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Digital competences in Higher Education: an agenda for students' equal participation

DIGITAL
LITERACY
PROJECT
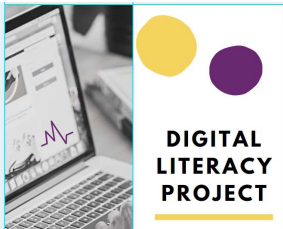
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I am delighted to have the opportunity to present at the 28th PanHellenic conference on academic libraries and thank you for the invitation to be part of the event. It is lovely to meet and interact with you all.
Academic libraries can play an active and significant role in sustainable development via strategies that aim to address social inequalities in students. Librarians have professional skills that support a range of learning and can help to tackle and reduce inequalities in students, by means of empowering them with digital competences.

In the modern online interconnected environment, digital competences have emerged as an umbrella concept encompassing information literacy, digital literacy and media literacy skills that are considered to be an important condition for learning, communication, civic participation and engagement, informed citizenship, employability, health and well-being.
Digital competences are not only about technology related skills, but ultimately about the behaviour and attitudes that relate to the online information and communication environment (e.g., the responsible, ethical and safe use and sharing of information; the ability to interact with others in the information society).

So what does this mean for the Higher Education context? The pandemic created an important emphasis within the education agenda to implement a systematic plan for developing HE students' digital competences within a fast-changing online learning and digital professional environment.

It also stressed even more the important role that academic librarians can play in helping students to develop information and digital literacy skills so that they can be in a position to independently select, access and use accurate, reliable, trustworthy and credible sources of information; and also to effectively use different digital tools and resources for their academic study.

In this talk, I will draw from research we have conducted over the past few years to diagnose students' digital competences, and I will critically discuss the importance of understanding the wider context of a learner's experiences within the digital, media and information landscape. I call this the 'continuum' of lifelong learning, where everyday life, work and education contexts converge, as learning takes place in multiple contexts, both formal and informal.

Do our students have the baseline set of information and digital skills required for their learning when they enter their university study?

If yes, how do we know?

Markus Spiske. https://unsplash.com/photos/VO5w2Ida70s

A fundamental question in HE should be how to understand and relate to students' different levels of digital experiences and competences within diverse online subject contexts. Also, how to empower students to adopt a proactive engagement with developing their own digital competences for life.

Despite this emphasis, some key unanswered questions still remain: Do we know, and do we understand the existing diversity of information and digital skills present in our students (and potentially the presence of a digital divide between those who are digitally competent and those who are not)?' and 'Should we be approaching our students as a heterogeneous group or expect that they all arrive with a baseline set of skills?'
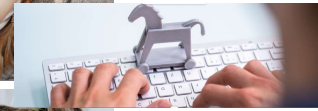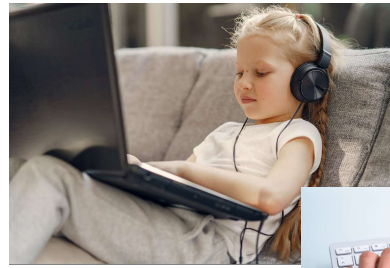
Once upon a time…

Photo of girl on tablet by Kelly Sikkema. @kellysikkemaHD photo by Kelly Sikkema (unsplash.com)
Little girl watching movie on laptop · Free Stock Photo (pexels.com) By Gustavo Fring

That was me back in the '70s and a picture can tell more than what a thousand words could ever convey. In my childhood experiences, information abundance or overload was not really an issue. It was more the problem of information scarcity. Sometimes, I try to envisage what I would have been like today, if I had access to digital technology and online connectivity from that very early age. Would I have been the same or different? I am now classed as a member of 'Generation X', someone who was not born with the Internet and, according to some research, I may even appear to struggle more than my 'Generation Z' citizens (after all the internet is all they know, they are the digital natives and I am the digital immigrant). I still remember the day when I sent my first email and browsed the Web to find information for one of my assignments on Sherlock Holmes. I was already a university student, and I could count only 8 websites on the topic! They were easy to evaluate and select from. These days, it may be more likely for a young person to be bombarded by masses of information, mixed up with some fake news, a bit of misinformation or disinformation, and occasionally some online scams and fraudulent websites that could even steal your personal data. In my days, put it that way, I knew more about the Trojan horse that led to the fall of Troy than the pitfalls of the Trojan virus, a common type of malware that could erase my computer's hard drive.

However, when it comes to the development of information and digital literacy skills, or digital competences as the term we will be using quite a lot here, as an overarching umbrella concept, research shows that the younger generation may not be necessarily equipped with the digital and information literacy skills required for today's modern interconnected world. Thinking in relation to students transitions into HE we may want to consider the following findings from research.

1 in 5 children face online harms. The Council of Europe Strategy for the rights of the child (2016-2021) included a focus on children's rights on the Internet. But it is not only an issue of protection, restricting access to dangerous online content but also of critical literacy when accessing content that is important for taking part in everyday life activities. 'Digital Education Vision for the European Schools' is envisaging that every student "develops throughout his/her European School Education the digital competence to foster confident, critical, responsible and creative use of, and engagement with, digital technologies for learning, at work, and for participation in society" (Schola Europaea, 2019). Therefore, while digital skills relate to the use of information and communication technologies and to functional or technical skills to perform certain digital activities, such as using a computer, using software and applications, digital competences are defined in a way that encompass not only what people can effectively do, but also what behaviour and attitudes they should be developing towards technology and online connectivity, with responsibility as online citizens and confidence as creators of content.

I'd like to also share some other research which is of interest to libraries particularly, conducted by The National Literacy Trust, in the UK in 2018 which concluded that only 2% of children and young people have the critical literacy skills they need to tell if a news story is real or fake.

In addition, latest research with young children in the U.K. by Ofcom (2019) suggests that "three in ten users aged 8-11 and 12-15 believe that if a website is listed by a search engine it can be trusted" and "only a minority of 8-15s who use search engines (23% for 8-11s and 33% for 12-15s) correctly identify sponsored links on Google as advertising" (a phenomenon that has remained unchanged in the last few years).

Recent research on children's news consumption and attitudes in response to COVID-19 related information has found that for half of 12-15 year old children (52%) it is "hard to know what is true and what is false about Coronavirus", while a quarter (24%) agree that they are "confused about what I should be doing in response to Coronavirus" (Ofcom 2020, p.2)

So where do libraries come along when it comes to the modern online information interconnected environment in HE and beyond? Libraries already play a key role in helping students to develop information and digital literacy competences that will allow them to shape their personal information landscapes, to work with digital media, to participate in online social communication networks and explore a multitude of fields of knowledge as active creators of online content.

Pre and post pandemic

Professor Robert Kelly experienced an "unexpected distraction" while he was being interviewed live on BBC News
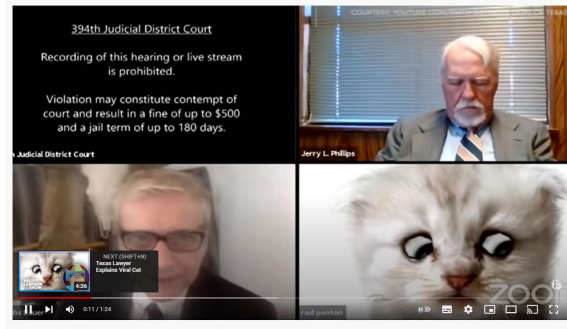
Lawyer Rod Ponton unable to undo filter during court debate
'I don't know how to remove it … I'm here live. I'm not a cat'

With the changes introduced by the pandemic, the online landscape became even more complex as we are experiencing changing boundaries between formal and informal communication, learning and working regimes, challenging existing models of learning as well as codes of conduct. It was not long ago, just back in 2017, when Professor Robert Kelly experienced an "unexpected distraction" while he was being interviewed live on BBC News about South Korea (BBC News, 2017; Usborne, 2017). The video, which became viral, captured the imagination of people around the world, as it presented a common professional fear: informal events in everyday life mixing up with the formal professional sphere. In that case, it was a young family and a wife interrupting a live professional interview. let's watch that video.

Play video: https://www.youtube.com/watch?v=Mh4f9AYRCZY

Although Professor Kelly managed to keep his professional composure and persona intact by continuing the formal interview successfully, an incident like that created interesting public debates, as at that time, as such incidents of interrupting the work etiquette was still an unusual and uncommon occurrence.

Post-COVID-19, professionals, across the globe, have now opened the virtual doors to their houses and families, while "home-working" is established as the new standard. Informal encounters with family, pets and sudden interruptions are not only a natural phenomenon but, often, an expected one. This new reality is challenging the way in which professional activities are taking place.

And then during the COVID 19 pandemic the demands for virtual working practices became the norm. A characteristic, although extreme, incident that took place in the pandemic lockdown and captured the public imagination around the lack of basic digital professional skills, was the story of a Lawyer from Texas, who appeared in a Zoom meeting during a formal legal hearing, wearing the filter of a cat, as he was unable to remove it from his video settings (Gabbatt, 2021).

Play video: Texas lawyer, trapped by cat filter on Zoom call, informs judge he is not a cat | Texas | The Guardian

With the fast pace in which online practices became the new professional standard, the question started to emerge about who may be left behind on the basis of existing digital divides, both in the professional and the educational realm. We were now presented with a new era of online learning that created new challenges on the basis of online accessibility and digital skills development but also, where learning could be delivered more flexibly, blurring the boundaries between informal and formal education.

During COVID-19, in a similar vein, academic librarians encountered both challenges and opportunities experienced in the changing online education environment, as they were called to work remotely, deliver access to resources solely electronically and deliver almost exclusively to an online audience.

With many academic librarians' roles involving teaching responsibilities and information skills–related support, awareness of technical considerations for connectivity as well as design for online education and understanding of accessibility and digital literacy gap barriers faced by students and staff became a priority.
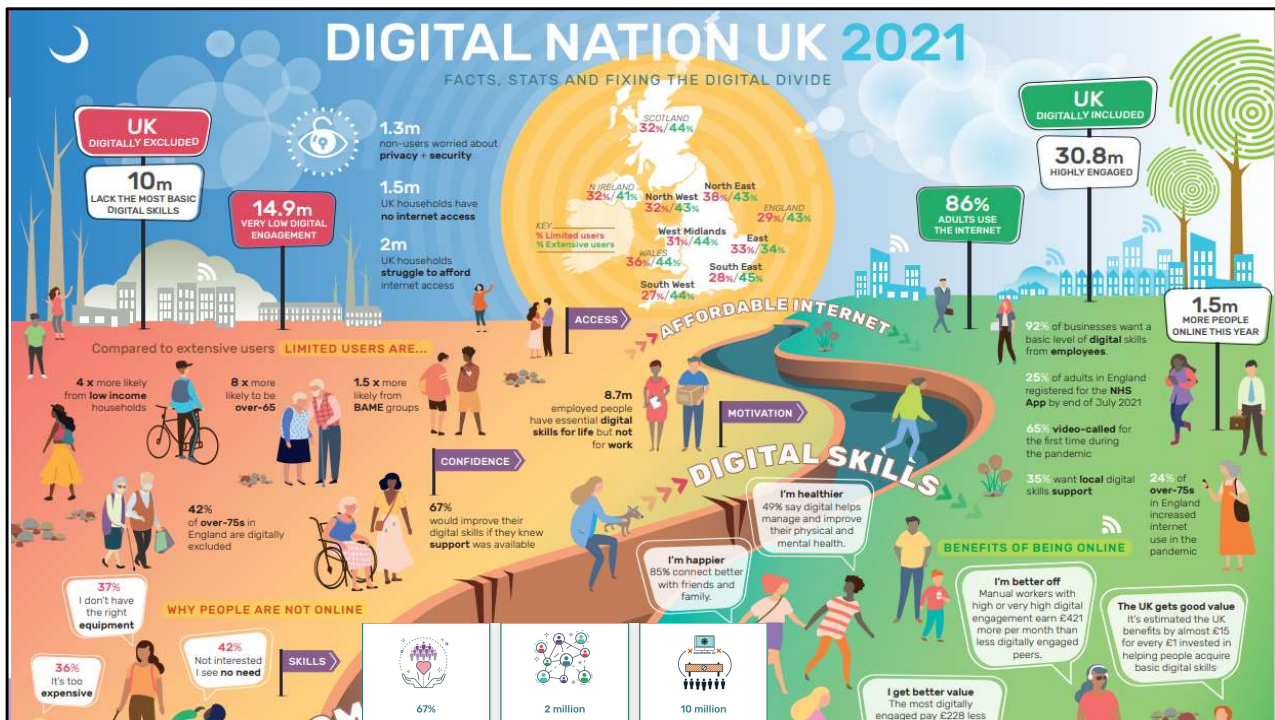
But let's see this in terms of bringing more context from the everyday life. Let's begin with a simple proposition that, in an era of constant Internet connectivity, HE students enter the realm of university, not as digital 'tabula rasa' (i.e. with digital experiences largely unformed), but with existing information and digital skills and behaviour.

These have already been shaped by earlier encounters with the digital and online information environment and within different socio-cultural and environmental situations. These may act as barriers or as enablers to further information literacy and digital literacy development. For example, we know from research that lack of digital connectivity and fewer opportunities for digital skills development, within the continuum of one's everyday life, work and educational interrelated contexts, may act as a trigger of digital inequalities, which may lay hidden or undiscovered in students' educational journeys (Good Things Foundation, 2018; Moore et al., 2018; Ofcom, 2020; UK Department for Digital, Culture, Media & Sport, 2017).

In this infographic by the Good Things Foundation, you can see facts and stats related to the UK digital divide. The UK is leading the world as a digital nation but only in the UK there 10 million people who struggle to use the internet independently and are being left out. 8.7 million people have digital skills for life but not for work and 1.3 million worry about privacy and security. If we consider where our diverse student body is coming from (for example in the UK many international students come from countries where digital connectivity and digital skills development may have been more challenging for them), the digital exclusion challenge becomes even more prominent. We need to place digital inclusion strategies at the heart of HE. Many of the students we meet may be coming from the other side of the divide.

But, I want to emphasise is that when we are approaching the concept of information and digital literacy in HE we tend to consider students as situated not in the fabric of their previous holistic experiences of information and digital literacy but only within their present HE learning experiences. In other words, we overlook students' experiences in the everyday life, their previous education and the workplace. We don't ask about them, we have no awareness of them, and we often take the existence of information and digital literacy skills for granted.

Our students can be on the wrong side of the divide

The digital divide follows much the same fault-lines as pre-existing gender, economic, social and educational inequalities

It is not just a question of digital natives and digital immigrants.

**Young people too can find themselves on the wrong side of the divide**

Our students can easily be on the wrong side of the digital divide. IFLA's digital literacy statement says that "Differences in digital skill levels and attitudes often replicate those seen in society as a whole. The digital divide follows much the same fault-lines as pre-existing gender, economic, social and educational inequalities. It is not just a question of digital natives and digital immigrants; young people too can find themselves on the wrong side of the divide" ifla_digital_literacy_statement.pdf

The current pandemic crisis has therefore accelerated the need to diagnose and understand more systematically students' pre-existing knowledge, behaviour and experiences gained within these interrelated contexts, as well as their interplay in shaping academic performance and outcomes, identifying equally gaps and areas of strength in students. Identifying where digital competences gaps and strengths may lie, within the boundaries of specific disciplinary areas and future work-related expectations, can become a crucial step in helping students to develop further and collaboratively empower each other in certain digital areas, building new digital skills, where required and professional level expertise. Designing tailored digital skills support may also further accelerate this process and ameliorate student anxiety and confusion with using specific digital tools or adopting particular behaviours within the online environment.

There is a new agenda for libraries to play a key role in developing digital readiness in students within the educational environment, mastering not only digital technologies, but also expected information related and digital literacy behaviours.

Throughout this talk I would like to gather some of your practices and thoughts around how you see yourself involved in this debate. I would like to know from you how you are currently supporting the development of information, digital and media literacy skills in your students. What are the challenges?

As you are taking part in this poll, I should say that definitions of information literacy, digital literacy and media literacy are contested, and we could dedicate this entire talk on this aspect only, most definitely disagreeing about what each one of these terms ever means! Defined by IFLA, Media and Information Literacy (2011), for example, is 'the knowledge, the attitudes, and the sum of the skills needed to know when and what information is needed; where and how to obtain that information; how to evaluate it critically and organise it once it is found; and how to use it in an ethical way. The concept extends beyond communication and information technologies to encompass learning, critical thinking, and interpretative skills across and beyond professional and educational boundaries'. https://www.ifla.org/publications/ifla-media-and-information-literacy-recommendations.

IFLA also states that "to be digitally literate means one can use technology to its fullest effect - efficiently, effectively and ethically – to meet information needs in personal, civic and professional lives… It implies compliance with the same standards of behaviour online as offline, respect for the human rights of others, and the necessary openness to move beyond national and language boundaries, and cultural and religious differences. It also requires media and information literacy skills (ifla_digital_literacy_statement.pdf)

IFLA goes on to say that «Libraries of course will have to take steps. They should position digital literacy as a core service of libraries, with adequate planning, budget and staff. For librarians to be able to teach digital literacy, they may need training themselves. It may be necessary to form partnerships with external actors in order to provide best service to users"…Higher education institutions should also: "Apply the skills and knowledge of librarians, in academic libraries and embed in learning management systems, to improve digital literacy among students and researchers".

At Robert Gordon university (RGU) we have introduced a Digital Skills Quiz that explores students' needs for further support by means of using simple YES/NO answers to basic questions around four areas:

 1)the first area is **digital proficiency** (e.g. how to log on to university services, how to use the university App which is used for accessing a number of student systems and information, the timetable, and our online learning system, how access the university Wi-fi, how to use ASK RGU, which helps to find which university services students may require to use, the remote university drive and the printing facilities)

2) the second area is **online learning** (e.g., what online studying behaviours are expected, how to use the university virtual learning environment, how to access and use the online (Leganto) reading lists and the Turnitin plagiarism detection system, that is used to check their work for originality, understand how to submit their online assignments, and use MS Teams, Zoom and Blackboard Collaborate for online classes)

3) the third area is **digital behaviour and safety**

4) finally **using Microsoft office tools** (e.g. One Drive, Office 365 and Excel).
Students 'No' answers to the quiz direct them to key areas for learning, which provide documents and audio-visual resources around the themes. For example, in relation to theme 3 on 'digital behaviour and safety' these address the university's online code of conduct with recommendations which are given in the form of a video, the university policy on dignity (e.g., based on problems such as bullying and harassment) and an online university course on cyber security awareness (e.g., addressing digital footprint issues).

DIGITAL LITERACY PROJECT

DIGITAL COMPETENCES TOOLKIT

RECOMMENDATIONS FOR DIGITAL SKILLS TRAINING

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2022

In academic session 2021-22 we also ran the 'Digital Literacy' Institutional research project, led by myself in collaboration with leading teams from a number of schools at Robert Gordon University.

The aim of the project was to drive and support the development of digital literacy skills among RGU students in different discipline areas. In line with UK and global strategic priorities, the project aim was to identify pockets of digital inequalities in students, to enhance their digital capacity as future digital citizens and professionals, and open conversations around information and digital literacy training and support for students and staff.

Aims & Objectives

Objective 1. To examine with participant academics, digital competences areas needs that reflect disciplinary needs.
Objective 2. To implement a discipline-based digital competences self-assessment tool with students in different schools.
Objective 3. To conduct focus groups/interviews with students to obtain qualitative feedback.
Objective 4. To collate internal and external resources on the development of specific digital competence areas in the form of a digital skills toolkit.

The project examined with participant academics, digital competences areas needs that reflect disciplinary needs. We engaged a total of 35 members of staff in discussions across nine schools. Following the consultation meetings, a total of seven schools engaged with administering a discipline-based digital competences self-assessment tool to students in different schools (Aberdeen Business School, Creative and Cultural Business, Engineering, Health Sciences, Law School, Nursing, Midwifery and Paramedic Practice, and Pharmacy and Life Sciences). We also organised interviews with students which provided helpful insights into the survey results and helped to contextualise key findings. Finally we collated internal and external resources on the development of specific digital competence areas in the form of a digital skills toolkit that can be used by academic staff to support their students (which I am going to share as part of this presentation).

In the past few years since our work on digital competences started, we have collected data from a total of 860 students. However, for this talk we are going to report on the results from the latest round of research and the surveys that were administered in the academic year 2021-22. Overall, 371 questionnaires were returned to offer a useful snapshot of students' self-assessment of digital skills for further discussion.

Conceptual framework
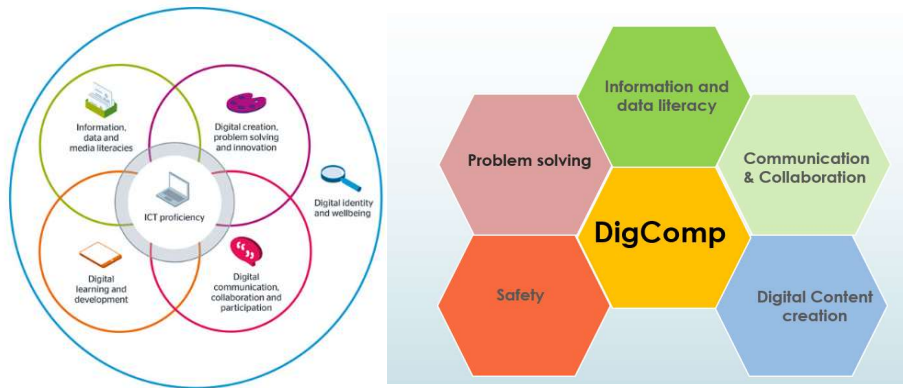
The theoretical frameworks that formed a basis for the survey, included the European Digital Competence Framework for Citizens (Carretero et *al.,* 2017) and The Digital Capabilities framework, developed by JISC (2012). The former places focus on the diversity of digital environments and digital literacy skills needed for work, learning, and everyday life digital participation. The latter focuses on the Higher Education learning context in particular and explores developing digital skills with a view to requirements for both students and educators.

UNESCO in 'A Global Framework of Reference on Digital Literacy Skills' discuss numerous instruments that have been developed by national, regional, international and commercial agencies for assessing digital literacy or digital competence. Based on their mapping of different frameworks they concluded that the competences described can all be mapped to the DigComp 2.0 framework,

In our work we wanted to incorporate three aspects: a) the effective use of constantly-changing digital tools and media for learning, work and everyday-life, b) digital behaviours expected of students as learners, professionals and digital citizens (such as online communication, teamwork and the ethical sharing of information) and c) the need for the development of a mindset that values the importance of lifelong digital learning and development.

A glance at digital frameworks in different domains: Law

Principle 3: To consider safety, security, confidentiality, privacy, appropriateness, and ethical issues before using digital tools for legal practice

Principle 1: To deliver alternative forms of technology-driven legal service delivery

Digital Lawyering Curriculum

Principle 2: To collaborate & undertake legal services using digital tools & software articulated by appropriate e-practice & project management systems.

Virtual law clinic is used as a backdrop to the digital lawyering curriculum

Thanaraj, 2017,p. 7

Figure 2: Illustration of a proposed digital lawyering framework.

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However, we also wanted to explore the need for workplace digital skills, not just baseline skills that would relate to any area. And inspiration for a discipline-based approach was given by means of an earlier study we conducted with Law students. While reviewing the literature for this project, we came across, for example, the Digital Lawyering framework which demonstrates that legal professionals require a variety of digital skills. A number of legal services, have already migrated to online environments. For instance, the concept of the 'Virtual Law Clinic' (VLC) describes replicating an online legal transactions process, where students can explore different forms of technology and develop diverse transferable skills, including online communication, client online interviewing and negotiation, scheduling and time management, online safety, privacy and ethical conduct. There is also emerging work on 'Virtual Court Systems' that could handle the management and resolution of legal cases entirely online (Thanaraj, 2017: 7).

In addition it was important to help our students develop skills around utilising digital tools, safely preparing and sharing online legal documents, with attention to personal data protection and ethical guidelines, which are part of the expected online professional code of practice and would need to be followed for online dispute resolution processes and the correct handling, online management and curation of court-related documents.

A glance at digital frameworks in different: domains: health

Health Education England 2019

Another direction we are currently examining is nursing with a research paper coming out soon to explore that domain. With the urgent response required to cope with COVID-19 within healthcare systems, there was an accelerated need for healthcare practitioners to become more involved in technology but also develop skills, attitudes, values and behaviours focused on digital identity, well-being and safety, communication, collaboration and participation as well as digital innovation. Overall, our research points so far to the need for targeted digital literacy education interventions, as part of undergraduate nursing studies to improve nursing students' baseline digital literacy before commencing clinical placement and ensure an effective transition to nursing practice in evolving digitally driven healthcare environments.

But now I would like to offer an overview of the Digital Competences Tool (DCT) we developed which offers an appraisal of self-assessed digital competences. It addresses a number of important areas for everyday life, study and work in the digital online environment. The aim of the DCT is to help academics and support staff, who work directly with students in HE, to identify pockets of digital skills inequalities in a discipline focused way and support planning for the enhancement the digital capacity of students as future digital citizens and professionals.

The DCT includes 11 strands that capture a variety of digital skills. These are described below.

Everyday participation as digital citizen
This strand deals with digital citizenship skills that address everyday life skills such as well-being and the right to information, which are important for promoting the fundamental principles of democracy, socialisation, human rights and the rule of law. It is important to specifically note this item, as The Council of Europe defines digital citizenship as "the capacity to participate actively, continuously and responsibly in communities (local, national, global, online and offline) at all levels (political, economic, social, cultural and intercultural)". Universities should prepare the workforce of the future to be both ready for digital work life ahead as well as graduating as good or better digital citizens.

Our earlier research found that students who have higher competence levels in everyday life digital activities also considered themselves more competent in their digital skills for academic study overall (Martzoukou et al. 2020; Martzoukou et al. 2021). Students should be supported to adopt a positive, proactive and enthusiastic approach to digital skills development in all areas of life (everyday environment, education, workspace).

When students embark on their academic study it is expected that they may not have advanced digital skills in specific areas, and they will be developing them throughout their study and via future practical experience. Exploring everyday life digital interactions and competences at that early phase will therefore help academics to understand more about potential attitudes towards digital tools and behaviours of students, offering guidance and support at the right time. As students move on to a higher level, the digital competences tool can be used to explore more specialised digital skills, expected as part of a course/area of study or the professional context.

ICT Proficiency
This strand deals with skills to handle technological devices, software, web browsers, search engines, university digital administrative services & learning management systems, personal digital services and communication platforms.

ICT Productivity/Use
This strand deals with data management, i.e., using tools, such as calendars, task lists, project and time management apps, to make learning more efficient.

Information Literacy Skills and Information Identification
This strand deals with skills to distinguish scholarly/academic, professional and popular online information and using online tools for finding, gathering and evaluating and organising digital information (e.g., using search engines, academic databases, online information curation and referencing tools) as well as skills for sharing digital information respecting and acknowledging the work of others.

Digital Research Skills
This strand deals with skills for finding, organising, storing, analysing and interpreting digital research data together with skills for understanding ethical, legal, and security guidelines.
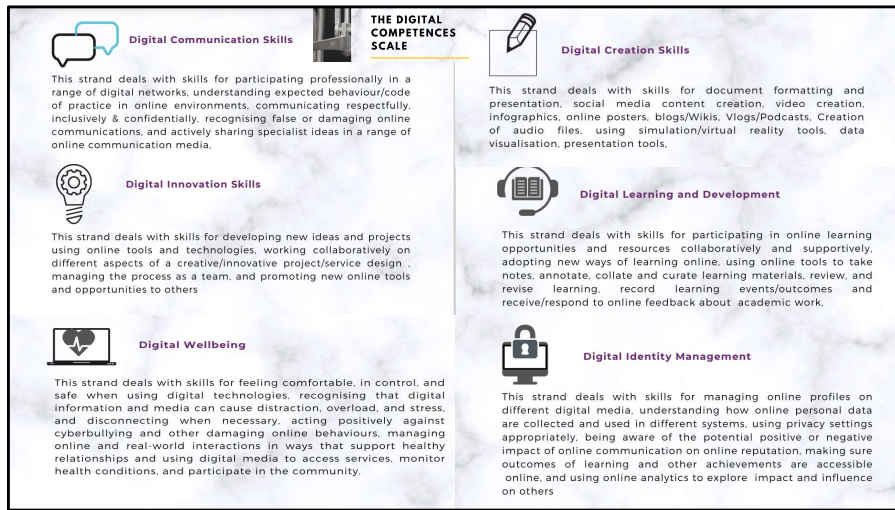
Digital Communication Skills

This strand deals with skills for participating professionally in a range of digital networks, understanding expected behaviour/code of practice in online environments, communicating respectfully, inclusively & confidentially, recognising false or damaging online communications, and actively sharing specialist ideas in a range of online communication media.

Digital Innovation Skills

This strand deals with skills for developing new ideas and projects using online tools and technologies, working collaboratively on different aspects of a creative/innovative project/service design, managing the process as a team, and promoting new online tools and opportunities to others.

Digital Wellbeing

This strand deals with skills for feeling comfortable, in control and safe when using digital technologies, recognising that digital information and media can cause distraction, overload, and stress, and disconnecting when necessary, acting positively against cyberbullying and other damaging online behaviours, managing online and real-world interactions in ways that support healthy relationships and using digital media to access services, monitor health conditions, and participate in the community.

Digital Creation skills

This strand deals with skills for designing digital content, capturing, editing, and producing with digital media as well as creating, sharing, and showcasing digital artefacts, with audience and purpose in mind. It includes coding and designing apps, digital games, virtual environments, and interfaces, document formatting and presentation, social media content creation, video/vlogs/podcasts creation, infographics, online posters, blogs/wikis, audio/vlogs/podcasts, simulation/virtual reality tools and data visualisation.

Digital Learning and Development

This strand deals with skills for participating in online learning opportunities and resources collaboratively and supportively, adopting new ways of learning online, using online tools to take notes, annotate, collate and curate learning materials, review, and revise learning, record learning events/outcomes and receive/respond to online feedback about academic work.

Digital Identity Management

This strand deals with skills for managing online profiles on different digital media for individual, professional, and academic purposes, understanding how online personal data are collected and used in different systems, using privacy settings appropriately, being aware of the potential positive or negative impact of online communication on online reputation, making sure outcomes of learning and other achievements are accessible online, and using online analytics to explore impact and influence on others.

Digital Abilities to Complete Academic Work

An additional strand 'Digital Abilities to Complete Academic Work' is also included. This strand deals with digital skills for addressing the overall requirements of academic work, taking into consideration students' individual perceptions of areas that they consider important for their academic success. The notion of these skills may differ significantly from one individual to another. The purpose is not to explore what these may be on an individual level but to gauge perceived overall individual confidence

Digital Competences Scale

Level 1: Novice

The digital task is new to me. I am currently developing basic knowledge and skills in this area, but I need help either to complete or to learn how to complete this sort of task.

Level 2: Basic

I have foundational knowledge in this area. I can perform simple digital tasks with help from others.

Level 3: Intermediate

I have more than foundational knowledge, but I am not yet advanced in this area. I can usually complete complex digital tasks independently, although I sometimes need help from someone more advanced than I am.

Level 4: Advanced

I have advanced knowledge in this area, though I am not an expert. I can perform complex digital tasks without assistance. I adapt easily to learning new knowledge and skills. Others sometimes ask me for help.

Level 5: Expert

I have mastered the knowledge and skills for this area. I apply my knowledge and skills to create and redesign processes, tools, and/or technologies appropriately and effectively. As an expert in this area, I frequently show others how to complete these tasks.

The Digital Competences tool uses a scale that measures digital competences on the basis of Novice (Level 1) to Expert (Level 5), representing different levels of knowledge and self-sufficiency for performing specific digital tasks. Unlike other survey we decided to clearly define the scale dimensions for clarity and to highlight the importance of independent learning as students move from a novice to an expert level where they can confidently show others how to complete certain digital tasks.

Digital Literacy Toolkit
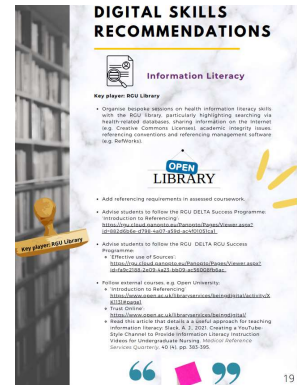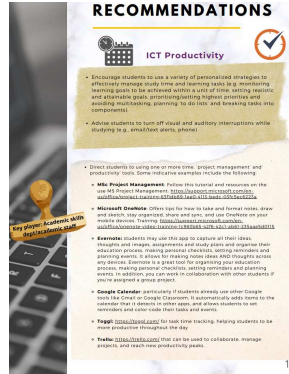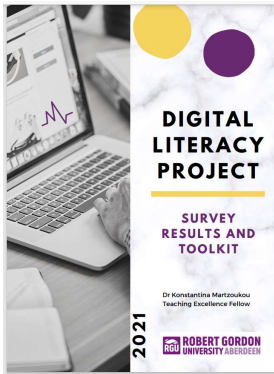
Digital Literacy Toolkit eBook version 2022

Based on the results of our survey we developed the Digital Literacy Toolkit which is available as an eBook. The toolkit includes advice around all key digital skills areas with recommendations for training, both internal and external in the form of webinars, audio-visual resources and reading. I will now show you what it looks like in that version online.

Demographics (n=371)

Now I would like to share some of our key survey results starting with some demographics and offering an overview of our digital competences survey.
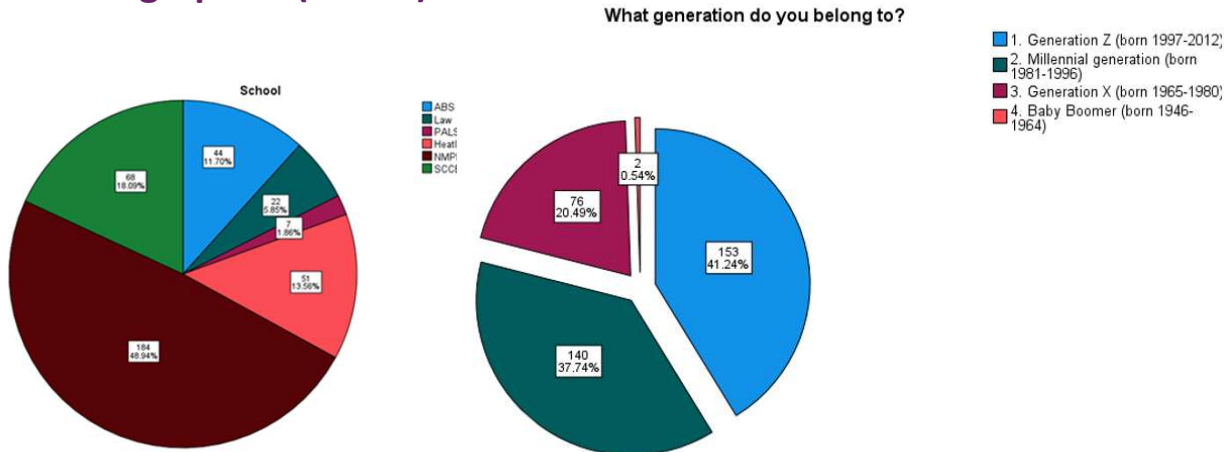
Selected Demographics

A total of 371 students participated in the survey of Digital Competences. The demographics characteristics of the participants are offered below.

Gender and Language

There was a gender imbalance in the sample with a majority of female participants (1 missing case). A total of 75% of respondents had English as their first language.

Participant Schools

A total of six schools participated in the survey. The highest number of participants were from the School of Nursing, Midwifery and Paramedic Practice (NMPP) with 184 students who contributed to the questionnaire survey.

Generational Categories

The majority of the students were members of the Generation Z category (41%, n=153). A good balance in two of the four generational categories (Generation Z and Millennial generation) is observable. Approximately 20% (n=76) of the respondents were in the Generation X category, while there were only two cases of Baby Boomer respondents (and 5 missing cases in the overall sample). Indicative cross-comparisons for key areas of digital skills and generational differences are provided later in this report.

Level of Study

The majority of students who took part in the survey were undergraduate students (67%, n=247). Respondents in the 'other' category included 'graduate entry', 'return to practice', top up degree' and 'short course' students (n=9). (with 6 missing cases in the sample overall).

Year of Study

Almost 60% (n=217) of respondents were first year students. The remaining 40% were in their 2nd (n=79), 3rd (n=46), 4th (n=17) and 5th year (n=8) (with 9 missing cases in the sample overall).

Digital Competences Results

A traffic light system with emphasis on 'red' and 'amber' areas for upskilling, which become areas for further development and 'green' areas which aim to identify pockets of strength within a given student group.

The reporting of our survey data used traffic light system with emphasis on 'red' and 'amber' areas for upskilling, which become areas for further development. The study also reported on 'green' areas which address overall 'advanced' and 'expert' level (median values) in the overall sample with the aim to identify pockets of strength within the student sample examined. This was to encourage students with more advanced skills to offer peer support to students with less confidence in certain areas.

Students assessed themselves as 'intermediate' in several individual areas and in their overall self-perceived digital competences to complete their academic work. However, there were also many instances of lower competences reported, across the different categories. In this study these were reported in the form of 'red' (more than half of the population self-assessed at 'novice' and 'basic' levels) level. These 'red' areas are summarised below:

- e-democracy (e.g., accessing voting information and political information online; taking an active role in democratic processes online)
- Blog/Wiki content creation
- Video Creation
- Data visualisation (e.g. Excel, SPSS, Tableau)
- Infographics (e.g. Canva)
- Designing and administering data collection instruments online (e.g., online surveys, Microsoft Forms, online interviews)
- Analysing digital research data using different tools (e.g., spreadsheets, textual data analysis software)
- Designing online communications for different purposes (e.g., online discussions, blog messages, Twitter threads to persuade, inform, entertain, guide, and support)
- Developing new ideas and projects using online tools and technologies (e.g. setting up a work or study group online, using online tools in innovative ways to create presentations)
- Promoting new online tools and opportunities to others (e.g. proactively promoting creative ideas and projects)
- Using online tools to take notes, annotate, and collate learning materials, review, and revise learning (e.g. Evernote, OneNote, Google Apps, Scribble)
- Using online tools to record learning events/outcomes and use them for self-analysis, reflection, and showcasing of achievement (e.g., in an e-portfolio or learning blogs

ICT Proficiency

"Know how to access online moodle, modules, BbC, MS Teams, Ms Office etc"

"Familiarity with sites similar to moodle helps me navigate to the area of information I require".

"Starting uni has improved online skills"

Digital Communication

"Being familiar with different online forums has allowed me to adapt my knowledge to understand new online forums"

"Supervision sessions easier to organise" "Able to interact and attend sessions online"

"It has helped as you can get a fast response over communication services if you aren't sure about work assigned"

"Successful completion of online activities, assignments and participation in forums while working towards my MSc"

"Learning how to use different online education tools such as blackboard collaboration through video tutorials to allow me to take part in course work with others"

"Adapting to online teaching full time. Using different programmes with big class numbers, sharing of content resources online that work and are enriching.

"Learning to use programmes such as zoom, blackboard, teams, grademark, Panopto to ensure we improve the students experience".

"They have allowed me to study and join classes during Covid"
"accessed online tutorial with tutor"

"Creating and presenting team academic work during Simulated practice"

"They have helped me to make the best use of online learning"

Information Literacy

"Able to find information from various sources, knowing where to look"

"Being able to access journals etc. effectively in order to reference credible sources"

"Able to access resources"

"using guides on how to use ref works"

"When needing to search for academic articles, knowing that Google has, and how to use, its academic function to full effect".

Digital Research

Advertise to larger sample sizes"

Digital Collaboration

"Collaborating with others digitally has helped"

Graduate Employability

"Completed TURAS modules in preparation for joining vaccination team"

"I have learned to navigate moodle quicker than expected mainly in part because of my work skills"

Special Needs

"I am dyslexic so using digital and online skills have always helped me. I had to learn digital and online skills at a younger age as it helped my learning. By doing this it has given me a great advantage now in covid times as I am very confident when using technology"

"I use digital skill to use software to help with overcoming with my dyslexia"

In qualitative feedback students mentioned a number of digital skills that were important for their learning including developing ICT proficiency, using the online learning tools, communicating and learning with others online, developing online information literacy and research skills, developing teamwork skills and employability.

Students also offered examples of how everyday life digital skills development played a role in how these skills were utilised in the education environment. One student explained:

"…even if you were going to a patient home and you have to park in a public car park, you can't pay for the parking with coins anymore. You have to use an app on your phone…. if you're not digitally literate, you've got no hope….and I think people struggle to keep up with the rate that it's changing" (4)
Another student referring to digital communication elaborated on the use of the Internet in the context of work, everyday life and education, showing the interplay of the different contexts were digital literacy develops:

"We use it every time…At home with families, if you have distance relations, you need to communicate and all that… it has become part of my personal life, not just with my learning and my career" (1).
In addition, the students felt that the pandemic helped to further accelerate digital skills in different contexts, however, there is still lack of confidence in the work environment and more advanced digital skills are required to be developed, while education could help to bridge that gap by means of starting with basic skills that would help to build confidence:
"So you know my whole life is online actually at the moment because I am still working remotely…obviously with the pandemic…there is an element of digital literacy but perhaps it could be a lot stronger than it is and there's quite a strong push for staff becoming more digitally literate, but there is also a pushback…I think it's more down to confidence and lack of exposure and lack of experience in areas… maybe develop a baseline level of skills and that I think will develop confidence for people to move further "(3).
Overall, one of the key ideas deriving from the discussions around this theme was that digital literacy development is important is different parts of life, education and work and exposure to digital tools and processes can help to develop a 'digital mindset' that is transferable from one context to another.

Need for support/Demographic and Study level differences

ICT Proficiency: "Previous knowledge of Microsoft word and excel have been useful"

Digital Learning and development:"I am working on updating my skills""I have to ask all the time, I can't cope with online learning"

Need for support in digital skills overall:"My lack of digital skills is a hindrance. I wish I knew more as I feel it would enhance my work and academic life"

Job related skills"I need to use online technology with my job"

panic, get stressed and anxious, take a deep breath, get very confused, shout at the machine and walk away stressed, cry and scream at the computer, get annoyed, panic - refer to someone for advice, cry, very frustrated. Ask for help from others or to IT, get in a rage

We also performed comparisons between different generational groups and found that Generation X students (i.e., mature students) self-assessed more at 'basic' levels, while 'intermediate' and 'advanced' skills featured more prominently in the younger groups of students (Millennial and Generation Z) in an number of areas from ICT productivity, to finding digital information using databases, to organising digital information to referencing digital information sources, adhering to a referencing style and understanding how to share information publicly online, respecting and acknowledging the work of others (e.g., using creative commons licensing, providing references/citations to original works). Also the same was found in relation to **Digital Creation skills** such a**s** blog/wiki creation, video creation and data visualisation and Infographics creation, **Digital Research** (e.g. 'Designing and administering data collection instruments' and 'Designing online communications for different purposes) **Digital Innovation, digital learning and development, Digital Identity Management (**e.g. 'Understanding how your online personal data are collected and used in different systems and use privacy settings appropriately', 'Using online analytics to explore your impact and influence on others', 'Acting positively against cyberbullying and other damaging online behaviour and **Digital Wellbeing.**

In relation to Digital Abilities to Complete Academic Work: Generation Z students had the highest proportion of 'advanced' digital skills. However, all three generational groups self-assessed at 'intermediate' level, which may be an indication of the need for additional support across the board of digital skills.

Throughout the interviews, students shared may ideas about how their digital skills could be further developed, for example by means of incorporating digital tools and processes in teaching and assessment, increasing staff engagement and training with new digital tools, offering clear explanations of how certain digital skills relate to the discipline and the working environment and overall encouraging students to develop a more proactive attitude towards developing their digital skills.

Several students indicated that they required more help to locate university support services, particularly as they encountered difficulties with unexpected IT issues and often preferred to dealing with the issues themselves. In addition, students expressed negative emotional reactions when the experienced ICT difficulties which could be hindrance to their learning. You can see some of the ideas shared in this slide.

Information Literacy

"The information literacy skills is something you want to continue to learn"

"...for your work you are expected to have legal research skills, that's what I think"

"Information literacy skills that's an area where I thought I had good abilities...there's so much more out there to learn"

"One of my areas that I really don't feel particularly confident with is searching for information... I find that all a bit daunting with all the different search terms and things to use and all the different databases..."

Although we had a lot of qualitative data, I wanted to share some comments around IL in particular as I think this area is important for libraries.

Students struggled with some aspects of IL but they had awareness of its value. It was a matter of where libraries could intervene to help students further develop these skills:

- *"The information literacy skills is something you want to continue to learn"*
- *"…for your work you are expected to have legal research skills, that's what I think"*
- *"information literacy skills that's an area where I thought I had good abilities…there's so much more out there to learn"*
- *"So for me, one of my areas that I really don't feel particularly confident with is searching for information...I suppose I find that all a bit daunting with all the different search terms and things to use and all the different databases and stuff so, but that's a personal thing that I need to work on, so that would be an area, but that's obviously a super important area, especially going into the research module for the next year"*

Although independent learning resources and support were available in the library, students would rarely proactively utilise them and instead would expect that these skills were supported by academic staff in collaboration with the library at different stages of students' learning journey and when needed. For example, one of the students who studied Law explained that:

"Obviously there are library and resources that we can go on and try and learn, but how many students would you say really actually go out of their way to contact the library to then teach them how to use this one database, doubt it, and it's likely it will be a quick YouTube tutorial or hey 'do you know how to do this' to your friend… but if you get them to come in for a workshop or conduct an online workshop and just 'look X, Y, Z database is used in this particular module because we think it will help you out, this is how you use if you have any questions, give me a shout and I think that would maybe resolve a lot of anxiety issues have around legal research'" (2).

The same student further elaborated that idea, offering an example of that passive approach:

"…there are students who come in, in first year, especially those that come from high school that don't even know that these legal databases exist and obviously, although it's made clear in an induction, most people either don't attend or forget that they're all these resources available and I just, I don't think that a lot of the staff realize how lazy students are sometimes in terms of how much nudging they may need…And I have found that every once in a while, you get a lecturer that will go through reliable sources and things to use in your research, but that will be like 'don't use Wikipedia'. Sure, that's helpful, but what can I use?" (2).

Another student supported this view, adding that more interactive and information sessions would be beneficial, putting emphasis not only on search skills but also on "academic integrity" and "plagiarism" as key areas:

"I really liked the idea of live, informal Q and A sessions…curiosity will arise stronger in a relaxed environment, I suppose…there's really quite a lot there that you don't know. I think if the libraries attended to students at their point of need…how many students are actually going to really look for library services throughout the course, they may be overwhelmed with what they're studying, there's going to be a lot on their plate… maybe make the library course with students a session a few classes long, not to overwhelm but to give people the skills" (3).

A similar idea was also expressed by another interviewee, who also referred to the library sessions offered:

"I know they offer those courses so they would probably be the first people I would approach to try and better my skills in those areas. And I know they do offer sessions and it's just because I haven't got around to getting on one. So, it's not as if we weren't made aware of the resources out there. It's just the case of me not accessing them" (4).

Students also noted a resistance to change. For example, one of the interviewees described how they are used to manual methods of doing things, even when knowing that digital tools could get the job done faster:

"I'm not very good at change either, like with my referencing and things I do it all manually and I know you've got RefWorks and I know it must be brilliant if you can use it properly, but I just haven't got around to getting on top of it. So yeah, I don't know, it's probably me being stuck in my ways. I'm used to working at a certain way… I've got to get an essay done, I'll just, you know, write my references, even though it's probably longer that way than actually spending the time investing in learning how to use the system" (3).

Go to **www.menti.com** and use the code **1361 1773**

Please share ways in which you are supporting the development of information, digital and media literacy skills in students? What are the challenges?
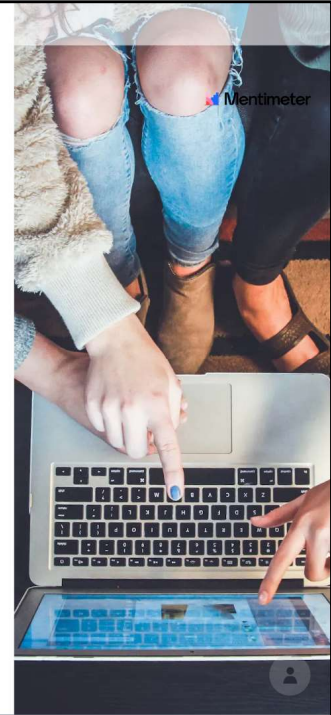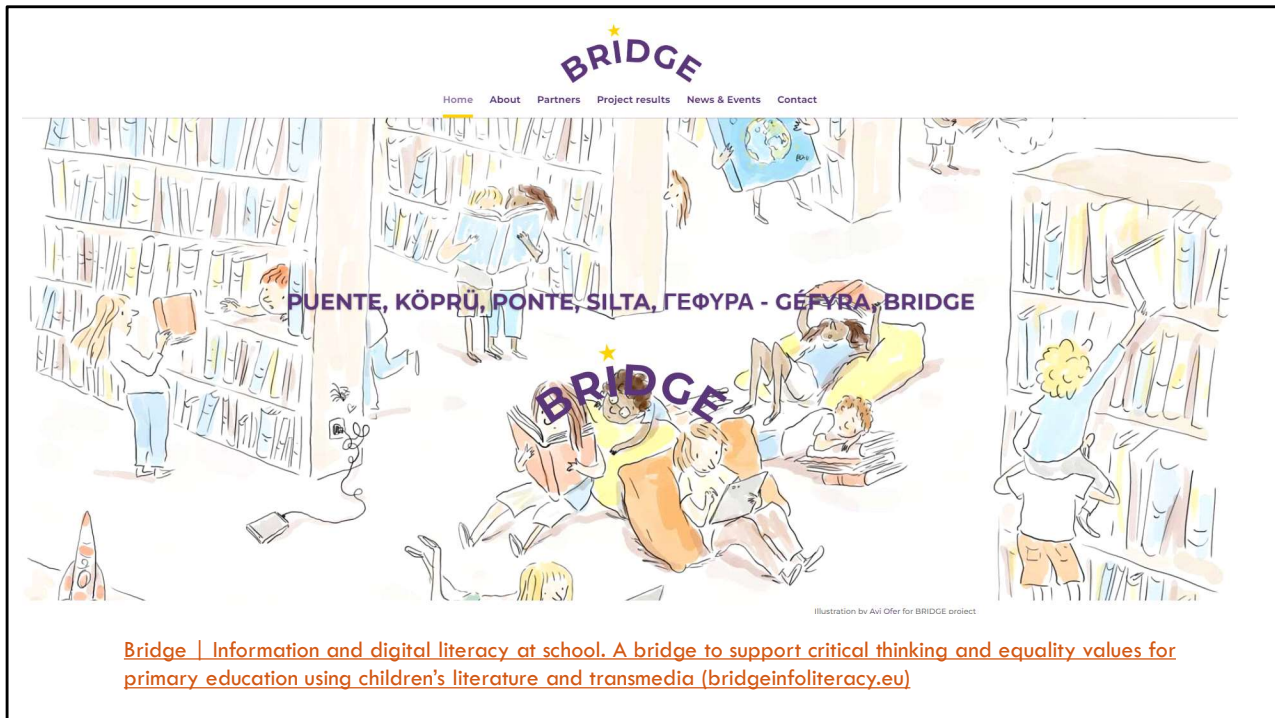
Press s to show image

At the beginning of this talk I invited you to share ways in which you are supporting the development of information. Digital and media literacy in students

Our work provided only a snapshot and it would be lovely to find out what you are working on. O if you haven't filled in the poll please do and share some information.

I hope that I have inspired you to consider and explore information and digital literacy gaps and divides in your students. As emerging models of online teaching and learning begin to challenge traditional teaching and learning paradigms, and with increasing demands for global connectivity in education, work and everyday life, existing digital divides that are unexplored may be further accelerated in or students.

The design and results of this study have demonstrated that the concept of digital competences is not only complex but also constantly developing and, as new tools, technologies and digital behaviours emerge, incorporating ongoing discussion and dialogue about what is expected of students, and in what stage of their learning journey, is important.

This research supported that students should develop not only technology mastery (i.e. the abilities, competences, capabilities and skills required for using digital technology, media and tools) but also digital mindsets (consisting of attitudes and behaviours necessary to develop as critical, reflective and lifelong learners). It is the task of all staff who are involved in teaching and learning to help students develop this dual perception of digital skills and emphasise the importance of lifelong digital learning and development, with awareness of the diversity of learning contexts and the learners involved. When thinking about the diversity of students' skills and backgrounds and designing support in the overall continuum of students' learning for life, this involves, past and present learning experiences but also future anticipated development of core digital skills and behaviours. This may also mean critically reflecting on the digital competences of staff and ensuring that training and support for upskilling is available, where and when that is required.

Bridge | Information and digital literacy at school. A bridge to support critical thinking and equality values for primary education using children's literature and transmedia (bridgeinfoliteracy.eu)

I would like to leave you with this thought. Information and digital literacy are not static skills. They develop throughout one's everyday life, work and education. For that reason, it is important to understand how they develop from an early age and supported at different stages as our digital world is evolving.

As part of this growing skills agenda I wanted to share this European Erasmus + project we are working on "Information and Digital Literacy at school: A bridge to support critical thinking and equality values for primary education using children's literature and transmedia' a collaboration with several EU partners. The project is managed by Universität Jaume I De Castellon in Spain and the Ionian university is a partner. The project involves 8 partners from 6 European countries (Spain, Italy, Turkey, Finland, Greece and United Kingdom) to advocate for the urgent need to promote information and digital literacy in primary schools, as a key pillar for the education of a democratic citizenship based on critical thinking and values of equality.

Thank you for listening!

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Invite your students to reflect on the baseline set of digital skills required for their learning and future professional environment:

Digital Literacy Toolkit eBook version 2022

Thank you for listening to my talk and I hope that you will join this endeavour!

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