



WHITE PAPER ON DIGITAL INCLUSION

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Introduction

Access to higher education has traditionally been viewed as a crucial element for personal growth, enhanced quality of life, and economic advancement for societies. In Europe, where values of equality and inclusivity are highly regarded, universities play a pivotal role in realising these societal goals. Despite persistent efforts to ensure widespread access to higher education, new forms of student exclusion have emerged, primarily linked to the ongoing digital transformation.

This digital revolution has revolutionised learning methods and the availability of educational resources. European universities, akin to their global counterparts, have adopted information and communication technologies (ICT) to broaden their outreach, engage diverse audiences, and facilitate online learning. However, this shift to digital education presents challenges and introduces novel patterns of exclusion among university students.

On 11 June 2020, the Secretary-General of the United Nations published a Roadmap for Digital Cooperation (A/74/821) outlining how the international community can better take advantage of the opportunities offered by digital technologies and, at the same time, address the challenges they pose.

The document, released by the United Nations in 2022, emphasises connecting, respecting, and protecting the online world. It offers detailed recommendations and tangible measures to enhance global digital cooperation. These measures are specifically designed to:

- **Connect:** Foster greater connectivity across the digital landscape, ensuring that people worldwide can access the benefits and resources of digital technologies. This includes promoting inclusive access to the Internet, bridging the digital divide, and encouraging collaboration among nations and organisations.
- **Respect:** Uphold digital rights and ethical standards, safeguarding individuals' privacy, security, and dignity online. This involves promoting digital literacy, awareness, and education to empower users and create a responsible digital society.
- **Protect:** Implement robust cybersecurity measures and policies to shield digital infrastructures, businesses, and individuals from cyber threats. This includes international collaboration on cybersecurity frameworks, data protection regulations, and effective mechanisms to respond to cyber incidents.

The Roadmap for Digital Cooperation stands as a pivotal document, outlining a multifaceted approach to ensure that digital technologies are harnessed for the collective benefit of humanity while safeguarding individuals and societies from potential risks. It underscores the importance

of collaborative efforts on a global scale, reflecting the United Nations' commitment to fostering a secure, inclusive, and respectful digital future for all.

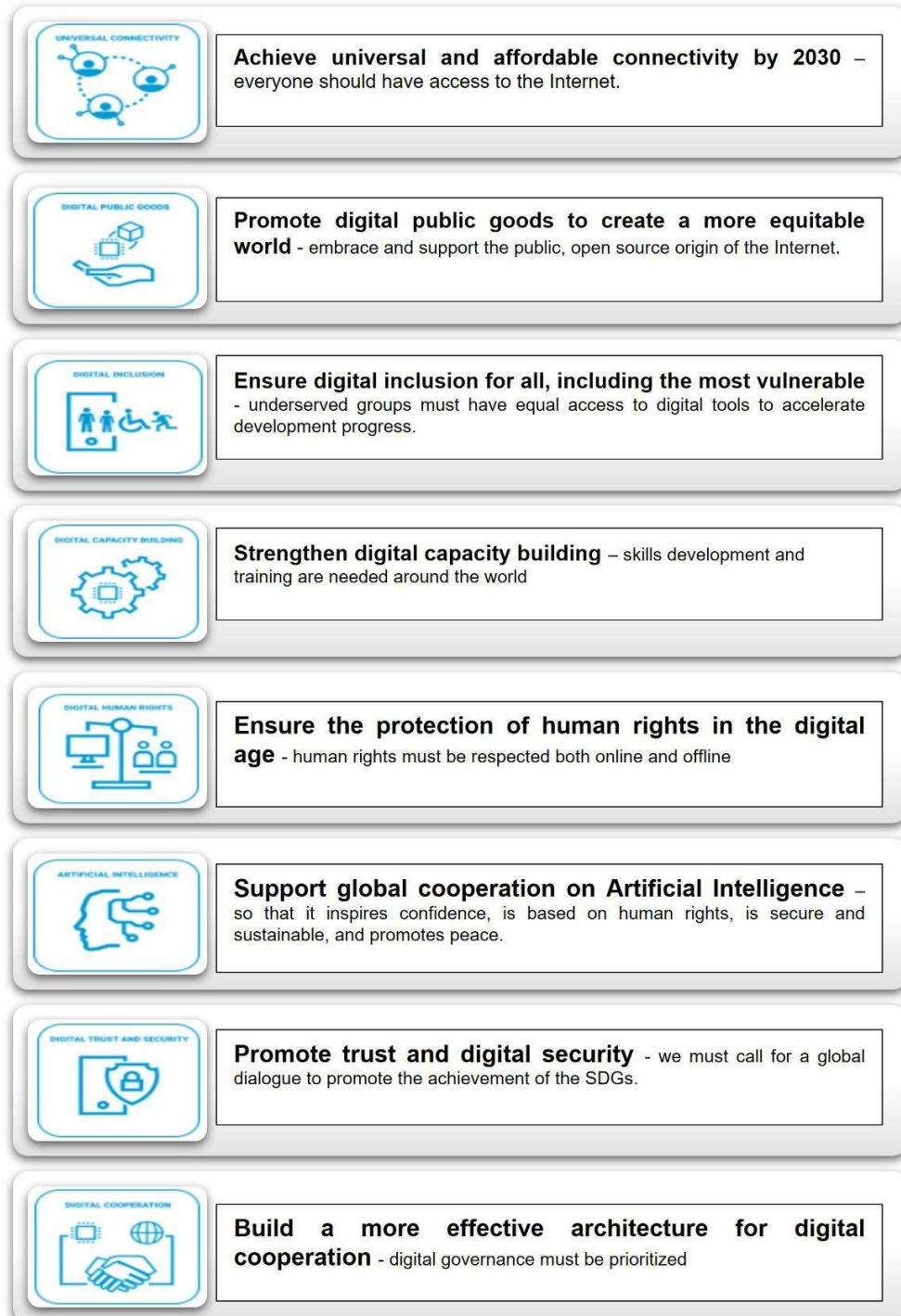


Figure 1. The Roadmap for Digital Cooperation (UN, 2022)

Digital Inclusion

The term Digital Inclusion describes the effort to guarantee that all people, regardless of age, gender, socioeconomic origin, or abilities, and communities have access to Information and Communications Technologies (ICT), along with the skills to make use of them, ensuring that everyone has the opportunity to participate in the digital world, as an integral part of modern society (IEEE, 2023).

This concept is a technological adaptation of social inclusion that acquires greater importance as increasingly digital sub-societies are created. It encompasses everything from sustainable digitalization to the democratisation of technology (Smowl, 2023).

Digital Inclusion seeks everyone to contribute to and benefit from the digital economy and society (Iberdrola, 2023). Therefore, work must be done on the:

- access to information and communications technologies (ICT), guaranteeing infrastructure, affordable prices and ease of use;
- assistive technologies, which facilitate access for people with disabilities who would not otherwise be able to use them;
- Digital literacy, including ICT training in primary education and people's continuous learning, focuses on the most disadvantaged sectors of society with specific programs that help them join the digital world.

Benefits of Digital Inclusion

An inclusive digital society evolves into a more just society (Smowl, 2023). The main benefits it provides are:

1. Access to education: allows all people access to education, regardless of their geographic location or abilities. This means that, with technology, it is possible to overcome barriers such as distance, lack of resources, or some disabilities. Additionally, it allows students to learn at their own pace and choose the courses that best suit their needs and interests. This may be especially important for those who,

- for example, live in rural areas or have family responsibilities that prevent them from attending a traditional school. It can also improve the quality of education by providing students with access to a wide range of educational resources and materials.
2. **Improved employability:** Having extensive knowledge of the digital sector is increasingly important in the labour market, and digital skills are becoming required for many jobs. Therefore, digital inclusion allows all people, regardless of their location or abilities, to develop and improve their digital skills, which can enhance their employment opportunities. It can be a powerful tool for continuous training and professional development, allowing people to access remote training courses and programs to improve their skills and knowledge.
 3. **Economic growth:** Digital inclusion can help boost business creation and generate new jobs, especially in companies in the ICT sector. It can also help improve the efficiency and competitiveness of existing companies, which can lead to higher productivity and sustainable economic growth. It can foster innovation by allowing more people to access information and resources, which can drive new ideas and solutions that, for example, can help reduce environmental impact through technology.
 4. **Social inclusion:** Digital technology is a valuable tool for connecting with others and building more inclusive communities, improving accessibility for people with disabilities, and helping reduce the barriers they may face daily. For example, descriptive audio and keyboard navigation tools can make technology more accessible for people with visual or motor disabilities.
 5. **Digital literacy** is one of the keys to promoting digital inclusion. Thanks to ICT, practical tools, strategies, and solutions help to include all people in training processes, such as older people or people with disabilities.

In the specific case of older adults or people with disabilities (both physical and intellectual), digital inclusion can help them improve communication, thereby improving their quality of life and reducing their feelings of loneliness. Increases your cognitive development and mental activity; It helps them become familiar with technology, increasing their confidence in its use and

facilitating access to the information and services they need. Digital inclusion also contributes to the independence of these social groups.

An example of what is being done in terms of digital inclusion is the fact that the European Union (EU) is taking measures to promote multilingualism online and has invested, in the last decade, more than 200 million euros in this area. It also launched the Connecting Europe mechanism, an electronic translation service offering multilingual support to digital services and public administration across the EU (European Commission, 2021).

The transition to the digital world provides new and exciting opportunities. However, not everyone has equal access to these opportunities: for some people, the digital world is not yet fully accessible; for others, it is not affordable, and others have not received the training necessary to participate fully. Therefore, Digital Exclusion leads to greater marginalisation and hinders access to essential services such as Education, Health Care, and Employment opportunities.

Digital Equity

Digital Equity refers to the accessibility and fair and equal use of new information and communications technologies (ICT). This includes access to devices, the Internet, digital services, and training to use them effectively.

Access to ICT is essential for many activities, including work, education, communication, and access to public services. However, a digital divide prevents some people from accessing the same opportunities as those with ICT access. This gap is often based on factors such as education, economics, and geographic location.

Digital equity seeks to reduce this gap by promoting equitable access to ICT for all, regardless of socioeconomic status. This may include measures such as providing devices and internet access at low or free cost, training, and education programs to improve digital literacy, and creating accessible digital content and services tailored to the needs of different groups.

Two-thirds of the world's population uses the Internet, but 2.7 billion people remain offline

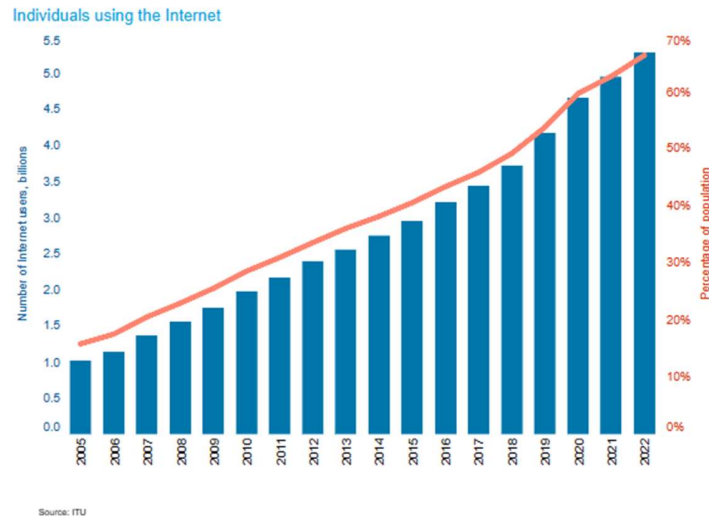
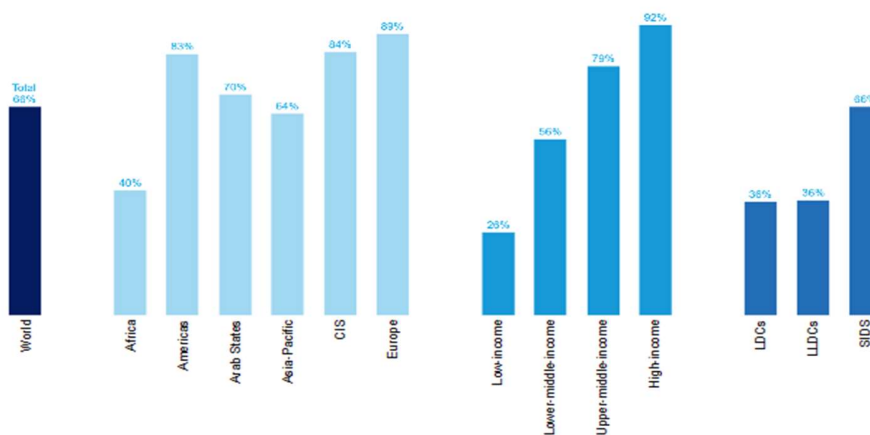


Figure 2. Internet use in the world (ITU, 2022)

The latest ITU studies (2022) estimate that 5.3 billion people of the 8 billion people on Earth will use the Internet in 2022, approximately 66 percent of the world's population (see Figure 2 and Figure 3).

Percentage of individuals using the Internet by region, 2022



Source: ITU

Figure 3. Internet use by region (ITU, 2022)

Three-quarters of the population aged ten or over owns a mobile phone. On average, in almost all regions, the percentage of people who own a mobile phone is higher than that of Internet users, but the gap has been narrowing. This is reflected in the fact that mobile broadband subscriptions continue multiplying, catching up with mobile cellular subscriptions, which have stagnated.

The world takes a small step towards digital gender parity

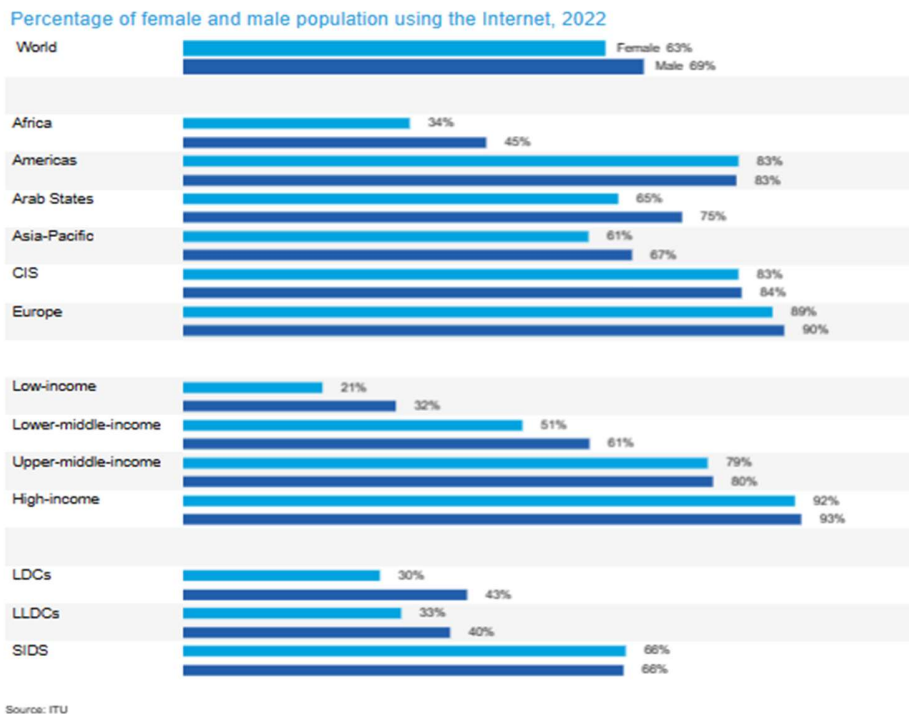
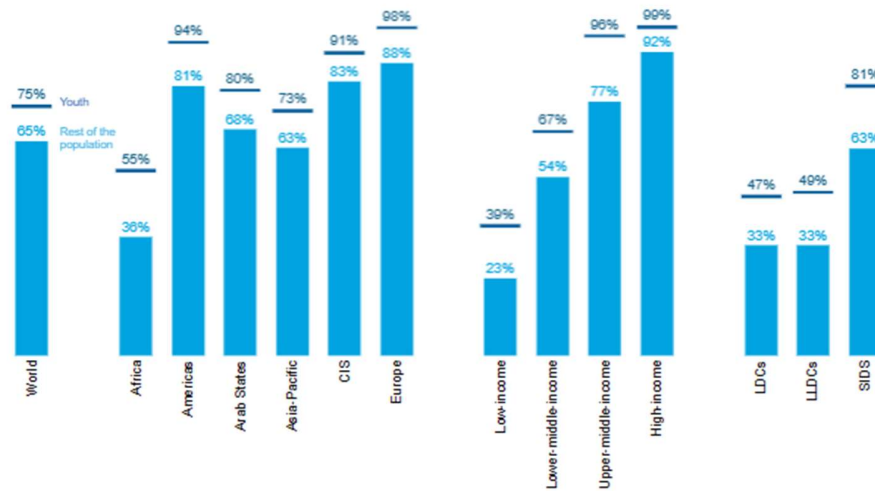


Figure 4. Digital Gender Parity (ITU, 2022)

While the Internet use gender parity score (Figure 4), defined as the percentage of women divided by the percentage of men who use the Internet, is slowly improving, the population of non-Internet users has also become more skewed as women are left behind more often.

Three-quarters of 15- to 24-year-olds use the Internet

Percentage of individuals using the Internet by age group, 2022



Note: Youth means 15-24 year old individuals using the Internet as a percentage of the total population aged 15 to 24 years. Rest of the population means individuals below 15 years old or over 24 years old as a percentage of the respective population.

Source: ITU

Figure 5. Internet use by young people (ITU, 2022)

Statistics (ITU, 2022) further show that young people are the driving force of connectivity: 75 percent of people aged 15 to 24 are online, compared to 65 percent of the whole population (Figure 5).

The affordability of essential fixed and mobile broadband services improved in 2022 compared to the previous year. The global gap remains wide: for the average consumer in a typical low-income economy, the cheapest mobile broadband basket costs more than 9 percent of their income, more than six times the global price.

Worldwide, 82 percent of urban residents used the Internet in 2022. That percentage is 1.8 times higher than the percentage of Internet users in rural areas (Figure 6). The ratio has decreased from 2.3 to 1.8 in the past three years as rural areas gradually recover (ITU, 2022).

The urban-rural gap has essentially narrowed in Europe (ratio of 1.1). Elsewhere, it is wide but narrow.

Percentage of individuals using the Internet in urban and rural areas, 2022

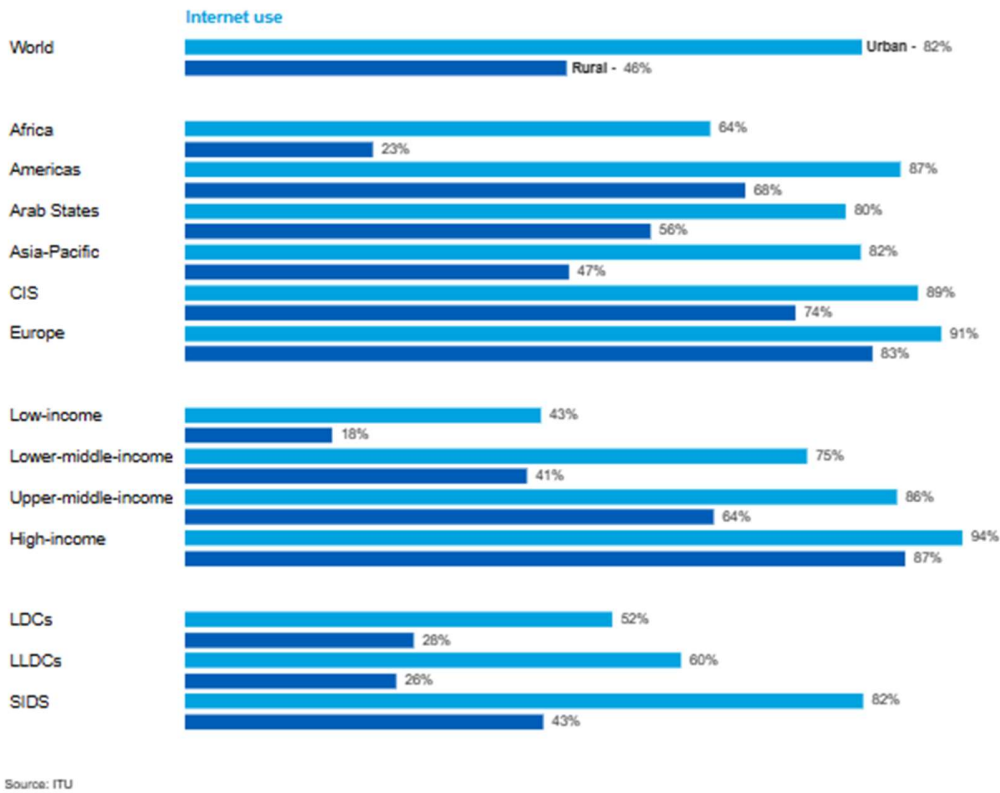


Figure 6. Internet use in urban and rural areas (ITU, 2022)

Digital learning and ICT in education in the EU

The European Commission is at the forefront of efforts to modernise education and training across European Union (EU) member states. Through funding research and innovation and actively promoting the use of digital technologies for learning, the Commission has embarked on a transformative journey to adapt education systems effectively to the demands of the digital age.

Central to this mission is the Digital Education Action Plan (2021-2027), a pivotal political initiative of the EU. This Action Plan is strategically designed to support the sustainable and efficient adaptation of education and training systems in EU member states to the digital era. To achieve its ambitious objectives, the Action Plan outlines 13 key actions categorised into two priority areas:



Priority Area I: Promoting the Development of a High-Performance Digital Education Ecosystem

Under this priority, the European Commission is focused on fostering a robust digital education ecosystem. To ensure ethical practices, guidelines are being developed concerning trustworthy artificial intelligence and the responsible use of data in educational contexts. These guidelines serve as a foundation, promoting ethical considerations and ensuring the responsible integration of advanced technologies within the realm of education and training.

Priority Area II: Improving Digital Skills and Competencies for Digital Transformation

In this priority, efforts are concentrated on enhancing digital skills and competencies among educators and learners. Standard guidelines are being established for teachers and educators, facilitating the promotion of digital literacy and addressing the challenge of misinformation through targeted education and training initiatives. By equipping educators with the necessary skills and knowledge, the Commission aims to empower them to navigate the digital landscape effectively and guide students toward responsible and informed digital citizenship.

Beyond the Action Plan, the European Commission actively supports many research and innovation activities geared toward digital learning. Several flagship programs, including Horizon Europe and the Digital Europe Programme, and their predecessors, such as Horizon 2020, the Seventh Framework Program (FP7), and the Framework for Innovation and Competitiveness (PIC), serve as platforms for funding these initiatives. Through these programs, the Commission fosters ground-breaking research, innovative practices, and the development of cutting-edge technologies, thereby driving the evolution of digital education within the EU.

The European Commission's comprehensive approach to modernising education encompasses policy initiatives, ethical guidelines, and robust funding mechanisms. By emphasising the development of digital ecosystems, promoting digital skills, and investing in research and innovation, the Commission is steering EU member states toward a future where education is not only adapted but thrives in the digital age, ensuring that learners and educators are equipped to face the challenges and opportunities of the 21st century.

Digitalization of schools in the EU

In 2019, the European Commission embarked on a comprehensive survey titled "ICT in Education," aimed at achieving two key objectives: firstly, to assess the advancements made in integrating Information and Communication Technology (ICT) in schools, and secondly, to formulate a definitive model for classrooms equipped with advanced technology and seamless connectivity.

This survey covered 31 countries, including the 27 European Union member states and the United Kingdom, Norway, Iceland, and Turkey. By encompassing such a broad geographical scope, the survey provided a nuanced and reliable comparative analysis of ICT usage in school education across Europe. The survey delved deep into various aspects, such as providing ICT resources, the existing infrastructure, usage patterns, levels of trust, and attitudes towards ICT in educational settings.

A significant finding from a related study conducted in 2015 highlighted a glaring issue: approximately 18% of primary and secondary schools in the European Union were not yet connected to broadband internet services. Addressing this digital divide became a focal point, prompting further exploration into viable solutions.

One innovative approach suggested by the study was integrating satellite broadband services in schools. The research indicated that satellite broadband could be a highly efficient solution, especially for schools in remote or poorly connected areas. Satellite technology offers the potential to bridge the connectivity gap and ensure that even schools in remote regions can benefit from the advantages of digital learning.

Additionally, the study proposed the implementation of a voucher system as a means to tackle the broadband disparity in schools. This system would provide vouchers or subsidies to schools lacking adequate broadband connectivity, enabling them to access satellite broadband services. By adopting such an approach, the European Commission aimed to create a level playing field, ensuring that all schools, regardless of location or economic status, could provide their students with access to high-quality digital education.

The 2019 survey and the subsequent study on satellite broadband services identified the challenges schools face in integrating ICT and offering innovative and practical solutions. By leveraging satellite technology and implementing targeted subsidy programs, the European Commission sought to empower schools across the continent, fostering a more inclusive and technologically advanced educational landscape.

Inclusive Digital Teaching

Inclusive digital teaching refers to the practice of using technology in a way that allows all students, regardless of their differences or needs, to access education and participate effectively in the learning process. Some key aspects of inclusive digital teaching include:

- 1) **Accessibility:** Ensure that learning materials, online platforms, and tools are accessible to people with disabilities, such as content in alternative formats, subtitles, screen readers, etc.
- 2) **Personalization:** Use technology to adapt content and learning activities to students' individual needs, which may include differentiation and adaptation of resources.
- 3) **Flexibility:** Allow students to access materials and participate in learning activities at times and locations that are convenient for them, which is especially important for those with additional responsibilities or challenges.
- 4) **Online collaboration:** Encourage interaction and collaboration between students and teachers through online tools, which can help overcome geographic and mobility barriers.
- 5) **Training and Support:** Provide training to educators and students on the effective use of technology and how to adapt it to address the needs of all students.

Inclusive digital teaching seeks to ensure that no one is excluded from education due to personal characteristics or circumstances and to promote equitable and enriching learning for all.

Authors such as Evans-Amalu & Claravall (2021) define an inclusive curriculum as the commitment to achieving social justice and equity in teaching and learning. They have the vision and desire to develop and foster curricula that challenge and dismantle structural and systemic

problems such as racism, ableism, sexism, classism, linguism, ageism, heterosexism, religious prejudice, and xenophobia currently facing our global society. In their research, Kabel, Hwang. J and Hwang (2021) find that virtual learning accessibility, implementation, and resources are lacking in rural communities.

Other researchers such as Kim, Coenraad, and Park (2021) integrate reflection using digital storytelling to promote identity construction and learning. Meaning-making and reflection provide deep hope in virtual learning spaces, which are necessary now. Seale, Draffan, & Wald (2013) evaluate a conceptual framework that encompasses two aspects: one that focuses on technology, personal and contextual factors, and another on resources and options.

DIG-2-INC Project

The DIG-2-INC Project assesses that access to higher education has long been considered a fundamental factor for individual development, improving society's quality of life and economic growth. In Europe, where equality and inclusion are essential, universities are often seen as the cornerstone of these social aspirations. However, despite efforts to ensure universal access to higher education, student exclusion persists in new forms, mainly associated with the ongoing digital revolution.

This digital revolution has transformed learning methods and access to educational resources. Like their counterparts worldwide, European universities have embraced information and communication technologies (ICT) to expand their reach, reach diverse audiences, and facilitate online learning. However, this transition to digital education is not without challenges and has created new dynamics of exclusion among university students.

This sociological research project aims to explore these underlying challenges and identify exclusion factors affecting European university students, specifically focusing on digital exclusion. Digital exclusion encompasses all the barriers students face that prevent them from fully benefiting from online education and digital resources. These barriers can take multiple forms, such as limited Internet access, lack of personal computers, insufficient digital skills, or language and cultural barriers.

Concept and methodology of the workshops

Among the methods designed to evaluate and transform the topic of inclusive digital learning in the Project, was the concept of developing workshops to generate motivation and commitment with the staff of the universities and implementing an Awareness Campaign to “Create a more welcoming university”.

The workshops were held at the five associated universities: UTU, TUIASI, BFU, USGM, and uB, with the participation of staff members from each university: managers, professors, instructors, counsellors, and administrative/medical/social services.

The workshops had several objectives:

- Make the Dig-2-Inc project known to the university community.
- Raise awareness in the community about the problems of inclusion of students from low socioeconomic status, especially in digital learning.
- Identify needs and challenges from the staff point of view to complement the Community Recording process with student stories.
- Identify staff members who could participate in the design of more inclusive pedagogical practices.

The topics proposed to analyse were Inclusion, Diversity, Disability, Diseases, Cultural barriers, Linguistic barriers, Socioeconomic status, Learning difficulties, Migrants and refugees, Gender and sexual discrimination, Geographical barriers, Financial support, Mentoring, Evaluation Process, Extracurricular Activities, Culture of Inclusion, Digital Learning, Challenges to technology.



Figure 7. Word cloud around the term "inclusion".

Twenty participants were invited to each workshop and divided into four groups led by a facilitator.

The workshops raised awareness among university staff about the problem of exclusion, to start thinking about improvement solutions, and to have a more precise awareness of the existing solutions.

It was important to note that there is particular interest in the topic of digital inclusion and disability and the desire to better understand the existing tools around inclusion. This interest is related to personal sensitivities, the position held, and contact with students.

It is considered that IT departments periodically accompany students in using computer tools, international relations departments attend to international students, and university libraries are in contact with students who sometimes have difficulties with digital tools.

In the results of each workshop, it is perceived that it is important to evaluate the context of each country and each university since the realities and behaviours of the topics discussed, mainly the topic of inclusion, are not represented in the same way.

However, one of the main conclusions of the workshops was the idea of making universities more attractive for younger generations, keeping up with society's development, constantly changing, integrating the latest technologies, teaching techniques, methods evaluation, etc.

Project Assessment and Recommendations

Drawing from our assessment of student digital inclusion workshops, we have thoroughly examined the realm of Inclusive Digital Education. This evaluation identified key barriers and challenges, proposing comprehensive actions and measures.

Problems evaluated:

- Universities need to adapt to attract and meet student expectations continually.
- Most of the students face problems due to their background.
- Students from poor regions have difficulty studying due to the need to work, which reduces their motivation.
- Need for mentoring to reduce dropout rates.
- The lack of interest of students demotivates teachers.
- High school graduates often choose to work abroad over college.
- Staff may lack digital training to support students.
- Students can be passive and mainly use digital for recreational purposes.
- Concerns about eliminating all barriers and difficulties for students.
- Need to achieve a balance in promoting equal opportunities.
- Emphasis on understanding and addressing the needs of low socioeconomic students.
- Emphasize staff training to support inclusion efforts.
- Importance of adapting to the diverse needs of students, breaking down barriers, and promoting independence.

Proposals for actions and measures:

- Study and analyse the experiences of other educational institutions on students of low socioeconomic status (SES).

- Draft regulations for the governance and regulation of activities, organisation, financing, and control mechanisms to fully include low SES students.
- Create a commission to plan and implement activities for including and integrating low SES students.
- Conduct regular research on the needs and good practices of low SES students.
- Approve standards and programs for the inclusion of digital education.
- Improve the university guidance system per the Inclusion and Diversity Strategy 2021-2027.
- Build specialised consultation environments.
- Create policies to support low SES students.
- Improve the conditions of the library fund.
- Importance of adapting the language to the profile of the students.
- Ensure staff are informed about student issues and needs.
- Provide training to administrative staff.
- Increase the competence and capacity of university staff.
- Establish an appropriate architectural and informational environment.

Conclusions

Our evaluation has highlighted crucial challenges faced by students from diverse backgrounds and socioeconomic statuses in higher education. Universities must adapt to meet evolving student expectations comprehensively.

Many students, especially those from economically disadvantaged regions, struggle to balance work and studies, hampering their motivation and academic progress. Essential mentoring programs are needed to support these students and reduce dropout rates.

Additionally, the indifference of some students affects their learning experience and demotivates educators. High school graduates opting for international employment over higher education pose a challenge to domestic universities. Staff members lacking digital training further hinder student support.

Eliminating barriers and promoting equal opportunities is vital. Understanding the specific needs of low socioeconomic students is key, emphasising staff training to actively support inclusive initiatives. Together, we'll explore strategies to address these challenges and create an inclusive educational environment.

In today's ever-evolving educational landscape, fostering inclusivity and ensuring equal opportunities for all students, regardless of their socioeconomic status, stands as a paramount objective. Recognizing the pressing need for comprehensive measures, we have compiled a list of proposals aimed at enhancing the educational experience for students belonging to low socioeconomic backgrounds.

These proposals encompass a wide array of strategies, ranging from analysing successful initiatives undertaken by other educational institutions to drafting meticulous regulations that govern the inclusion of low socioeconomic status students. Our recommendations further delve into creating dedicated commissions, conducting regular research, and establishing specialised consultation environments, all geared towards fostering an inclusive educational environment.

Furthermore, we emphasise the significance of digital education and advocate for the approval of standards and programs tailored to include all students effectively. Aligning with the Inclusion and Diversity Strategy 2021-2027, our proposals delve into refining university guidance systems, offering training to administrative staff, and enhancing the competence of our dedicated educators.

Lastly, we stress the importance of adapting our language and ensuring our staff is well-informed about the unique needs of our students. Through these proposals, we endeavour to create an educational atmosphere where every student, regardless of their background, feels valued, supported, and equipped for success.

In summary, findings within the Project underscore the importance of holistic strategies to promote inclusive education and foster success for students with low socioeconomic status. These strategies include clear regulations, staff training, and personalised support to meet the diverse needs of students.

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