors, "15 minutes" neighborhoods. In some cases these are the result of solutions already planned and whose implementation has been accelerated, in other cases they are temporary and reversible solutions, but which foreshadow lasting changes.

Some actions are the consequence of what we found ourselves having to face during the lock-down and which however showed the need and potential for a more flexible use of physical space with the function of protection in case of danger, but also of a possible way of life that is more interesting and free: houses that are also places of work and leisure; condominium spaces that can finally be used for play and relaxation; offices that can free up spaces for different activities; buildings that can change their function to adapt to new needs with a flexibility that has so far been little known; suburban or remote places that may regain interest as places where many remote activities can be carried out effectively.




Co-funded by the Erasmus+ Programme of the European Union

Looking at this set of elements - what we know now, what is empirically happening in reaction to the crisis, and what it means to prepare - we can begin to see clearly what are the traits of policies and planning forms capable of dealing with situations of radical uncertainty. An uncertainty that can only be tackled starting from the recognition of systems of opportunity, available resources and their combination and by returning value and guidance to public institutions capable of producing, accumulating and circulating forms of innovation and social intelligence.

In that sense the "Open Squares in Milan" project, complies these objectives.

It mainly concerned (but with some important exceptions, such as the forecourt of Porta Genova station) peripheral areas and which brought the paradigm of tactical urbanism to the reduce the weight of cars, but also to conquer residual and generally underutilized spaces for collective use, involving settled communities as much as possible. The "Reinventing Cities" operation, and in particular the projects presented in the 2020 Call for the redesign of Piazzale Loreto, also show a push to re-naturalize spaces that for decades have been subtracted from any use other than the automotive one.

This renewed attention to safe spaces because they are freed from cars, characterized by the flexibility of uses and by strategies of variable appropriation by different populations, is however subject to some risks. The first is that of privatization, highlighted by the often poorly governed proliferation of the dehors of the premises that end up colonizing and occupying the pavements and accentuated by the rules of distancing. The second is that of the ephemeral nature of the interventions, which don't always seem capable of prefiguring permanent spaces, capable of lasting over time. The third is that of the connection between individual interventions and the urban contexts in which they are located, which requires attention not only from the point of view of urban design, but also from the point of view of the social construction of care and uses.

Some recent projects regarding Milan seem to be working to avoid these risks: the pedestrianization project of Piazza Freud, in front of the entrance to Garibaldi station, the first step to reconnect the station and Piazza Gae Aulenti in a pedestrian fabric, shows the importance of linking spaces and routes. The project for the Fossone in via Novara, which aims to reactivate the beds and the system of water gradually disappearing, operates within the framework of a renaturalization strategy that must be continuously measured with respect to the more general design of space and mobility. The progressive and incremental definition of Grande Forlanini, as a metropolitan park strongly connected to the green-blue shoulder of Lambro, offers important indications on the centrality of the policy and management dimension of the projects.

These examples, very different from each other, therefore show how an effective policy of public spaces needs an effective urban design, but also attention to the social dimension of the practices of use of spaces and a capacity for care and management that it must involve the administration, but also the social actors and users.

In Trieste a large group of architects and sociologists met for three days (3-6 September) to dictate the guidelines for a "Charta Trieste", an attempt to elaborate a vision of the future city, updating the Charter of Athens of 1934 by Le Corbusier. Since urban planning will be the number one topic of the 21st century: it will be in the urban ecosystem that our human future and the sustainability





of our economic-social model will be decided, given that now 60% of the world population lives in cities. Changing the way we live and organizing cities in an eco-sustainable way will make the difference between destruction and / or survival.

6.2.3 Spanish context

The gaps in policy and planning are not considered to exist in this case because the University of Granada has proven to be a safe site for the prevention of the spread of COVID-19. These policies and planning are adapted according to the needs of the University, but always to have a safe and quality University. For this reason, every anomaly that occurs in the University is carefully analysed, such as an overcrowding of students in one place at one time.

When a disturbance occurs, prevention and security measures are automatically taken in the university community. Finally, the data obtained demonstrate how the measures provided in the previous section are useful to meet the main objective, the health of the university community.

6.2.4 Bulgarian context

Since the beginning of the COVID-19 outbreak, UNICEF has supported education continuity and enabling student learning, with a focus on the most marginalized children. UNICEF efforts have focused on supporting Ministries of Education and related Government agencies in establishing, selecting or improving distance and online learning systems; monitoring the impact of school closures on the quality of education provided, particularly through distance learning platforms, and on learning outcomes; and supporting parents and caregivers in guiding children in home-learning and in providing psychosocial support.

The Council of Ministers of the Republic of Bulgaria developed a strategy for development of higher education in the Republic of Bulgaria for the period 2021 – 2030. The analysis of the achievements in recent years and the new challenges in front of the HE system shows the need to prepare and adopt a new one Strategy for the development of higher education in the Republic of Bulgaria to outline vision and to ensure sustainable development of the HE system in the Republic of Bulgaria for the period 2021 - 2030.





7 **CAPACITY TYPES**

This section aims at assessment of the existing state of capacities in the HEI for integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment. As defined by the CAPNAM analytical framework, the four types of categories are institutional, organizational, individual, and the knowledge base.

Country	Institution	No of students	No of academic staff	St / Ac. staff ratio	No. of faculties	No. of graduates	No. of study programs	No. of academic Partners	Interna- tional rankings
Lithuania	VGTU	9400+	960	10:1	10	1900	110	450+	591–600 (acc. to QS Global World Ranking)
Estonia	TalTech	10000+	987	10:1	5	72627	81	536	601 (acc. to QS Global World Ranking)
Spain	UGR	55981	3720	15:1	22	10000+	323	1108	201-300 (acc. to Shanghai Ranking's Academic Ranking of World Universities 2020)

7.1 Key facts and figures about the partner HEIs

7.2 Strategic priorities

Current context of strategic priorities given to integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment at HEI level.

Country	Institution	Strategic priorities
Lihtuania	VGTU	No
Estonia	TalTech	No
Spain	University of Granada	No*





7.2.1 Strategic priorities at the institutional level

Strategic priorities given to integrated education at HEI level.

Country	Institution	Strategic priorities					
Lihtuania	VGTU	1. Sustainable construction (advanced building constructions, environmentally friendly building materials and technologies, architecture and urban environment, digital modeling of buildings and sustainable life cycle, geodetic technologies)					
		2. Environmental and energy technologies (efficient use of resources and energy, environmental technologies, building energy, renewable energy)					
		3. Information and communication technologies (artificial intelligence and decision making systems)					
Estonia	1. Smart and energy-efficient environments – R&D focusing on the creation, development and application of internationally breakthrough smart and energy-efficient (artificial) environments in areas important to the Estonian economy.						
		2. Dependable IT solutions – reliable and attack-resistant IT systems and services, sustainable development of critical IT infrastructure, energy-efficient IT systems and data processing methods. Trust and confidence of users and society in the IT services and guaranteeing privacy.					
		3. Valorisation of natural resources – innovative solutions for economical and sustainable use of Estonian land, natural resources and man-made resources.					
		4. Future governance – R&D focused on technological change (in particular the development and uptake of ICT) and related changes in patterns of human behaviour (personal preferences and expectations, mobility patterns, social networks, etc.) and international developments (UN Sustainable Development Framework4, global ICT governance agreements, etc.) affecting the state's role in society and expectations for public policies and services.					
		5. Innovative SME-s and the digital economy – R&D focused on sustainable and innovative utilization of human resources, capital and technology in small and medium-sized enterprises in order to enhance value creation and improve the international competitiveness of the economy.					
Spain	UGR	1. Strategy based on the use of Information and Communication Technologies (Application of tools based on artificial intelligence).					





2. Strategy based on Equality (To teach university students about equality between people, regardless of their gender).
3. Strategy for the recovery of historic buildings (Reusing and adapting historic buildings to promote their conservation and reduce the environmental impact produced by the construction of new buildings).
4. Environmental strategy (Responsible use of energy resources and promotion of renewable energies).
5. Mental health strategy (Psychological support for people who need it to improve their mental health).
6. COVID-19's strategy (Contingency and Action Plan for SARS-CoV-2 virus).*

*While the latter strategy has been used to integrate education on human behaviour relevant to the influence of the coronavirus, the mental health strategy has been used to analyse and diminish negative emotions in a built environment at the HEI level.

7.2.2 Needs in integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment.

The needs at HEI in integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment related to organisation of study process.

Country	Strategic priorities	
Lihtuania	VGTU	 Develop the necessary modules and integrate them into the study program: Qualified teachers in this field Trainings for teachers and staff.
Estonia	TalTech	 New modules in the field of coronavirus and negative emotions in a built environment and integration of these modules into existing programmes; Funding for researches and modules development; Teachers' and staff trainings.
Spain	UGR	 Increased funding for research. Increased financing for teacher training on coronavirus and negative emotions in a built environment and the integration of these modules into existing programmes. Creation of specific modules related to coronavirus and negative emotions in a built environment and integration of these modules into existing programmes.



 Increased funding to develop the above-mentioned modules.
 Increased financing for staff training.

7.2.3 Gaps in integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment.

The gaps at HEI in integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment.

Country	Institution	Strategic priorities
Lihtuania	VGTU	 Integration of human behaviour relevant to the influence of coronavirus and negative emotions in a built environment as a whole; Lack of staff; Insufficiency of funding for: Researches; Teacher trainings; Curricula development and implementation. Insufficiency of knowledge for curricula development and implementation.
Estonia	TalTech	 Integration of human behaviour relevant to the influence of coronavirus and negative emotions in a built environment as a whole; Lack of staff; Insufficiency funding for: Researches; Teacher trainings; Curricula development and implementation. Insufficiency of knowledge for curricula development and implementation.
Spain	UGR	 Insufficient funding to carry out research and staff contracts. Lack of staff. Lack of modules related to coronavirus and negative emotions in a built environment and the integration of these modules into existing programmes. Lack of financing for the creation of the aforementioned modules. Insufficient funding for teacher training.





7.2.4 Organizational capacities

This part describes the organisational capacities pertinent to integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment at HEI.

7.2.5 HEIs organizational capacities

Country	Lihtuania	Estonia	Spain
Institution	VGTU	TalTech	UGR
 Is integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment sufficiently included in the curricula of HEI? 			
BSc level	No	No	No
MSc level	No	No	No
PhD level	No	No	No
2. Is funding sufficient for integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment at HEI?	No	No	No
 What are the needs at HEI in integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment related to organisation of study process? In order to develop the necessary modules and integrate them into the study program: 			
Qualified teachers in this field	Yes	Yes	Yes
Trainings for teachers and staff	Yes	Yes	Yes
Time for preparation	Yes	Yes	Yes
Teachers and staff trading	Yes	Yes	Yes
Researchers' funding	Yes	Yes	Yes
 What are the gaps in integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built 			





environment related to organisation of study process:			
Funding to carry out research in this field	Yes	Yes	Yes
Financing to train teachers and staff	Yes	Yes	Yes
Time to be able to carry out teacher training	Yes	Yes	Yes

7.2.6 Individual capacities: Staff skills

This part describes the individual staff capacities pertinent to education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment at HEI.

7.2.6.1	Academic staff work at institution
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Country	Institution	Academic staff at Unit	Staff - University level		Researchers	
			University	Unit/	University	Unit/
				department		department
Lihtuania	VGTU	5	2	2	3	3
Estonia	TalTech	2				
Spain	UGR	7	6	6	6	6
Italy		6				

7.2.6.2	Individual	capacities: S	Staff stability	and Turnove	er of professio	nals
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Country	Institution	Staff stability and Turnover of professionals
Lihtuania	VGTU	The staff is stable.
Estonia	TalTech	The turnover rate is low.
Spain	UGR	The team has been very stable since its creation. This team, usually when it undergoes a rotation, it is to add new components to create a larger, more stable and robust staff. This allows us to create quality and professional projects.
Italy		The staff is stable.





7.2.6.3 The current state of the staff training and flexibility in designing its own skill development plans

Country	Institution	Trainings on the topic	Flexibility in designing its own skill development plans
Lihtuania	VGTU	No, but many raleted to the topic at micro, meso and macro levels	The academic staff have flexibility in designing its own skill development plans
Estonia	TalTech	No, but many staff trainings raleted to the topic	The academic staff have flexibility in designing its own skill development plans
Spain	University of Granada		Academic's staff have the necessary skills to design their plans. Moreover, academic staff have a long and successful experience in creating their plans in other respects. Nevertheless, these own plans are based on a set of standards and guidelines to which the completely educational community must adhere.
Italy			In short, skill development plans must be carefully designed in line with the general and specific objectives of the Administration.

7.2.6.1 Individual capacities: required skills and major gaps for integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment at HEI.

Country	Institution	Required Skills	Major gaps in integrated education
Lihtuania	VGTU	Soft skills, such as communication, flexibility, interdisciplinary team work and time management Hard skills, such as ICT, data analytics, affective computing, intelligent desision support systems, etc.	Improvements of soft skills such as communication, flexibility, interdisciplinary teamwork and time management Improvements of hard skills, such as ICT, data analytics, affective computing, intelligent desision support systems, etc.
Estonia	TalTech	Soft skills, as well as hard skills (e.g.communication,flexibility,interdisciplinaryteamICT,dataanalytics,affective	Improvements of soft skills such as communication, flexibility, interdisciplinary teamwork and time management





		computing, intelligent desision support systems)	Improvements of hard skills, such as ICT, data analytics, affective computing, intelligent desision support systems, etc.
Spain	UGR	Empathy : You cannot analyse the influence of coronavirus and negative emotions without understanding how people feel. Analysis : In order to extract relevant information, it is necessary to know how to analyse and select in order to draw relevant conclusions.	The only gap that can be included in this list is that due to the current global pandemic period it is not feasible to conduct face-to- face meetings. The solution to this is to hold them online.
		Responsiveness : Once the information has been extracted and conclusions have been drawn, the action is needed to anticipate a bad situation.	
		Resilience : The process can be long and tiring, so you need to be resilient to work until you achieve your goal.	
		Continuous training : All the other skills are useless if the staff does not have continuous training and excitement to do a good job.	
Italy		 organizational behavioral knowledge of national and local regulations main healthcare guidelines technological / digital communicational stress management empathy. 	Re-building new in-presence relationships with colleagues and managers after working from home Re-organising one's private and professional life so as to re- balance them Learning to view colleagues and users not as potential disease vehicles, but as an asset Keeping updated both easily and timely on possible new safety measures.





7.2.7 Access to Information, Knowledge and Technology

Access to information, knowledge and technology are becoming increasingly critical for sustaining long-term growth and development of education. It relates to the capacity to enable academic staff and students to mobilize, access and use information and knowledge, including access to and effective use of internet.

7.2.7.1	Accecability	to	novel	educational	reso	urces	on	human	beha	viour
	relevant to i	nflu	ence o	f coronavirus	and	negat	ive	emotions	in a	built
	environment	[

Country	Institution	Printed learning materials		Online learning materials		MOODLE	Computer- based intelligent systems	Software
		National language	Other language	National language	Other language			
Lihtuania	VGTU	Yes	Yes	Yes	Yes	Yes +BECK Centre	Yes BECK Centre	Yes BECK Centre
Estonia	TalTech	Yes	Yes	Yes	Yes	Yes	No	No
Spain	University of Granada	Yes	Yes	Yes	Yes	Yes	Yes PRADO	No
Italy	Municipality of Bologna	Yes	Yes	Yes	Yes	Yes	No, only webinars and e- learning courses	No

7.2.7.2 Information/Knowledge/Technology needs and gaps required for integrated education on human behaviour relevant to influence of coronavirus and negative emotions in a built environment

Country	Institution	Information/Knowledge/Technology needs	Major gaps in access to information, knowledge, and technology
Lihtuania	VGTU	Soft skills and hard skills	 Lack of soft skills and hard skills;
		• Integration of different research	 Lack of training;
		areas: built environment, urban planning, human behavior, emotions analytics.	•Integration of different research areas: built environment, urban planning, human behavior, emotions
		• Integration of adaptive MOOCs,	analytics.
		computer learning systems, affective tutoring system, Big Data mining,	•Lack of implementation of the latest technologies (adaptive





		adaptive examination system, adaptive biometric examination system in the study process.	MOOCs, computer learning systems, affective tutoring system, Big Data mining, adaptive examination system, adaptive biometric examination system) in the study process.
Estonia	TalTech	Soft skills and hard skills	 Internationalization and mobility,
		 Integration of different research areas: built environment, urban planning, human behavior, emotions analytics. Integration of adaptive MOOCs, computer learning systems, affective tutoring system, Big Data mining, adaptive examination system, adaptive biometric examination system in the study process. 	 Student motivation to transition to e-learning. Lack of soft skills and hard skills; Lack of training; Integration of different research areas: built environment, urban planning, human behavior, emotions analytics. Lack of implementation of the latest technologies (adaptive MOOCs, computer learning systems, affective tutoring system, Big Data mining, adaptive examination system, adaptive biometric examination system) in the study process.
Spain	UGR	• Follow health guidelines and analyse how they affect the University of Granada.	•Lack of funding to improve the knowledge of the university community.
		 Adapt the University of Granada to the health guidelines by applying measures that favour the safe use of the facilities. Use technologies and resources that favour the safety and equitable learning of the student body. To provide continuous information on the measures taken by the University in accordance with regional and state health measures. To provide students with sufficient technology for those students who are technologically deficient at home. 	 Lack of financing to avoid technological poverty among the student body. Ensure that the entire university community has access to the Internet regardless of where they live.





Italy	Municipality	 national and local norms 	
c	of Bologna	 healthcare guidelines 	
		 case and behavior management procedures. 	





8 REFERENCES

Abbott, A., Schröder, K., Enthoven, P., Nilsen, P., Öberg, B. 2018. Effectiveness of implementing a best practice primary healthcare model for low back pain (BetterBack) compared with current routine care in the Swedish context: an internal pilot study informed protocol for an effectiveness-implementation hybrid type 2 trial. *BMJ open*, *8*(4).

AnalyticsInsight.net, 2020. Link in the Internet: <u>https://www.analyticsinsight.net/top-digital-transformation-trends-education-post-covid-19/</u>

CGTN, 2020. COVID-19 and the city: The future of pandemic-proofed buildings. Link: <u>https://newseu.cgtn.com/news/2020-07-12/COVID-19-and-the-city-The-future-of-pandemic-proofed-buildings-RCqRHMSn72/index.html</u>

CHEC, 2020. COVID-19 Framework Receives CHEC Endorsement. Link on the Internet: <u>https://www.checinternational.org/covid-19-framework-receives-chec-endorsement/</u>.

Chevallier, A., Enders, A. 2020. Method in the madness: organizing information flows. Link on the Internet: https://www.imd.org/research-knowledge/articles/Method-in-madness/.

De Giusti, A. 2020. Policy Brief: Education during COVID-19 and beyond. *Revista Iberoamericana de Tecnología En Educación y Educación En Tecnología*, (26), e12-e12.

Di Pietro, G., Biagi, F., Costa, P., Karpinski, Z., Mazza, J. 2020. The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets. *JT Report, Ed*.

Ekberg, K. 2020. STAGES OF CHANGE: A UNIQUE PERSPECTIVE. Link on the Internet: http://www.audiologypractices.org/stages-of-change-a-unique-perspective.

Kennedy, L. 2020. Impact investing: Build back better. Link on the Internet: https://www.ipe.com/reports/impact-investing-build-back-better/10045327.article.

OECD, 2020a. Cities Policy Responses. Link on the Internet: <u>https://read.oecd-ilibrary.org/view/?ref=126_126769-yen45847kf&title=Coronavirus-COVID-19-Cities-Policy-Responses</u>.

OECD, 2020b. Housing amid Covid-19: Policy responses and challenges. Link on the Internet: https://www.oecd.org/coronavirus/policy-responses/housing-amid-covid-19-policy-responses-and-challenges-cfdc08a8/.

Oxford Martin Programme on the Illegal Wildlife Trade, 2020. Behaviour change intervention design wheel. Link on the Internet: <u>https://www.illegalwildlifetrade.net/2017/08/31/evaluating-design-behaviour-change-interventions-case-study-rhino-horn-vietnam/1-olmedo/</u>.

UNESCO. 2020. Education in a Post-COVID World: Nine Ideas for Public Action International Commission on the Futures of Education.

United Nations, 2020. UN/DESA Policy Brief #78: Achieving the SDGs through the COVID-19responseandrecovery.LinkontheInternet:





https://www.un.org/development/desa/dpad/publication/un-desa-policy-brief-78-achieving-thesdgs-through-the-covid-19-response-and-recovery/.

2021. Link Worldmeter, the Internet: in https://www.worldometers.info/coronavirus/country/lithuania/.

Situación actual de la educación en España a consecuencia de la pandemia. Link on the Internet: http://www.educacionyfp.gob.es/va/mc/cee/publicaciones/estudios/situacion-pandemia.html Website of the COVID page of the University of Granada. Link on the Internet: https://covid19.ugr.es/

Plan de contingencia de la Universidad de Granada. Link on the Internet: https://covid19.ugr.es/informacion/plan-contingencia/docencia-evaluacion-no-presencial

Resumen 19-20 Memoria Académica Anexo Estadístico. Link on the Internet: https://secretariageneral.ugr.es/pages/memorias/academica/20192020/estadistica/ doc/resumn estadistico/%21

OECD, 2020. Cities Policy Responses. Link on the Internet: https://read.oecd-ilibrary.org/view/?ref=126 126769-yen45847kf&title=Coronavirus-COVID-19-Cities-Policy-Responses.

Web of the University of Granada. Link on the Internet: https://www.ugr.es/universidad/organizacion/saludo-rectora

Website of the Ministry of Health of the Spain's Government. Link on the Internet: https://www.mscbs.gob.es/

Official notification of the detection of COVID cases in Spain. Link on the Internet: https://cnecovid.isciii.es/covid19/#ccaa

Website of the Ministry of Universities of the Spain's Government. Link on the Internet: https://www.universidades.gob.es/portal/site/universidades/

Website of Andalucía's Government. Link on the Internet: https://www.juntadeandalucia.es/

Spanish Government epidemiological reports. Link on the Internet: https://www.isciii.es/QueHacemos/Servicios/VigilanciaSaludPublicaRENAVE/EnfermedadesTrans misibles/Paginas/InformesCOVID-19.aspx

Royal Decree 463/2020. Link on the Internet: https://www.boe.es/boe/dias/2020/03/14/pdfs/BOEA-2020-3692.pdf





Royal Decree-Law 7/2020. Link on the Internet: https://www.boe.es/boe/dias/2020/03/13/pdfs/BOE-A-2020-3580.pdf

Royal Decree-Law 22/2020. Link on the Internet: https://www.boe.es/eli/es/rdl/2020/06/16/22/con

Royal Decree-Law 21/2020, "new normality". Link on the Internet: <u>https://www.boe.es/eli/es/rdl/2020/06/09/21</u>

Dawn Naylor & Julie Nyanjom (2020) Educators' emotions involved in the transition to online teaching in higher education, Higher Education Research & Development, DOI: 10.1080/07294360.2020.1811645

Liisa Postareff & Sari Lindblom-Ylänne (2011) Emotions and confidence within teaching in higher education, Studies in Higher Education, 36:7, 799-813, DOI: 10.1080/03075079.2010.483279

Dietz L, Horve PF, Coil DA, Fretz M, Eisen JA, Van Den Wymelenberg K. 2020. 2019 novel coronavirus (COVID-19) pandemic: built environment considerations to reduce transmission. mSystems 5:e00245-20. <u>https://doi.org/10.1128/mSystems.00245-20</u>.

Bavel, J.J.V., Baicker, K., Boggio, P.S. et al. Using social and behavioural science to support COVID-19 pandemic response. Nat Hum Behav 4, 460–471 (2020). <u>https://doi.org/10.1038/s41562-020-0884-</u>

Megahed, N. A., & Ghoneim, E. M. (2020). Antivirus-built environment: Lessons learned from Covid-19 pandemic. Sustainable cities and society, 61, 102350. <u>https://doi.org/10.1016/j.scs.2020.102350</u>

Ko, W., Schiavon, S., Zhang, H., Graham, L. T, Brager, G., Mauss, I., & Lin, Y. (2020). The impact of a view from a window on thermal comfort, emotion, and cognitive performance. UC Berkeley: Center for the Built Environment. <u>http://dx.doi.org/10.1016/j.buildenv.2020.106779</u> Retrieved from <u>https://escholarship.org/uc/item/09b861jb</u>

Aristovnik, Aleksander; Keržič, Damijana; Ravšelj, Dejan; Tomaževič, Nina; Umek, Lan. 2020. "Impacts of the COVID-19 Pandemic on Life of Higher Education Students: A Global Perspective" Sustainability 12, no. 20: 8438. <u>https://doi.org/10.3390/su12208438</u>

Yen, SC., Lo, Y., Lee, A. et al. Learning online, offline, and in-between: comparing student academic outcomes and course satisfaction in face-to-face, online, and blended teaching modalities. Educ Inf Technol 23, 2141–2153 (2018). <u>https://doi.org/10.1007/s10639-018-9707-5</u>

Ramona Maile Cutri, Juanjo Mena & Erin Feinauer Whiting (2020) Faculty readiness for online crisis teaching: transitioning to online teaching during the COVID-19 pandemic, European Journal of Teacher Education, 43:4, 523-541, DOI: 10.1080/02619768.2020.1815702





Ackermann, C. (2021), "A personal narrative on understanding and navigating transitional change: lessons learned by an accounting academic amidst COVID-19", Accounting Research Journal, Vol. ahead-of-print No. ahead-of-print. <u>https://doi.org/10.1108/ARJ-08-2020-0281</u>

Olasile Babatunde Adedoyin & Emrah Soykan (2020): Covid-19 pandemic and online learning: the challenges and opportunities, Interactive Learning Environments, DOI: 10.1080/10494820.2020.1813180

Miki Yoshimura (2008) Educators in American online universities: understanding the corporate influence on higher education, Journal of Education for Teaching, 34:4, 295-305, DOI: 10.1080/02607470802401412

Evrim Baran , Ana-Paula Correia & Ann Thompson (2011) Transforming online teaching practice: critical analysis of the literature on the roles and competencies of online teachers, Distance Education, 32:3, 421-439, DOI: 10.1080/01587919.2011.610293

Ben Williamson, Rebecca Eynon & John Potter (2020) Pandemic politics, pedagogies and practices: digital technologies and distance education during the coronavirus emergency, Learning, Media and Technology, 45:2, 107-114, DOI: 10.1080/17439884.2020.1761641

Deirdre Ryan, Fiona Faulkner, Dominic Dillane & Robert V. Flood (2021): Communities of practice as a solution for the implementation gap in internationalisation of the curriculum, Higher Education Research & Development, DOI: 10.1080/07294360.2021.1877630

Johannes König , Daniela J. Jäger-Biela & Nina Glutsch (2020) Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany, European Journal of Teacher Education, 43:4, 608-622, DOI: 10.1080/02619768.2020.1809650

Wesley O'Brien, Manolis Adamakis, Niamh O' Brien, Marcos Onofre, João Martins, Aspasia Dania, Kyriaki Makopoulou, Frank Herold, Kwok Ng & João Costa (2020) Implications for European Physical Education Teacher Education during the COVID-19 pandemic: a cross-institutional SWOT analysis, European Journal of Teacher Education, 43:4, 503-522, DOI: 10.1080/02619768.2020.1823963

Betty Leask (2020) Embracing the possibilities of disruption, Higher Education Research & Development, 39:7, 1388-1391, DOI: 10.1080/07294360.2020.1824211

Sharmila Gamlath (2021): Peer learning and the undergraduate journey: a framework for student success, Higher Education Research & Development, DOI: 10.1080/07294360.2021.1877625

Wang, V. X., & Cranton, P. (2011). Transformative Learning. International Journal of Adult Vocational Education and Technology (IJAVET), 2(4), 58-66. doi:10.4018/javet.2011100105



Rodrigues, H., Almeida, F., Figueiredo, V. & Lopes, S.L. (2019). Tracking e-learning through published papers: A systematic review. Computers & Education, 136(1), 87-98. Elsevier Ltd. Retrieved February 15, 2021 from <u>https://www.learntechlib.org/p/208392/</u>.

Worldmeter (2021) <u>https://www.worldometers.info/coronavirus/country/estonia/</u> (as of the date of 15.02.2021)

International Commission on the Futures of Education, 2020. Education in a Post-COVID World: NineIdeasforPublicActionhttps://unesdoc.unesco.org/ark:/48223/pf0000373717/PDF/373717eng.pdf.multi(accessed15.02.2021)

European Students' Union (2020). Looking into the next academic year through the
recommendations from students <a href="https://www.esu-online.org/wp-content/uploads/2020/08/202008-Looking-into-the-next-academic-year-through-the-

recommendations-from-students-.pdf (accessed 15.02.2021)

NewMediaConsortium(NMC)HorizonReport(2018)https://library.educause.edu/resources/2018/8/2018-nmc-horizon-report

Hamidi, S.; Porter, K.M.P. How Cities Are Taking Action on COVID-19. Planning Magazine. American Planning Association. 2020. Available online: <u>https://www.planning.org/planning/2020/jul/how-cities-are-taking-action-on-covid-19/</u> (accessed 10 11 2020).

Barth, B. Increased Remote Work Could Mean Big Changes for Cities. Planning Magazine. AmericanPlanningAssociation.2021.Availableonline:https://www.planning.org/planning/2021/winter/increased-remote-work-could-mean-big-changes-for-cities/(accessed 20 01 2021).

LaSalle, J. L. COVID-19 global real estate implications: Paper II. JLL Research report. 2020. Available online: <u>https://www.us.jll.com/en/trends-and-insights/research/covid-19-global-real-estate-implications#download</u> (accessed 15 01 2021).

Cournède, B.; Ziemann, V.; De Pace, F. Impact of COVID-19 on Housing: how can policies support a healthy recovery? OECD Economics Department. 2020. Available online: <u>https://oecdecoscope.blog/2020/08/03/impact-of-covid-19-on-housing-how-can-policies-support-a-healthy-recovery/?print=print</u>, (accessed 10 01 2021).

Akhmouch, A.; Taylor, A. Cities policy responses. OECD, 2020, p. 97. Available online: <u>https://read.oecd-ilibrary.org/view/?ref=126_126769-yen45847kf&title=Coronavirus-COVID-19-</u> <u>Cities-Policy-Responses</u> (accessed 15 01 2021).

OECD. Cities Policy Responses. 2020. 97 pages. Available online: <u>https://read.oecd-ilibrary.org/view/?ref=126 126769-yen45847kf&title=Coronavirus-COVID-19-Cities-Policy-Responses</u> (accessed 15 01 2021).



Dechezlepretre, A.; Kozluk, T.; Elgouacem, A.; Kruse, T. COVID-19 and the low-carbon transition: Impacts and possible policy responses. 2020. Available online: <u>http://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-low-carbon-transition-impacts-and-possible-policy-responses-749738fc/</u> (accessed 12 01 2021).

OECD (2020b). Housing amid Covid-19: Policy responses and challenges. OECD Policy Responses to Coronavirus (COVID-19), OECD Publishing, Paris. <u>https://doi.org/10.1787/cfdc08a8-en</u>

Key Features of the Education System: <u>https://eacea.ec.europa.eu/national-policies/eurydice/content/bulgaria_en</u>

European Foundation for the Improvement of Living and Working Conditions: <u>https://www.eurofound.europa.eu/bg</u>

Information portal, COVID-19 in Bulgaria: <u>https://coronavirus.bg/</u>

Worldmeter, 2021: https://www.worldometers.info/coronavirus/country/bulgaria/

Rapid Assessment of COVID-19 impact on education in Bulgaria: <u>https://www.unicef.org/eca/rapid-assessment-covid-19-impact-education-bulgaria</u>

UNESCO: Building Resilient Education Systems beyond the COVID-19 Pandemic: <u>https://www.unicef.org/bulgaria/media/8346/file/BGR-ECAR-considerations-education-provision-en-latest%20version-disclaimer.pdf</u>

Economic reviews of the Organisation for Economic Co-operation and Development, Bulgaria: <u>file:///C:/Users/user/Downloads/BrochureBG.pdf</u>

Education during COVID-19 and beyond: United Nations, August 2020: <u>https://www.un.org/development/desa/dspd/wp-</u>

content/uploads/sites/22/2020/08/sg policy brief covid-19 and education august 2020.pdf