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UNIVERSITY OF MACEDONIA

Digitally-reinforced Learning Contexts in Higher Education: The *Back2Basics* Pilot experience

BACK 2 BASICS
BRIDGING THE GAP BETWEEN HIGHER EDUCATION AND LABOR MARKET BY FOSTERING DIGITAL SKILLS

August 2024

Co-funded by the European Union

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Executive Summary

The Erasmus+ project "Back2Basics - Bridging the gap between higher education and labour market by fostering digital skills" (2021-1-PT01-KA220-HED-000023543) aims to address the digital transformation within higher education (HE) systems and to align these systems more closely with labor market needs. Coordinated by the University of Aveiro (Portugal), and in partnership with the University of Macedonia (Greece), Association BioLiving (Portugal), and GRI - Gabinete de Recolocación Industrial (Spain), the project focuses on enhancing digital skills among educators and students to create a more digitally prepared workforce. Key objectives of the project include modernizing teaching practices, upskilling students with valuable digital competencies, aligning HE programmes with labor market demands, enhancing online security awareness, and improving collaboration between HE institutions and the labor market.

The current report presents the findings and outcomes of a pilot programme conducted in Greece and Portugal during the 2023-2024 academic year. This programme was designed to enhance digital skills and bridge the gap between higher education and the labor market. The report begins with an overview of the project's background and objectives, highlighting the critical need for modernized teaching practices and the development of HE students' work-valuable digital skills. It specifically emphasizes the

importance of aligning educational outcomes with labor market requirements.

The methodology section outlines the research and development process that led to the pilot programme, including the design of pilot tools and the "ECCE Teachers' Training Model". The implementation of the pilot programme is detailed, describing the involvement of participating universities, the structure and timeline of the programme, and the tools and resources utilized. Data collection methods, such as pre and post-questionnaires, *Google Classroom*, and regular meetings, are also explained.

The report concludes with an analysis of the pilot programme's results, demonstrating its effectiveness in bridging the gap between academic learning and labor market needs. This includes pre- and post-questionnaire results for both teachers and students, along with evaluations of the digital artifacts created by students and the digital lesson plans developed by HE teachers. The final section provides key findings, insights into the long-term impact of the project, and recommendations for future initiatives. Overall, the report offers a comprehensive overview of the "Back2Basics" pilot programme, its outcomes, and its implications for enhancing digital skills and fostering closer ties between higher education and the labor market.

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1. Introduction

1.1 Background of the "Back2Basics" project and its main aims

The European Commission has made significant efforts to promote student mobility, diverse career paths, and closer alignment between higher education (HE) systems and the labor market, but the digital transformation of HE remains a challenge [1]. The COVID-19 pandemic underscored this issue, revealing that many HE teachers were unprepared for the sudden shift to online teaching, leading to failed adaptation attempts, increased workload, and significant stress. This lack of 'digital readiness' among educators has exposed a deeper problem: without strong digital competencies, teachers are unable to equip students with the professional digital skills essential for today's job market. While students frequently use ICT tools, they cannot often apply these skills in professional contexts, which, combined with a lack of understanding of netiquette and online communication, diminishes their employability at a time when companies are increasingly moving toward digital work environments.

The Erasmus+ project "Back2Basics" - Bridging the gap between higher education and labour market by fostering digital skills" (2021-1-PT01-KA220-HED-000023543) aims to address digital transformation in the HE system and bring HE systems and labor markets closer together, working on the enhancement of digital skills in the HE Institutions in order to train more digitally prepared teachers and graduates. The project is coordinated by the University of Aveiro and with its partners in Greece (University of Macedonia), Portugal (Association BioLiving), and Spain (GRI - Gabinete de Recolocación Industrial) has identified several critical needs related to the digital transformation of HE systems:

- ➔ Modernizing and updating teaching practices, especially among educators with limited digital proficiency.

- ➔ Upskilling students to acquire valuable digital competencies relevant to the workforce.
- ➔ Aligning the skills developed through HE programmes more closely with labor market demands.
- ➔ Enhancing awareness of online security.
- ➔ Improving collaboration between HE institutions and the labor market.

1.2 Specific Focus and Objectives of PR5: Pilots for digitally-reinforced learning contexts in Higher Education

The digital landscape is continually evolving, and the acquisition of valuable digital skills is essential for personal and professional growth in today's world. The *"Back2Basics"* pilot courses aimed to engage Higher Education staff in Portugal and Greece to deliver classes and assignments, using digital tools, thus upskilling their pedagogical practice. More concretely, the pilot courses:

- ➢ promoted the building of students' basic digital skills demanded by the labor market in the context of academic learning;
- ➢ implemented innovative digitally based teaching techniques, tools, and resources in order to achieve this goal;
- ➢ allowed HE teachers to go from theory to practice;
- ➢ evaluated students' reactions to the hands-on approach, meaning digitally enhanced classes in terms of competences especially relevant to the labour market;
- ➢ helped HE teachers transform their traditional lesson plans into "digital lesson plans".

The Committee for Research Ethics of the University of Macedonia (Thessaloniki, Greece) approved this research on December 13, 2023 (reference number 18/13-12-2023).

2. Methodology

2.1 Overview of research and development leading up to PR5

Research shows [2-5] that one of the most important skills that educators should possess is being proficient in using digital tools and capable of imparting these digital skills to students by integrating these digital skills into the course content. Previous studies [6-8] emphasized the critical role of digital media in higher education and the necessity for teachers to be proficient in these digital skills. This proficiency can enable them to adapt to new digital teaching environments, effectively support student learning, and prepare students for a digitally driven workforce.

But how digitally prepared are HE students to enter the labor market? Do they already have digital skills as "digital natives"? Recent research [9] has shown that there is no evidence to support claims that digital literacy is a characteristic of a particular generation of learners and has highlighted the need to move away from simplistic and unfounded generational stereotypes and to

develop a more nuanced understanding of the issues associated with the social and educational use of ICT in higher education. Ilomäki et al. [10] articulated that, as students prepare to join the labor market, there is a necessity for them to function as knowledge workers, necessitating a high degree of digital competence. If HE teachers are not digitally prepared, they are also not conveying important work-valuable digital skills to the students.

Universities should prioritize the development of digital literacy among higher education students to ensure their preparedness for contemporary job markets. This imperative necessitates that higher education faculty themselves possess a robust understanding of digital tools and technologies. Without a proficient digital skillset, educators cannot effectively impart these essential competencies to their students. To address this challenge, institutions globally must prioritize the implementation of innovative, digitally-driven teaching methodologies, resources, and tools. Such initiatives will empower higher education educators to guide their students in acquiring the digital expertise necessary for success in future workforces. To address this challenge, the "Back2Basics" team organized two pilot courses—one in Portugal and one in Greece—designed to engage higher education staff in delivering courses and assignments using digital tools, thereby enhancing their pedagogical practices [11].

2.2 Pilots' Initial Planning and Preparation: Description of the design of the pilot tools and ECCE Teachers' Training Model

2.2.1 Participating Universities

The "Back2Basics" pilot courses engaged eight (8) higher education (HE) instructors, five (5) from the University of Macedonia, Greece,

and three (3) from the University of Aveiro, Portugal, across a range of academic disciplines (ii.e., E-commerce, English for Academic Purposes, Biology, Economics, and Information Systems, Biology, Social Sciences, Digital Accessibility and Compliance, Communication Sciences and Technology) with participation from over 300 students.

2.2.2 Structure and timeline of the pilot

The structure and timeline of the pilot courses were designed to span the 2023-2024 academic year. The University of Macedonia (Greece) implemented the pilot courses during the first semester, followed by the University of Aveiro (Portugal), which conducted the programme in the second semester.

2.2.3 Tools and resources used during the pilot courses

The pilot courses employed a range of digital tools and resources to enhance the pedagogical practices of higher education (HE) staff of both universities in Greece and Portugal and to promote the development of work-valuable digital skills among students. *Google Classroom* "Back2Basics Pilots" (Fig.1) was used as the central online management and training platform during the pilot. It facilitated the delivery and sharing of the digital content (e.g., training material, teaching material, produced digital material), as well as the communication among participants.

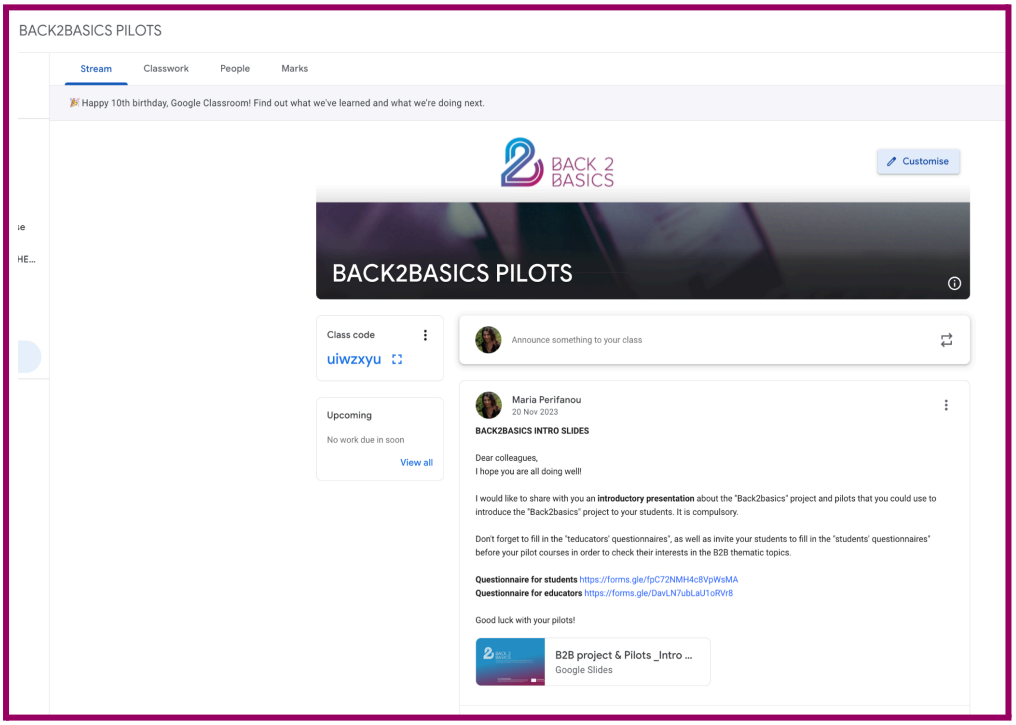


Fig. 1. "Back2Basics" Pilots_Google Classroom (Class code: uiwzxyu).

All the HE teachers involved in the pilot were guided to transform their traditional lesson plans into digital lesson plans, referred to as "Content and Digital Skills Integrated (CoDiS) Lesson Plans". These lesson plans are designed to include guidelines, learning objectives, materials, and activities aimed at developing not only students' knowledge and skills in the specific subject area but also their digital competencies.

All the HE teachers who participated in the pilots were encouraged to incorporate new approaches and resources from the *Learning, Teaching, and Training Activities* (LTTA1 & 2) into their courses. This integration allowed them to apply theoretical knowledge in practice, assess student responses to these digitally enhanced lessons, and evaluate the relevance of the competencies developed for labor market demands.

More specifically, the “Classwork page” (Fig. 2) in *Google Classroom* acted as the primary repository for all pilot-related materials, containing information and guidance for teachers who were involved in the pilot courses in both countries. The seven sections, named “topics” in *Google Classroom*, included information about the main goals of both pilot courses, the steps of the pilots’ process, examples of digital lesson plans as well as all training materials (Fig. 3-7) available for HE teachers and students developed during the lifespan of the project by the "Back2Basics" partners.

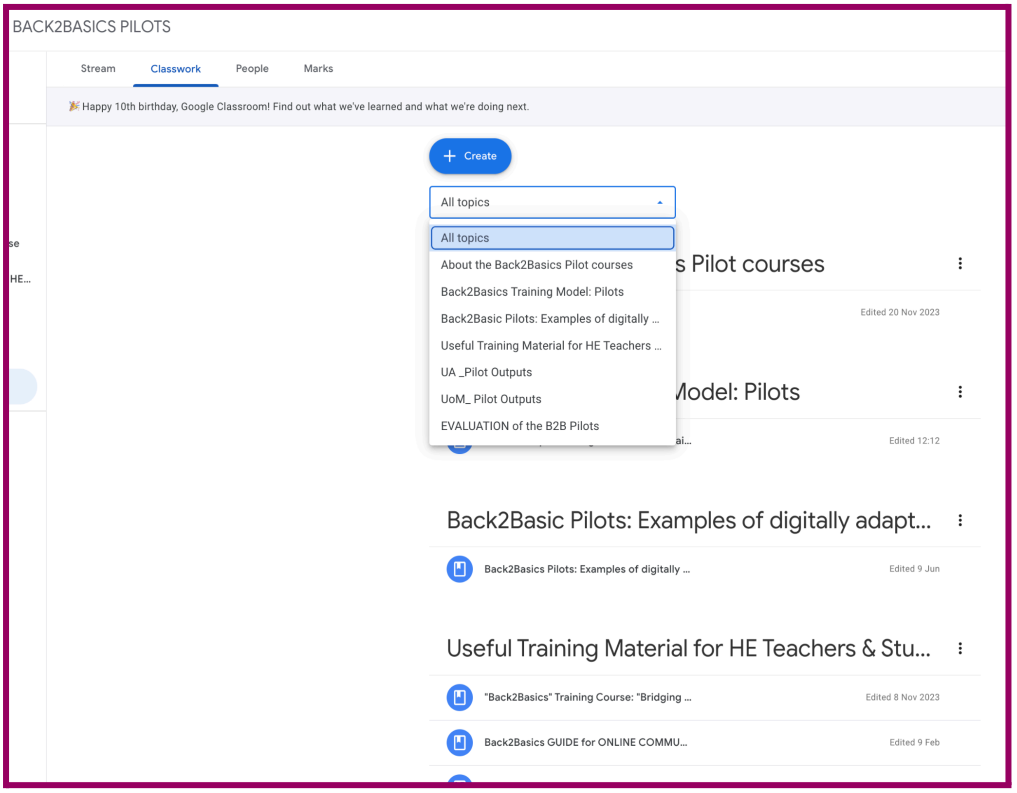


Fig. 2: "Back2Basics" Pilots_Google Classroom (Class code: uiwzxyu).

Specifically, the training materials for the "Back2Basics" pilots included the following:

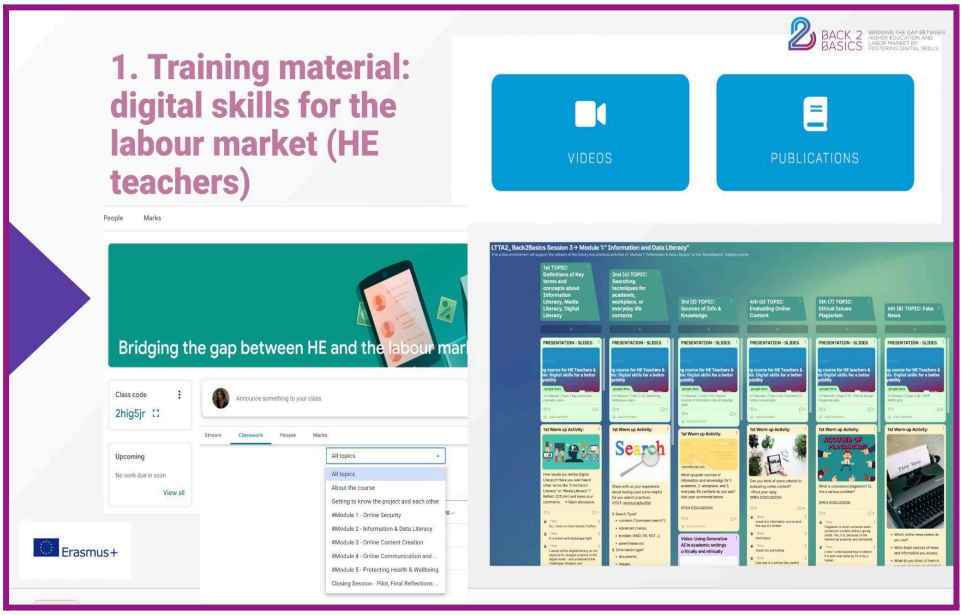


Fig. 3: "Back2Basics" Pilots_Training Material

a) MODULAR TRAINING PACKAGE targeted mainly at HE teachers This courseware focus on: Providing HE teachers with modern pedagogical skills and specific educational resources to better prepare their students for the labor market.

The 5 training modules are accessible here:

Fig.4 : Training Material available for the "Back2Basics" Pilots.

b) ONLINE COMMUNICATION & NETIQUETTE: A guide to help students who experience difficulties when communicating

using digital tools for formal purposes. The guide is accessible here (Fig. 5).

Fig.5. Training Material available for the "Back2Basics" Pilots.

c) A CYBERSECURITY HANDBOOK: A comprehensive guide to cybersecurity best practices that empower individuals and organizations to protect against common threats in the digital world. The guide is accessible here (Fig.6).

Fig. 6. Training Material available for the "Back2Basics" Pilots.

d) VIDEOS AND INFOGRAPHICS: These complement or add information to the other resources. The videos (Fig.7) are accessible here and the infographics here.

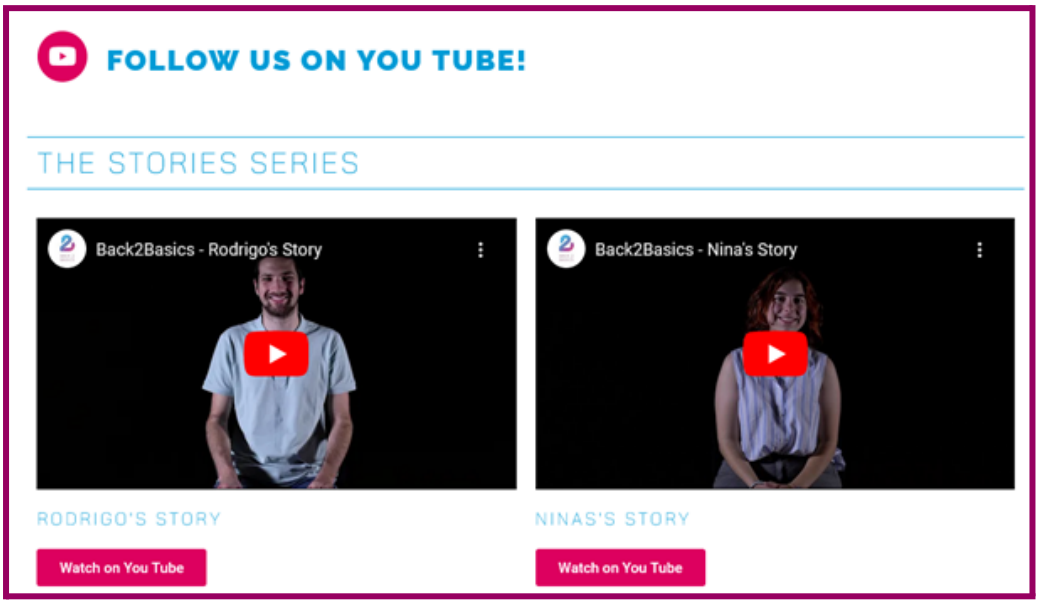
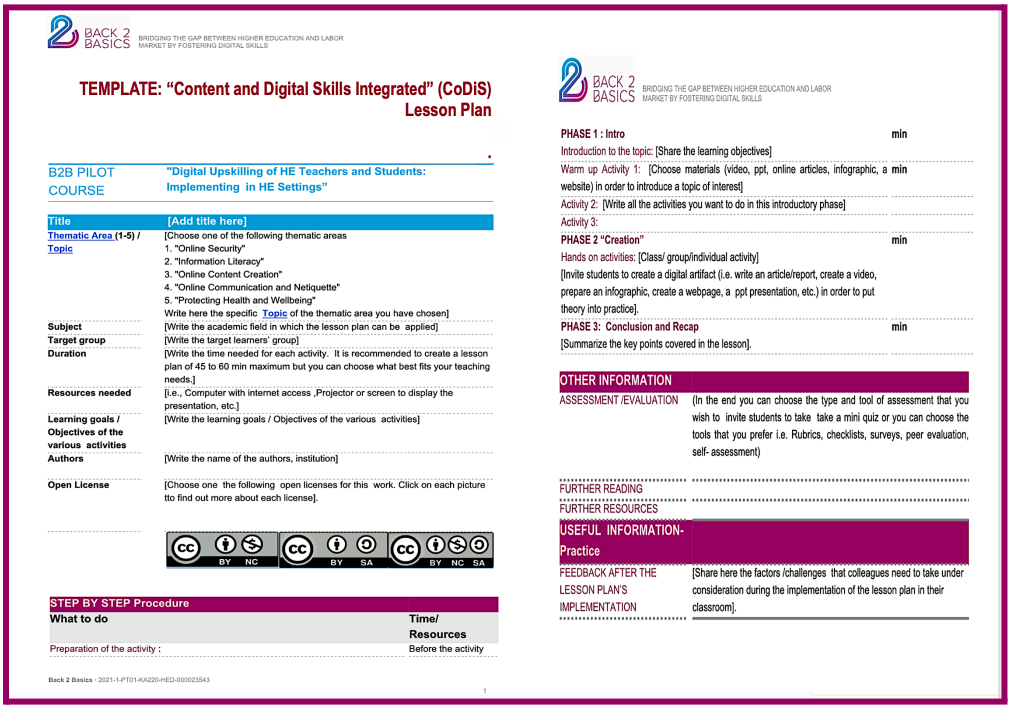


Fig. 7. Training Material available for the "Back2Basics" Pilots.

Additionally, the three last sections of the *Google Classroom* ("UA_Pilot Outputs", "UoM Pilot Outputs" and "Evaluation of the B2B Pilots") served as a main repository of the ready-to-use and adaptable digital lesson plans. To facilitate this process, specific templates (Fig.8) were provided for HE teachers to create "Content and Digital Skills Integrated (CoDiS) Lesson Plans", tailored to their specific subjects and student needs.



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TEMPLATE: "Content and Digital Skills Integrated" (CoDiS) Lesson Plan

B2B PILOT COURSE	"Digital Upskilling of HE Teachers and Students: Implementing in HE Settings"
Title	[Add title here]
Thematic Area (1-5) / Topic	[Choose one of the following thematic areas 1. "Online Security" 2. "Information Literacy" 3. "Online Content Creation" 4. "Online Communication and Netiquette" 5. "Protecting Health and Wellbeing" Write here the specific Topic of the thematic area you have chosen]
Subject	[Write the academic field in which the lesson plan can be applied]
Target group	[Write the target learners' group]
Duration	[Write the time needed for each activity. It is recommended to create a lesson plan of 45 to 60 min maximum but you can choose what best fits your teaching needs.]
Resources needed	[i.e., Computer with internet access ,Projector or screen to display the presentation, etc.]
Learning goals / Objectives of the various activities	[Write the learning goals / Objectives of the various activities]
Authors	[Write the name of the authors, institution]
Open License	[Choose one the following open licenses for this work. Click on each picture tto find out more about each license].

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STEP BY STEP Procedure	
What to do	**Time/ Resources**
Preparation of the activity :	Before the activity

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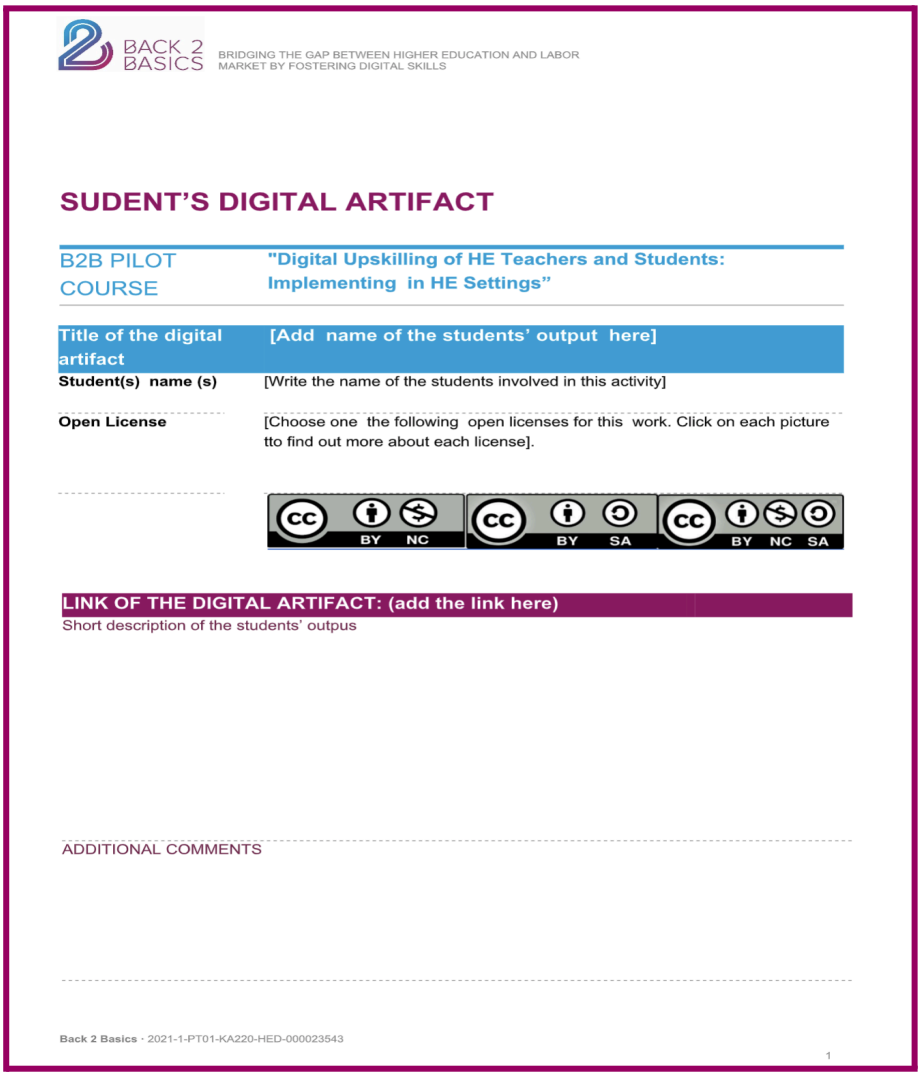
PHASE 1 : Intro	**min**
Introduction to the topic: [Share the learning objectives]	
Warm up Activity 1: [Choose materials (video, ppt, online articles, infographic, a website) in order to introduce a topic of interest]	**min**
Activity 2: [Write all the activities you want to do in this introductory phase]	
Activity 3:	
PHASE 2 "Creation"	**min**
Hands on activities: [Class/ group/individual activity] [Invite students to create a digital artifact (i.e. write an article/report, create a video, prepare an infographic, create a webpage, a ppt presentation, etc.) in order to put theory into practice].	
PHASE 3: Conclusion and Recap	**min**
[Summarize the key points covered in the lesson].	

OTHER INFORMATION	
ASSESSMENT /EVALUATION	(In the end you can choose the type and tool of assessment that you wish to invite students to take take a mini quiz or you can choose the tools that you prefer i.e. Rubrics, checklists, surveys, peer evaluation, self- assessment)
FURTHER READING	
FURTHER RESOURCES	
USEFUL INFORMATION- Practice	
FEEDBACK AFTER THE LESSON PLAN'S IMPLEMENTATION	[Share here the factors /challenges that colleagues need to take under consideration during the implementation of the lesson plan in their classroom].

Fig.8. "Content and Digital Skills Integrated" (CoDiS) Lesson Plan Template

Similarly, all HE teachers were invited to download the "Students' Digital Artifact" Template (Fig. 9) to document the details of their students' digital artifacts produced during the pilot courses. Upon completion of the pilot courses, each HE teacher was required to upload at least one "CoDiS Lesson Plan" and at least five exemplary students' digital artifacts to Google Classroom. All outcomes produced by the HE teachers and students were shared under Creative Commons licenses, allowing them to be used by others.



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SUDENT'S DIGITAL ARTIFACT

B2B PILOT COURSE	"Digital Upskilling of HE Teachers and Students: Implementing in HE Settings"
Title of the digital artifact	[Add name of the students' output here]
Student(s) name (s)	[Write the name of the students involved in this activity]
Open License	[Choose one the following open licenses for this work. Click on each picture tto find out more about each license].

LINK OF THE DIGITAL ARTIFACT: (add the link here)

Short description of the students' outpus

ADDITIONAL COMMENTS

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Fig. 9."Students' Digital Artifact" Template

The final section of the *Google Classroom*, "The Evaluation of the *Back2Basics* Pilot Courses," provided the assessment tools—pre- and post-questionnaires for both HE educators and students—which were designed to monitor the successful implementation and completion of the pilot courses and to measure the impact of the innovative digital teaching methods. This pilot testing allowed "Back2Basics" partners to explore how basic digital skills, demanded by the labor market, could be integrated into academic learning and to identify the most effective ways to achieve this.

The “People page” in *Google Classroom* listed all participants. Under "Teachers", users could find the "Back2Basics" researchers and organizers involved in the pilot, while "Students" referred to the Portuguese and Greek HE educators participating in the courses. Additionally, the “Stream page” served as a communication hub, where announcements were made by the "Back2Basics" team. Participants were encouraged to engage by posting comments, asking questions, and initiating discussions, all while adhering to netiquette rules to ensure respectful and productive interaction.

By leveraging these tools, the pilot programme, not only enhanced the digital competencies of HE teachers but also fostered a collaborative environment for knowledge exchange, contributing positively to the development of both educators and students for the evolving digital demands of the labor market. But what were the steps of the pilot process and was designed?

2.2.4 The “ECCE Teachers’ Training Model”

The "ECCE Teachers' Training Model" ("Explore - Create - Communicate - Evaluate Teachers' Training Model") was designed to equip higher education teachers with a structured framework for fostering the development of students' work-relevant digital skills within the academic context [11]. This model provided a step-by-step guide to assist HE teachers in creating, implementing, and sharing digitally transformed lesson plans within their classrooms. The model is designed to enable other universities to replicate the teacher training process by following the same steps, providing a clear framework for implementation. The flow of the “ECCE" Teachers’ Training Model” is presented below (Fig. 10) and contains four (4) different phases: a) “Exploration: Learning by doing”; b) “Creation of a digital artifact”; c) “Connection: Building

class community; and d) “Evaluation and Sharing”. This is the final version of this model that describes the flow of the model and complements theoretically the repository of the “Content and Digital Skills Integrated” (CoDiS) Lesson Plans that was created initially by the "Back2Basics" team and is now enriched with more digital lesson plans by HE teachers who participated in the "Back2Basics" pilots.

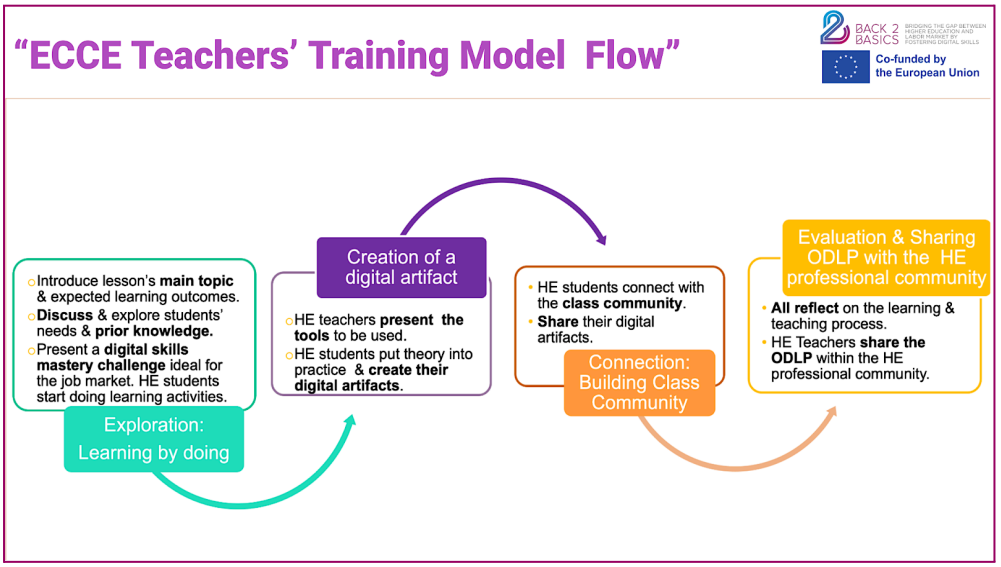

Fig. 10. ECCE Teachers’ Training Model Flow” [11]

Phase #1: "Exploratory phase":

In the initial phase of the pilot programme (Fig. 11, 12), HE teachers were encouraged to introduce their students to one or more "Digital Skills Mastery Challenges". This exploratory phase aimed to engage students in investigating and understanding various thematic topics related to digital skills, such as online security, content creation, and netiquette. The overarching goal of this phase was to raise students' awareness of these critical topics while simultaneously fostering the development of their digital competencies.

During this phase, students were invited to delve into these new topics, which were closely aligned with the specific learning objectives of their respective courses, whether in English language studies, economics, biology, or other disciplines. This process involved both discussion and comprehension of the subject matter. For instance, an English HE teacher can introduce the topic of netiquette through a multimedia resource, such as a video, followed by an open class discussion to facilitate understanding.

After this introduction, students can engage in collaborative group work where they search for and curate infographics about netiquette within professional networks such as LinkedIn. This collaborative effort not only encourages peer-to-peer learning but also enhances their digital literacy. Following their research, students can synthesize their findings into a Kahoot quiz game, which they can then play with their classmates. This interactive approach provides a dual opportunity for students to practice their digital skills alongside fundamental linguistic competencies.

HE teachers have the flexibility to suggest one or more activities tailored to the specific time constraints of their courses, ensuring that the exploratory learning experience is both impactful and manageable. This initial phase thus serves as a foundation for students to engage meaningfully with digital skills in a contextualized manner, ultimately preparing them for more advanced applications in their academic and professional endeavors.

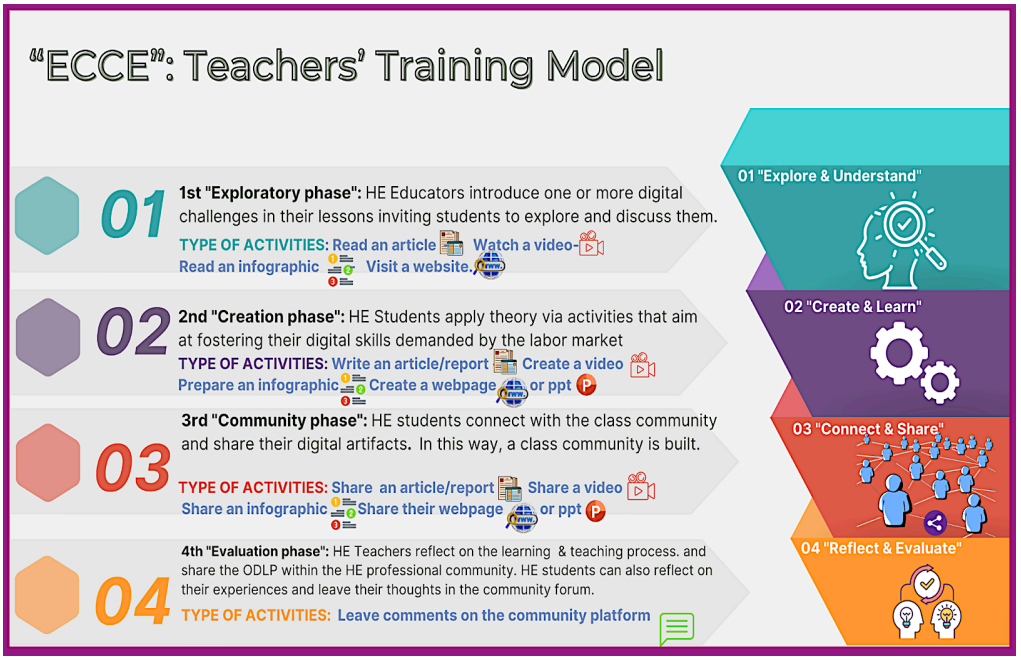

Fig. 11."ECCE Teachers' Training Model Phases" [11]

To enhance the effectiveness of Phase 1, practical and actionable tips can be provided to higher education (HE) teachers to facilitate their efforts in this phase (Fig.12). For instance:

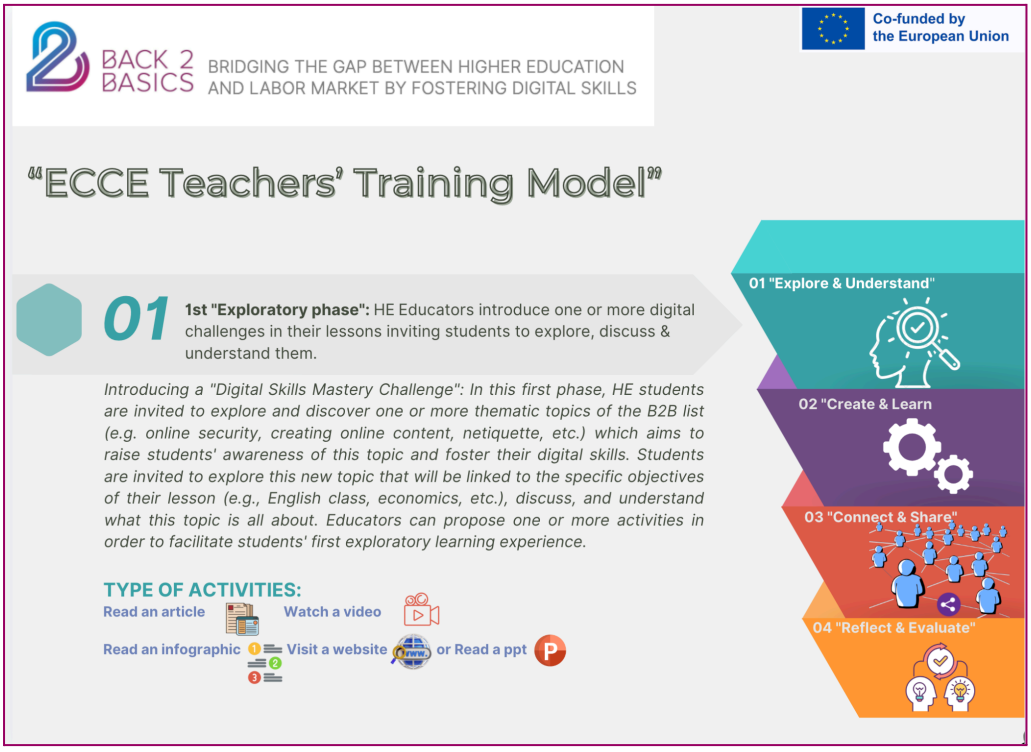

Fig. 12."ECCE Teachers' Training Model": Phase 1 [11]

a) Engaging Introductions: Begin with a captivating introduction to the topic, employing real-world scenarios, challenging questions, or multimedia presentations to stimulate student interest.

b) Activate Prior Knowledge: Encourage students to share their prior knowledge and experiences related to the topic. This practice helps activate existing mental frameworks and lays the groundwork for deeper learning.

c) Present Relevant Examples: Showcase examples, demonstrations, or case studies that highlight the digital skills being taught. These should be relatable and meaningful to students, linking theoretical concepts to practical applications.

d) Utilize Multimedia Resources: Incorporate multimedia resources, interactive simulations, or real-world artifacts to illustrate key ideas and principles effectively.

e) Encourage Diverse Learning Materials: Invite students to engage with various learning materials, such as articles, videos, infographics, websites, or online presentations, to broaden their understanding of the topic.

f) Promote Collaborative Learning: Foster collaborative activities that emphasize "learning by doing," such as project-based learning, peer teaching, and problem-solving exercises. Additionally, integrate innovative methodologies like flipped classrooms, gamification, and design thinking to enhance the learning experience, encouraging active participation, critical thinking, and the practical application of knowledge.

g) Explore Resource Repositories: Teachers are also encouraged to explore the "Back2Basics" repository of "Content and Digital Skills Integrated (CoDiS) Lesson Plans" for additional resources and inspiration.

Phase #2 "Creation phase":

In the second phase (Fig. 13) of the pilot programme, referred to as the "Creation Phase", higher education (HE) teachers encourage their students to apply theoretical concepts to practical scenarios through a series of carefully designed activities aimed at enhancing digital skills that are increasingly demanded in the labor market. During this phase, students have the opportunity to work either individually or collaboratively to further implement and explore the new knowledge acquired during the initial exploratory phase. This theoretical foundation is intricately connected to specific digital skills, while the variety of tasks assigned to students is tailored to align with their respective fields of study.

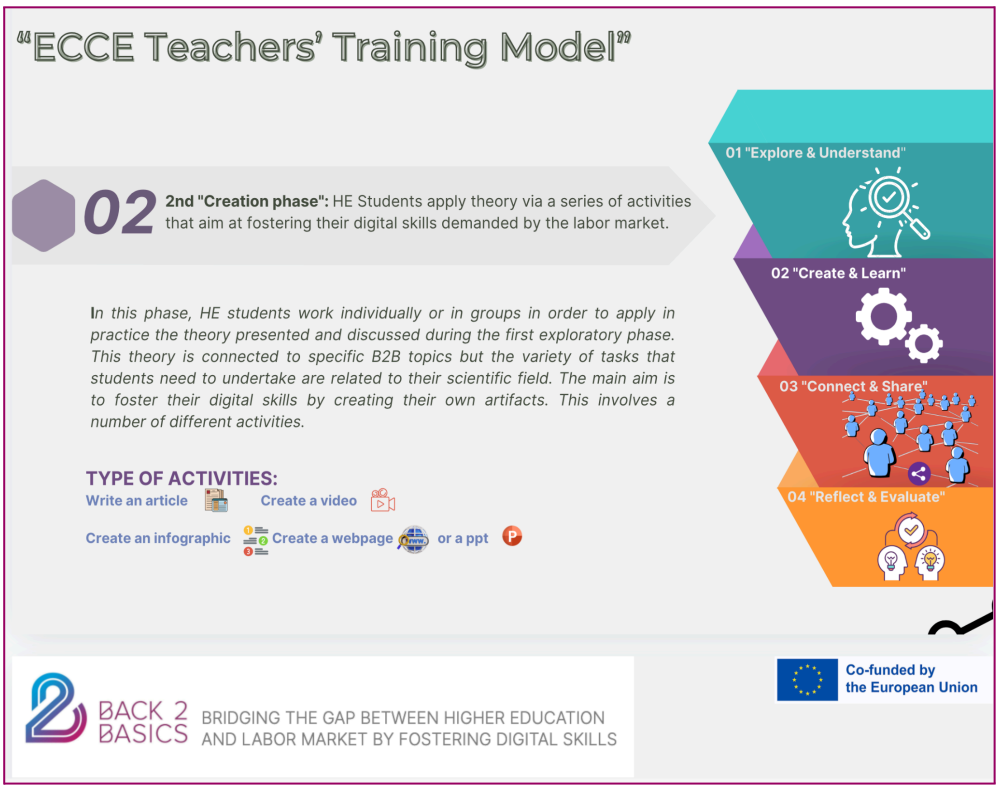

Fig. 13."ECCE Teachers' Training Model Phase 2" [11]

The primary objective of the "Creation Phase" is to cultivate students' digital competencies by guiding them in the production of their artifacts. This involves engaging in a range of activities that not only reinforce digital skills but also contribute to their academic development. For instance, continuing with the example from the

previous phase, students enrolled in an English course may now undertake the task of creating their infographic on the topic of netiquette within professional networks such as LinkedIn, utilizing the English language for this purpose. This particular assignment allows students to enhance both their digital skills and their proficiency in English.

Similar to the "Exploratory Phase", practical and actionable guidance can be provided to HE teachers to facilitate this phase effectively. These recommendations may include:

a) Preparing a Challenge: Teachers should design a challenge aimed at bridging the digital skills gap by offering students hands-on experiences and practical knowledge in essential areas of digital literacy, thereby empowering them to excel in a technology-driven work environment.

b) Providing Opportunities for Application: Instructors should offer learners the chance to apply their acquired knowledge and skills through hands-on activities or projects. These tasks should encourage problem-solving, critical thinking, and creative exploration.

c) Encouraging the Production of Digital Artifacts: Teachers should invite students to produce an outcome, which may take the form of a digital artifact such as a digital article, infographic, video, presentation, or webpage.

Through these activities, students not only reinforce their understanding of theoretical concepts but also gain valuable practical experience that enhances their readiness for the labor market. This phase thus serves as a crucial step in equipping students with the skills necessary to navigate a digitally-centric professional landscape.

Phase #3 "Community phase":

In the third phase (Fig. 14) of the pilot programme, known as the "Community Phase," higher education (HE) students are

encouraged to engage with their class community by sharing their digital artifacts. Utilizing the previous example, this phase allows students to upload their infographics to the designated online university platform that supports their coursework (e.g., Moodle, Google Classroom, etc.). By sharing their individual "learning products," students can contribute to the development of a cohesive class community, fostering a sense of connection and collective learning among their peers.

More specifically, by presenting their work and interacting with the projects of fellow students, learners cultivate a supportive educational environment where ideas and constructive feedback can be exchanged.

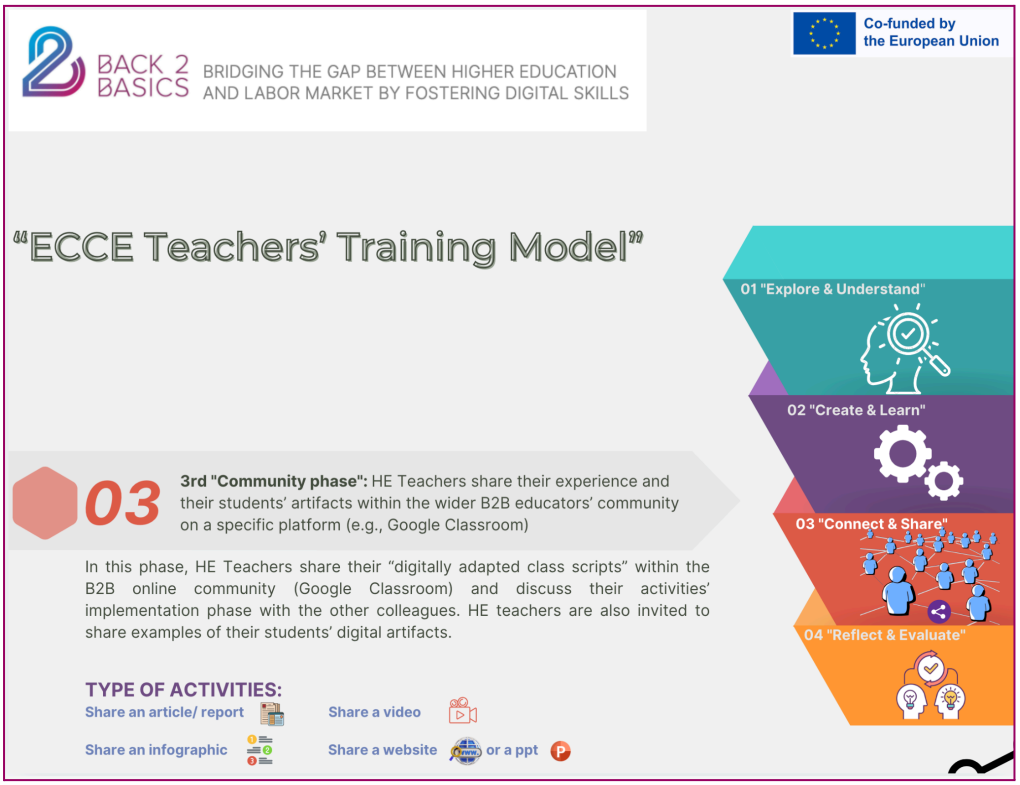

Fig. 14."ECCE Teachers' Training Model Phase 3" [11]

This collaborative approach significantly enhances their overall educational experience and empowers their learning processes while equipping them with valuable collaboration skills. Mastering effective teamwork is a crucial 21st-century competency that not

only improves individual performance but also enhances group outcomes, thereby preparing students for future professional and personal success.

To facilitate this phase effectively, HE teachers can be provided with practical and actionable recommendations, including:

a) Provide Clear Instructions: Teachers should offer detailed, step-by-step guidelines on how students can upload and share their infographics on the selected platform (e.g., Moodle, Google Classroom). Including screenshots or video tutorials can enhance clarity and usability.

b) Set Up a Dedicated Space: Instructors should create a specific forum, discussion thread, or assignment submission area designated for students to upload and showcase their infographics. This organization can help maintain focus and structure within the activity.

c) Facilitate Engagement: Teachers can encourage students to write a summary or reflection accompanying their infographic submission. This practice not only aids in articulating their understanding but also promotes more meaningful interactions with peers.

d) Monitor and Support: Instructors should regularly monitor the platform to ensure that students successfully upload their work and be available to assist with any technical issues or questions that may arise during the process.

e) Promote Best Practices and Ethics: Educators should remind students of the importance of digital etiquette and best practices when sharing work online, such as respecting the intellectual property of others and maintaining professionalism in their comments.

f) Promote Inclusion: Additionally, teachers should encourage inclusive practices by valuing diverse perspectives and ensuring that all voices are heard and respected in discussions and interactions.

g) Emotional Support and Encouragement: Educators should provide emotional support and motivation to students, fostering a collaborative environment where empathy and encouragement are central to peer interactions in educational settings.

Through these strategies, the Community Phase, not only enhances the learning experience but also prepares students for collaborative work environments they are likely to encounter in their professional lives.

Phase #4 "Evaluation Phase":

In the “Evaluation Phase” (Fig. 15), both higher education (HE) students and teachers are encouraged to reflect on the learning and teaching processes, assess outcomes, and share their experiences. HE students are prompted to consider their learning journey and post their reflections in the community forum. Additionally, students engage in peer review, offering constructive feedback on their classmates’ work to foster a collaborative learning environment. For instance, students might discuss which infographic they found most effective and the reasons behind their choices.

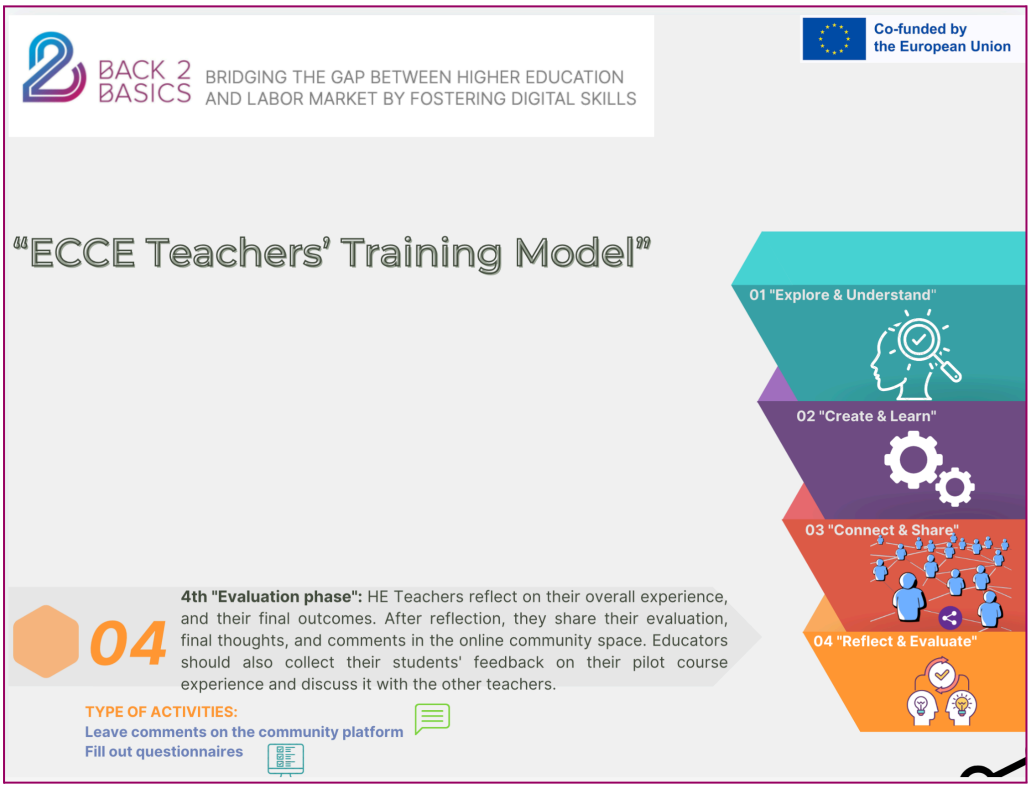

Fig. 15."ECCE Teachers' Training Model Phase 4" [11]

HE teachers play a crucial role in facilitating this peer feedback, promoting a culture of constructive criticism that enhances learning and builds community. They can also share their evaluations, insights, and comments in the online class community, highlighting exemplary work while providing constructive feedback to all students. Furthermore, teachers are encouraged to reflect on their experiences and outcomes, making necessary adjustments to their lesson plans. They should then share their revised "Content and Digital Skills Integrated (CoDiS) Lesson Plans" within their professional community, contributing to a broader sharing of Open Educational Practices.

To support this phase, HE teachers can utilize the following practical tips:

a) Encourage Reflection: Facilitate discussions or reflection activities where students can articulate what they learned from their peers

and the collaborative process, focusing on their use of digital tools and problem-solving strategies.

b) Foster a Positive Environment: Create a supportive atmosphere for sharing work and engaging with peers. Promote a peer review process that emphasizes constructive feedback and mutual respect.

c) Promote a Growth Mindset: Frame feedback and reflection as opportunities for growth. Encourage students to view challenges as chances to enhance their skills and inform their future work.

d) Provide Timely Feedback: Offer specific, timely feedback on digital artifacts to help students refine their work and deepen their understanding of the content.

e) Highlight Exemplary Work: Showcase outstanding infographics or thoughtful feedback to motivate students and exemplify high-quality work, possibly rewarding participants with digital badges.

f) Promote Critical Thinking: Encourage students to critically assess how their learning can be applied to other areas of study or future careers.

g) Use Technology for Feedback: Leverage online tools and platforms, such as comment features in learning management systems (LMS) or collaborative documents, to streamline the feedback process.

2.3 Data collection methods: feedback from students and teachers, monitoring progress, and regular meetings

2.3.1 Questionnaires:

a. Pre and Post-evaluation of the pilot courses for HE teachers

The pre-questionnaire (a) aimed to help HE teachers reflect on their familiarity with the "Back2Basics" thematic areas (1. "Online

Security", 2. "Information Literacy", 3. "Online Content Creation", 4. "Online Communication and Netiquette", 5. "Protecting Health and Wellbeing"), as well as their ability to adapt their traditional lesson plans into "CoDis Lesson Plans" in an effective way. It comprised two sections: (a) Demographics and (b) Work-Valuable Digital Skills Assessment in Five Thematic Areas. The second part of the questionnaire included nine questions.

The post-questionnaire (b) aimed to collect HE teachers' feedback concerning their overall pilot experience including specific examples and insights for the transformation of their traditional lesson plans into "CoDis Lesson Plans" their innovative teaching approaches, and the general impact of this on students' learning. It was divided into three sections: (a) Demographics, (b) Evaluation of the "Back2Basics" Pilot course experience, and (c) Work-Valuable Digital Skills Assessment in Five Thematic Areas. The second section of the questionnaire included twelve questions and the third section included six questions.

b. Pre and Post-evaluation of the pilot courses for HE students

The pre-questionnaire (a) aimed to help gauge HE students' level of digital literacy and their familiarity with various digital tools and technologies commonly used in higher education settings. It also explored which of the *"Back2Basics"* thematic areas (1. "Online Security", 2. "Information Literacy", 3. "Online Content Creation", 4. "Online Communication and Netiquette", 5. "Protecting Health and Wellbeing") were more important and interesting for them to explore. Based on the feedback provided HE teachers would adapt their traditional lesson plans to "CoDis Lesson Plans" proposing activities for their students in line with their needs. It comprised two sections: (a) Demographics and (b) Work-Valuable Digital Skills Assessment in Five Thematic Areas. The second part of the questionnaire included nine questions.

The post-questionnaire (b) aimed to collect HE students' (Fig.16) feedback concerning the course structure, content, and instructor.

Fig. 16. "Back2Basics" pilots at the University of Macedonia in Greece.

This post-course questionnaire could provide valuable insights into the student experience and help all HE educators and institutions make informed decisions about future course design and delivery on similar topics. It consisted of three sections: (a) Demographics, (b) Evaluation of the "Back2Basics" Pilot course, and (c) Work-Valuable Digital Skills Assessment in five Thematic Areas. The second section of the questionnaire included three questions and the third section included eight questions.

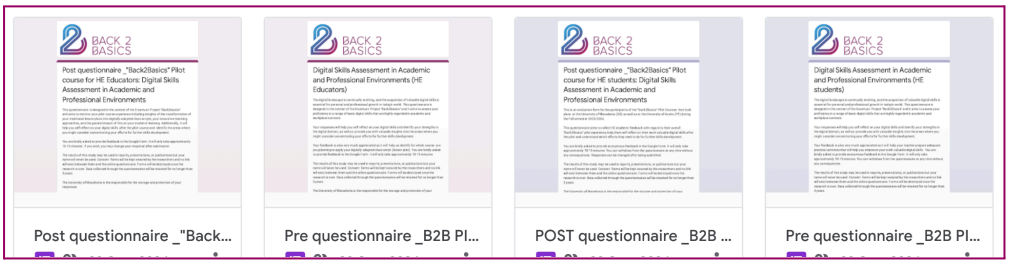

Fig. 17. The 4 "Back2Basics" questionnaires (Google forms)

2.3.2 Google Classroom and support and monitoring of the pilots

The guidance provided through the online platform *Google Classroom,* along with practical training materials and templates, significantly facilitated the development of personalized "CoDis Lesson Plans" by the HE teachers. These lesson plans integrated both subject content and essential digital skills, aligning with labor market demands. The gradual sharing of these digital lesson plans over the academic year via *Google Classroom* also played a vital role in the training process. This exchange of lesson plans fostered collaboration among educators, allowing them to adapt and refine their methods based on shared insights and experiences. Additionally, a series of face-to-face and online meetings between researchers and HE teachers, featuring productive discussions and continuous training, alongside the supportive online environment of *Google Classroom*, facilitated the successful monitoring and support of the "Back2Basics" pilots in both countries.

3. Pilot Programme Implementation

3.1 Overview of the pilot programme implementation

Preparing the "CoDis Lesson Plans":

Preparing the “Content and Digital Skills Integrated” (CoDiS) Lesson Plans was not an easy process as it included a round of 4 workshops (Fig. 18). This process started with an introductory workshop designed to equip teachers with a comprehensive understanding of the steps involved in creating, implementing, and sharing “Content and Digital Skills Integrated (CoDiS) Lesson Plans”. The workshops emphasized the importance of integrating subject-specific content with essential digital skills that align with labor market demands. Teachers were encouraged to evaluate the

unique needs of their students and to customize their lesson plans accordingly.

During this phase, they utilized various resources, including training materials and templates provided through the *Google Classroom* platform, which offered structured formats for creating effective lesson plans ("CoDis Lesson Plans"' template). This ensured that the lesson plans included clear learning objectives, relevant materials, and a variety of activities designed to enhance both subject knowledge and digital competencies.

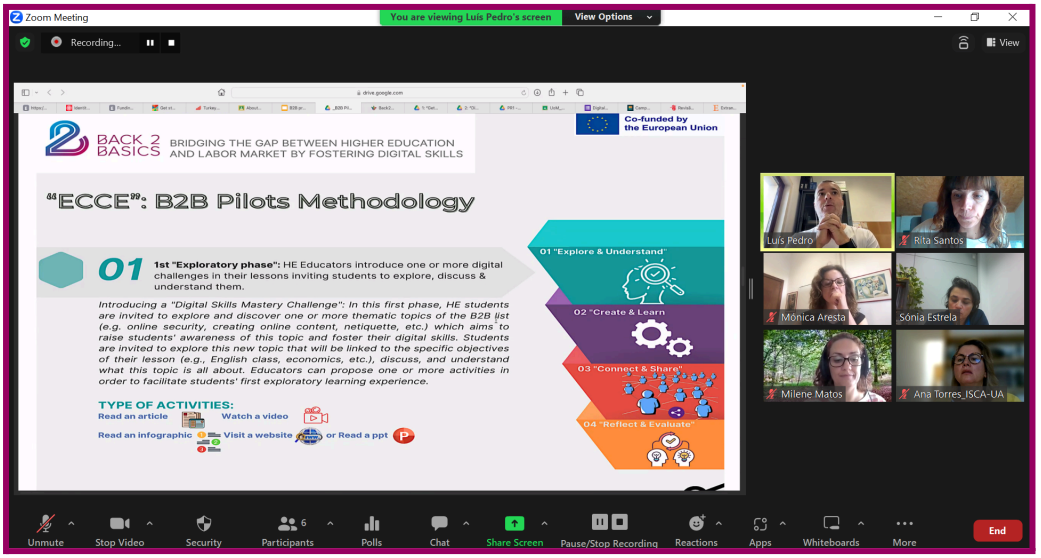

Fig. 18. Online "Back2Basics" workshop

Educators actively engaged in collaborative dialogues, exchanging insights and strategies to refine their lesson plans. The "Back2Basics" research team in both countries endeavored to highlight and propose innovative teaching methodologies and tools, as well as showcase exemplary practices to inspire participants. More concretely, to ensure the readiness of the "CoDis Lesson Plans", a follow-up meeting was held. Furthermore, two additional meetings were scheduled to coincide with the implementation and post-implementation phases of the innovative activities.

Classroom Implementation: Following the design phase, HE teachers introduced their digitally adapted lesson plans (CoDiS) into their regular courses (Fig.19, 20). This stage was pivotal, as it marked the transition from theoretical planning to practical application. All HE teachers employed various technology-enhanced teaching methods, including multimedia presentations, interactive online tools, and collaborative platforms, to facilitate a more engaging learning environment. The "Back2Basics" training materials, accessible via *Google Classroom*, were widely utilized by all HE teachers.

The “Content and Digital Skills Integrated” (CoDiS) Lesson Plans included hands-on, technology-driven assignments and activities that encourage active participation from students. For instance, teachers integrated digital tools for group projects, online discussions, and assessments that allowed students to apply their learning in real-world contexts. This practical approach aimed not only to reinforce subject content but also to cultivate students’ digital skills, preparing them for future employment opportunities in a rapidly evolving labor market.

Fig. 19. "Back2Basics" pilots at the University of Macedonia in Greece.

Fig. 20. "Back2Basics" pilots at the University of Aveiro in Portugal.

Monitoring and Support: As previously mentioned, throughout both semesters, all HE teachers involved in the pilots received ongoing support through the *Google Classroom* platform and regular meetings with researchers to discuss progress, challenges, and strategies for improvement. Researchers from both universities involved in the pilot projects collaborated to streamline the implementation process.

3.2 Repository of "Content and Digital Skills Integrated" (CoDiS) Lesson Plans

All "Content and Digital Skills (CoDiS)" Lesson Plans were developed and piloted in higher education classrooms at two universities in Greece and Portugal. Five of these plans were contributed by the University of Aveiro (UA), while the remaining nine were developed by UoM. Aside from two examples, all lesson plans were implemented in classrooms and shared on "Google Classroom", as

instructed by the research team of the University of Macedonia, which coordinated the pilots (Fig.19, 20, 21) in both countries.

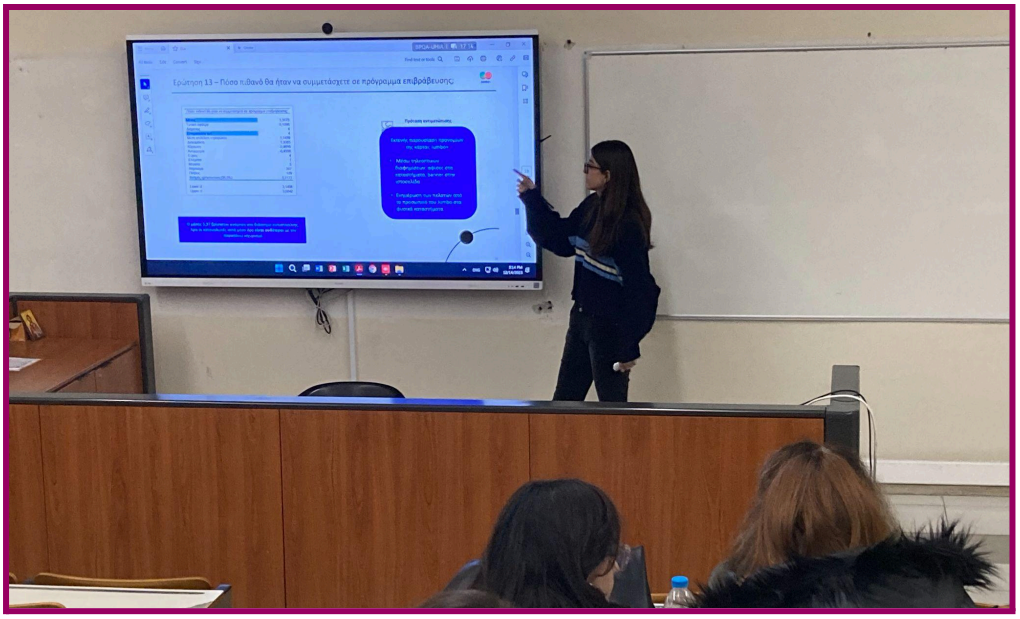

Fig. 21. "Back2Basics" pilots at the University of Macedonia in Greece.

These materials have been shared under "Creative Commons" open licenses, creating a publicly accessible repository for any higher education faculty looking to integrate digital skills into their teaching practices. While available on *Google Classroom*, they are also collectively presented on a *Padlet* (Fig.23, 24) and categorized by topic for easier navigation and use.

Fig. 22. "Back2Basics" pilots at the University of Macedonia in Greece.

The creation and dissemination of the open-access repository of "Content and Digital Skills (CoDiS)" lesson plans aims to represent a pivotal contribution to the transition of higher education curricula to meet digitalized needs that are needed in the job market. As industries increasingly prioritize digital proficiency, higher education must adapt its curricula to equip students with relevant skills. The "Back2Basics" repository addresses this by offering lesson plans that integrate essential digital tools and practices into teaching.

By offering educators peer-reviewed, high-quality lesson plans (Fig.23, 24, 25) that integrate digital tools, this initiative fosters the transition towards a more digitally proficient educational landscape. The main key contributions of this repository are to:

- *Promote the adoption of innovative teaching methods:* The proposed lesson plans provide educators with practical

examples of how to integrate digital tools and resources into their courses, effectively combining the teaching of specific content with the enhancement of basic digital skills needed in the job market.

- *Support professional development:* HE teachers can utilize these materials, along with the entire pilot process "The ECCE Teachers' Training Model," for self-directed learning or as a foundation for professional development workshops.
- *Foster collaboration and knowledge sharing:* The open-access nature of the repository encourages educators to share their experiences and best practices with colleagues.
- *Advance educational equity:* By providing access to high-quality educational resources, the project can help bridge the digital divide and ensure that all students have equal opportunities to succeed.

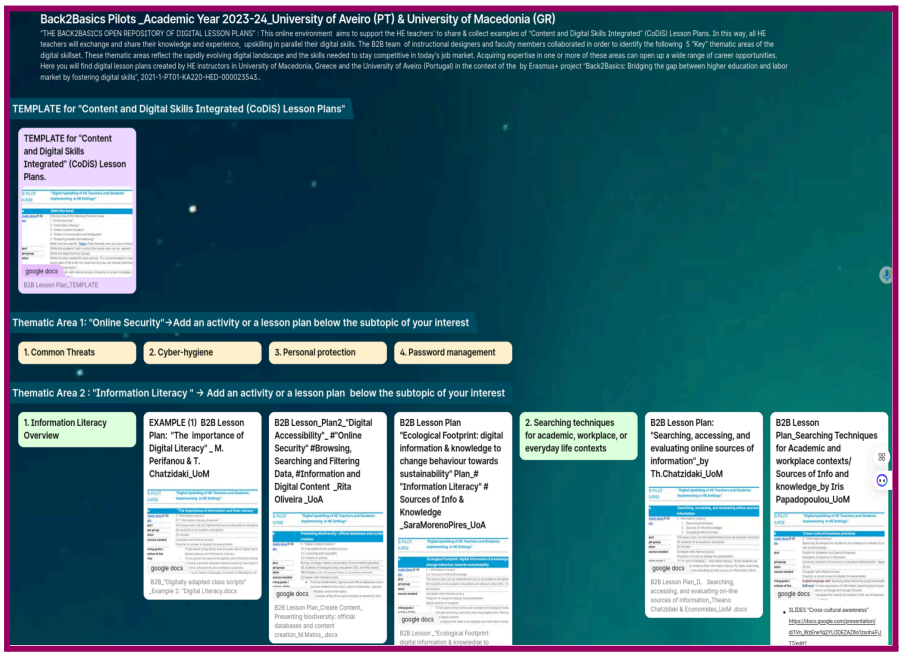

Fig.23. "Back2Basics" Open Repository of "Content and Digital Skills (CoDiS)" Lesson Plans (Padlet, Thematic areas, 1- 2)

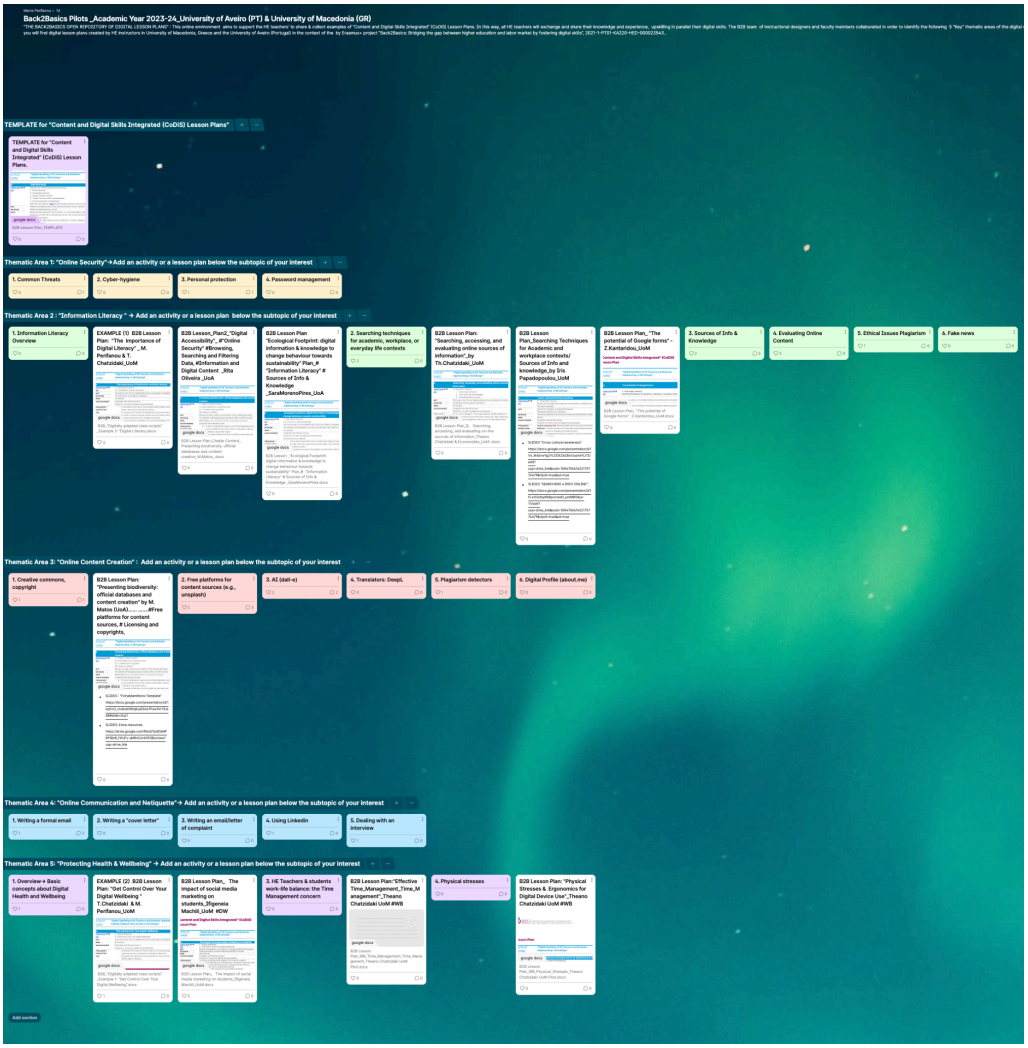

Fig.24. "Back2Basics" Open Repository of "Content and Digital Skills (CoDiS)" Lesson Plans (Padlet-Overview.) Accessible here

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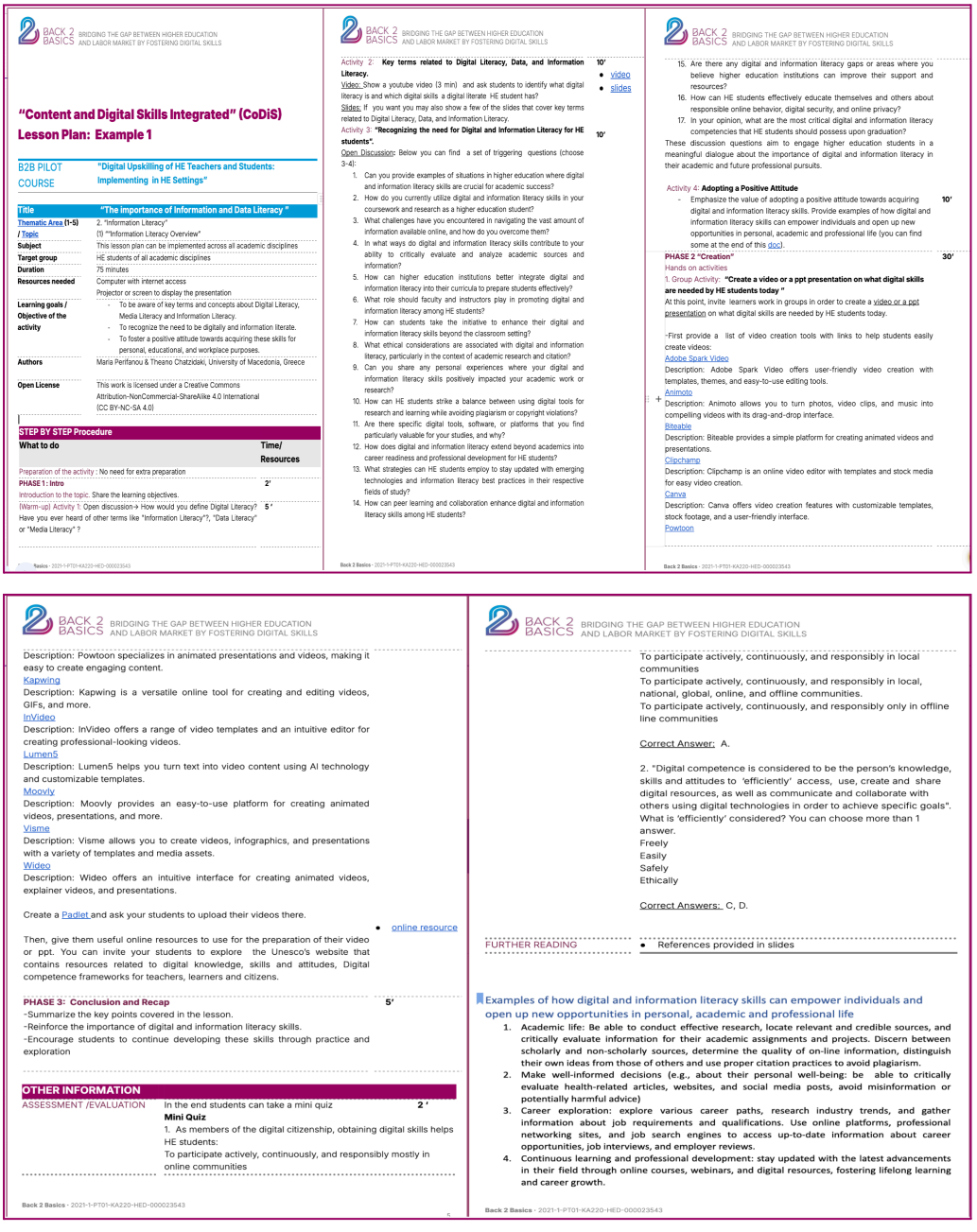

"Content and Digital Skills Integrated" (CoDiS)
Lesson Plan: Example 1

B2B PILOT COURSE	**"Digital Upskilling of HE Teachers and Students: Implementing in HE Settings"**
Title	**"The importance of Information and Data Literacy "**
Thematic Area (1-5) / Topic	2. "Information Literacy" (1) ""Information Literacy Overview"
Subject	This lesson plan can be implemented across all academic disciplines
Target group	HE students of all academic disciplines
Duration	75 minutes
Resources needed	Computer with internet access Projector or screen to display the presentation
Learning goals / Objective of the activity	- To be aware of key terms and concepts about Digital Literacy, Media Literacy and Information Literacy. - To recognize the need to be digitally and information literate. - To foster a positive attitude towards acquiring these skills for personal, educational, and workplace purposes.
Authors	Maria Perifanou & Theano Chatzidaki, University of Macedonia, Greece
Open License	This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0)

STEP BY STEP Procedure

What to do	Time/ Resources
Preparation of the activity : No need for extra preparation	
PHASE 1 : Intro	**2'**
Introduction to the topic. Share the learning objectives.	
(Warm-up) Activity 1: Open discussion→ How would you define Digital Literacy? Have you ever heard of other terms like "Information Literacy"?, "Data Literacy" or "Media Literacy" ?	**5'**

Activity 2: **Key terms related to Digital Literacy, Data, and Information Literacy.** **10'**
Video: Show a youtube video (3 min) and ask students to identify what digital literacy is and which digital skills a digital literate HE student has?
Slides: If you want you may also show a few of the slides that cover key terms related to Digital Literacy, Data, and Information Literacy.
- video
- slides

Activity 3: **"Recognizing the need for Digital and Information Literacy for HE students".** **10'**
Open Discussion: Below you can find a set of triggering questions (choose 3-4):

1. Can you provide examples of situations in higher education where digital and information literacy skills are crucial for academic success?
2. How do you currently utilize digital and information literacy skills in your coursework and research as a higher education student?
3. What challenges have you encountered in navigating the vast amount of information available online, and how do you overcome them?
4. In what ways do digital and information literacy skills contribute to your ability to critically evaluate and analyze academic sources and information?
5. How can higher education institutions better integrate digital and information literacy into their curricula to prepare students effectively?
6. What role should faculty and instructors play in promoting digital and information literacy among HE students?
7. How can students take the initiative to enhance their digital and information literacy skills beyond the classroom setting?
8. What ethical considerations are associated with digital and information literacy, particularly in the context of academic research and citation?
9. Can you share any personal experiences where your digital and information literacy skills positively impacted your academic work or research?
10. How can HE students strike a balance between using digital tools for research and learning while avoiding plagiarism or copyright violations?
11. Are there specific digital tools, software, or platforms that you find particularly valuable for your studies, and why?
12. How does digital and information literacy extend beyond academics into career readiness and professional development for HE students?
13. What strategies can HE students employ to stay updated with emerging technologies and information literacy best practices in their respective fields of study?
14. How can peer learning and collaboration enhance digital and information literacy skills among HE students?
15. Are there any digital and information literacy gaps or areas where you believe higher education institutions can improve their support and resources?
16. How can HE students effectively educate themselves and others about responsible online behavior, digital security, and online privacy?
17. In your opinion, what are the most critical digital and information literacy competencies that HE students should possess upon graduation?

These discussion questions aim to engage higher education students in a meaningful dialogue about the importance of digital and information literacy in their academic and future professional pursuits.

Activity 4: **Adopting a Positive Attitude**
- Emphasize the value of adopting a positive attitude towards acquiring digital and information literacy skills. Provide examples of how digital and information literacy skills can empower individuals and open up new opportunities in personal, academic and professional life (you can find some at the end of this doc). **10'**

PHASE 2 "Creation" **30'**
Hands on activities
1. Group Activity: **"Create a video or a ppt presentation on what digital skills are needed by HE students today "**
At this point, invite learners work in groups in order to create a video or a ppt presentation on what digital skills are needed by HE students today.

-First provide a list of video creation tools with links to help students easily create videos:
Adobe Spark Video
Description: Adobe Spark Video offers user-friendly video creation with templates, themes, and easy-to-use editing tools.
Animoto
Description: Animoto allows you to turn photos, video clips, and music into compelling videos with its drag-and-drop interface.
Biteable
Description: Biteable provides a simple platform for creating animated videos and presentations.
Clipchamp
Description: Clipchamp is an online video editor with templates and stock media for easy video creation.
Canva
Description: Canva offers video creation features with customizable templates, stock footage, and a user-friendly interface.
Powtoon
Description: Powtoon specializes in animated presentations and videos, making it easy to create engaging content.
Kapwing
Description: Kapwing is a versatile online tool for creating and editing videos, GIFs, and more.
InVideo
Description: InVideo offers a range of video templates and an intuitive editor for creating professional-looking videos.
Lumen5
Description: Lumen5 helps you turn text into video content using AI technology and customizable templates.
Moovly
Description: Moovly provides an easy-to-use platform for creating animated videos, presentations, and more.
Visme
Description: Visme allows you to create videos, infographics, and presentations with a variety of templates and media assets.
Wideo
Description: Wideo offers an intuitive interface for creating animated videos, explainer videos, and presentations.

Create a Padlet and ask your students to upload their videos there.
- online resource

Then, give them useful online resources to use for the preparation of their video or ppt. You can invite your students to explore the Unesco's website that contains resources related to digital knowledge, skills and attitudes, Digital competence frameworks for teachers, learners and citizens.

PHASE 3: Conclusion and Recap **5'**
-Summarize the key points covered in the lesson.
-Reinforce the importance of digital and information literacy skills.
-Encourage students to continue developing these skills through practice and exploration

OTHER INFORMATION

ASSESSMENT /EVALUATION	In the end students can take a mini quiz **Mini Quiz** 1. As members of the digital citizenship, obtaining digital skills helps HE students: To participate actively, continuously, and responsibly mostly in online communities To participate actively, continuously, and responsibly in local communities To participate actively, continuously, and responsibly in local, national, global, online, and offline communities. To participate actively, continuously, and responsibly only in offline line communities Correct Answer: A. 2. "Digital competence is considered to be the person's knowledge, skills and attitudes to 'efficiently' access, use, create and share digital resources, as well as communicate and collaborate with others using digital technologies in order to achieve specific goals". What is 'efficiently' considered? You can choose more than 1 answer. Freely Easily Safely Ethically Correct Answers: C, D.	**2 '**
FURTHER READING	• References provided in slides	

Examples of how digital and information literacy skills can empower individuals and open up new opportunities in personal, academic and professional life

1. **Academic life: Be able to conduct effective research, locate relevant and credible sources, and critically evaluate information for their academic assignments and projects. Discern between scholarly and non-scholarly sources, determine the quality of on-line information, distinguish their own ideas from those of others and use proper citation practices to avoid plagiarism.**
2. **Make well-informed decisions (e.g., about their personal well-being: be able to critically evaluate health-related articles, websites, and social media posts, avoid misinformation or potentially harmful advice)**
3. **Career exploration: explore various career paths, research industry trends, and gather information about job requirements and qualifications. Use online platforms, professional networking sites, and job search engines to access up-to-date information about career opportunities, job interviews, and employer reviews.**
4. **Continuous learning and professional development: stay updated with the latest advancements in their field through online courses, webinars, and digital resources, fostering lifelong learning and career growth.**

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Fig.25. Example of "Content and Digital Skills (CoDiS)" Lesson Plan: "The importance of Information and Data Literacy"(Check Appendix 2 for more examples).

3.3 Challenges faced before and during the implementation of the "Back2Basics" pilots

Actively engaging and guiding both HE teachers and their students in the pilot projects (Fig.26) in both countries presented several challenges. Numerous questions by teachers required careful consideration and resolution and were answered mostly before the pilots and during the preparation of their "CoDis Lesson Plans". These included:

- How could we effectively integrate digital skills into existing curricula without overwhelming students or faculty?
- What specific digital tools and resources would be most beneficial for the chosen courses?
- How could we ensure that all participants, regardless of their prior digital experience, felt supported and included?
- How could we address potential technical difficulties or challenges that may arise during the implementation process?
- How could we address issues related to students' digital literacy, access to technology, or technical support?
- How can we best design activities that integrate content and digital skills development?
- What pedagogical approaches are more recommended?

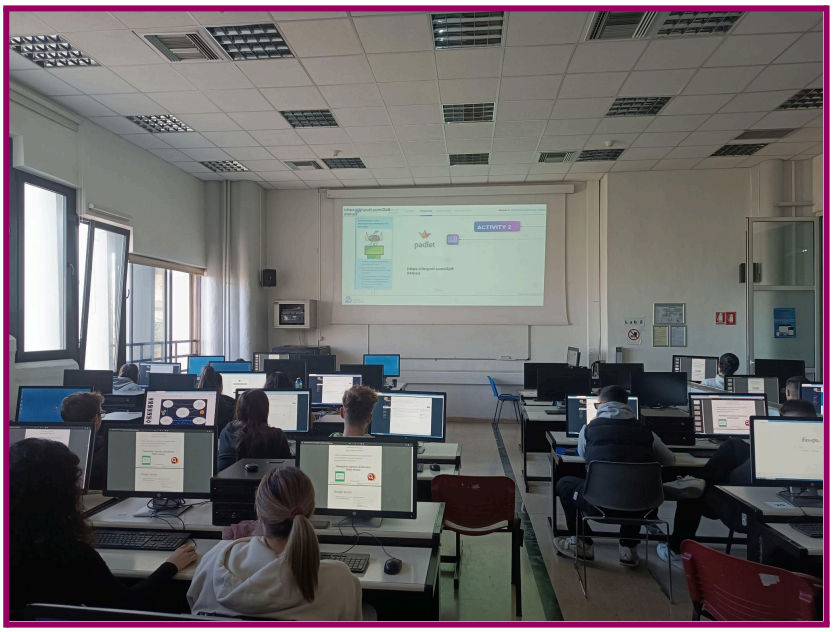


Fig.26. "Back2Basics" pilots at the University of Macedonia in Greece

Addressing these questions required a collaborative and adaptable approach, involving frequent communication, ongoing evaluation, and a willingness to adjust strategies as needed. Overall, in addition to the "ECCE Teachers Training Model", which was described in a previous section, several strategies for engaging both faculty and students included:

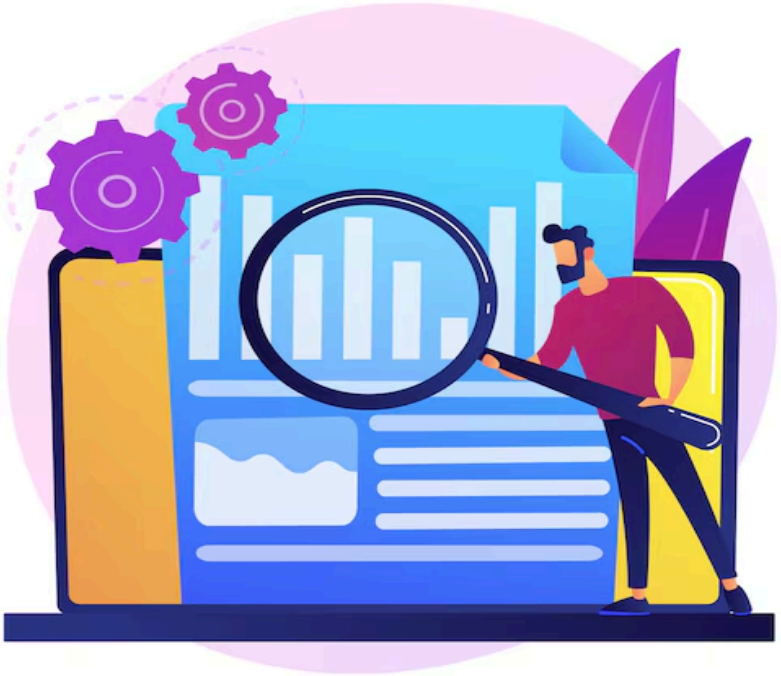
- *Organising regular Check-ins:* Scheduled periodic meetings were organised by the research team to discuss progress, challenges, and successes in pilot projects.
- *Promoting the Community of Practice (Google Classroom):* Teachers were invited to build a supportive community in *Google Classroom* to share experiences and strategies.
- *Promote the use of "Back2Basics" Training materials:* The research team promoted the use of "Back2Basics" training resources to enhance teachers' and students' confidence and competence in using digital tools
- *Integrating Digital Skills Without Overwhelming:* Teachers were guided to integrate into their "CoDis Lesson Plans" small, manageable digital skill components that could align with the existing curriculum goals of their courses.

Complexity could gradually increase in the future as both students and faculty become more comfortable with their competences.

- *Designing Integrated Activities and Promoting* Interdisciplinary Approaches*:* Teachers were encouraged to design activities for their "CoDiS Lesson Plans" that integrate both content knowledge and digital skills while fostering real-world applications. Additionally, they were prompted to combine subjects (e.g., science and technology) to create more enriched, cross-disciplinary learning experiences.
- *Recommended Pedagogical Approaches:* Following the "ECCE training model" teachers were encouraged to implement various Active Learning strategies and pedagogical approaches (e.g., Collaborative Learning, Problem-Based Learning - PBL, Socratic Method) to create dynamic, student-centered learning environments. These methods engage students in meaningful, interactive experiences that foster the development of critical thinking, problem-solving, and teamwork skills.

This flexible and ongoing approach ensured that both teachers and students remained engaged throughout the pilot projects.

4. Results and Findings



4.1 Evaluation of the "Back2Basics" pilot programme's effectiveness in bridging the gap between academic learning and labor market needs

4.1.1 Evaluation Tools and Process

A variety of tools and metrics were used to evaluate the "Back2Basics"' pilot programme's effectiveness in bridging the gap

between academic learning and labor market needs. Below are described briefly.

1. Students and Teachers' Surveys: Pre- and post-questionnaires were distributed to teachers and students who participated in the pilots in Greece and Portugal to assess the effectiveness of the digital tools, teaching methods, and learning outcomes. Concerning teachers' pre and post-questionnaires, the main aim was to evaluate the impact of the "Back2Basics" pilot programme on teachers' practices and perceptions. Specifically, the questionnaires sought to:

a) "Assess Digital Skills": Identify areas where teachers felt they needed to develop their digital skills to enhance their teaching effectiveness.
b) "Evaluate Traditional Lesson Plans' Transformation": Understand how teachers adapted their traditional lesson plans to "CoDiS Lesson Plans" by incorporating new methodologies and tools introduced during the programme.
c) "Identify Challenges and Benefits": Gather insights on the challenges faced during implementation and the benefits experienced, particularly in terms of student engagement and learning outcomes.
d) "Gather Feedback on Didactic Approaches": Collect information on the didactic approaches used and how they influenced classroom dynamics and student participation.
e) "Measure Overall Success": Determine the overall success of the pilot programme by analyzing teachers' experiences and the perceived impact on their teaching and students' learning.

By addressing these aims, the questionnaires provided valuable data to inform future training and support for HE educators.

Concerning students' pre and post-questionnaires, the main aim was to evaluate the impact of the "Back2Basics" pilot programme on students' basic digital skills needed in the labor market nowadays. Specifically, the pre-questionnaire gathered data on students' demographics, their time spent using computers or mobile phones for learning, specific areas of interest for further training, and the specific digital skills they felt needed development. The post-questionnaire, administered after the pilot, provided insight into their appreciation of the digital tools used during the course, the most valuable aspects of the pilot, and the digital skills they developed or still needed to enhance. By comparing these findings, the report assesses the effectiveness of the pilot in addressing students' digital skill gaps and their overall experience with the course.

2. Sharing of "CoDiS Lesson Plans": Teachers gradually shared their "CoDis Lesson Plans" in the *Google Classroom* platform, fostering a collaborative environment where educators could learn from each others' experiences. All the lesson plans were also collected on a *Padlet* (Fig.23, 24) as presented in a previous section.

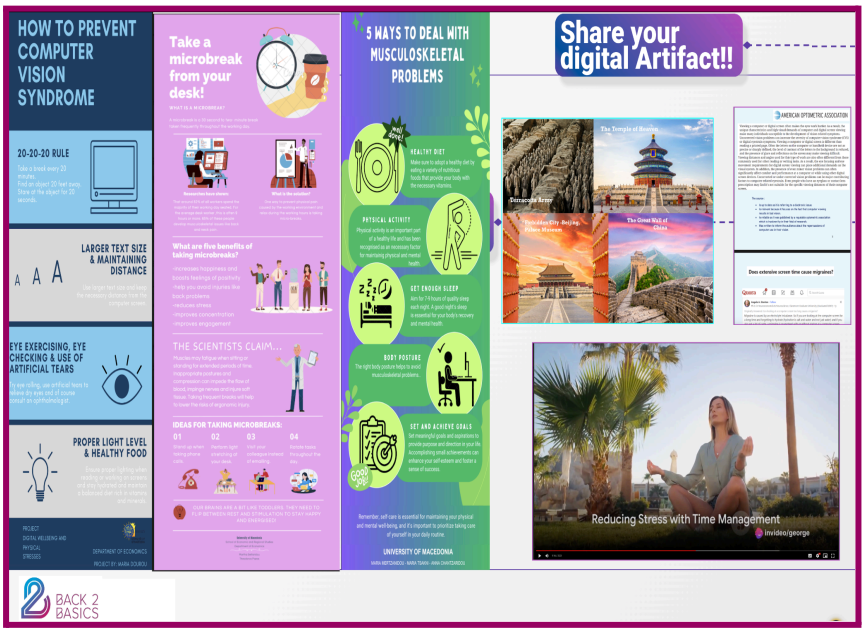
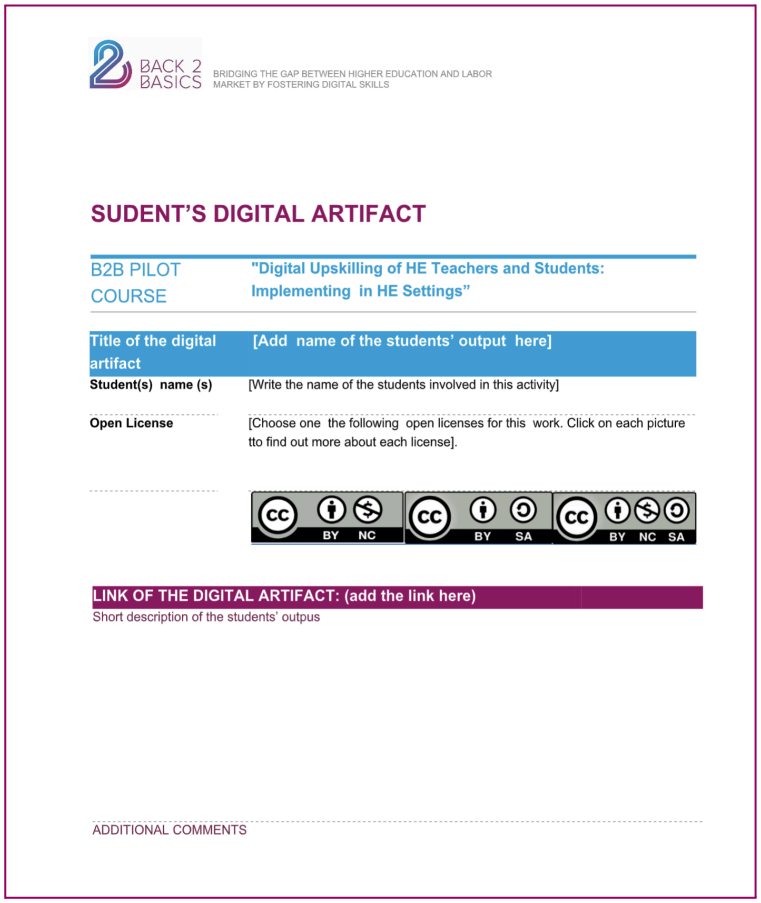


Fig.27. "Students Digital Artifacts" developed during the "Back2Basics" pilots.

3. Students' Digital Artifacts-SDAs : Teachers documented and shared exemplary digital artifacts created by students (Fig. 27), which served as evidence of the skills learned and the effectiveness of the pilots. In order to facilitate this process a specific template (Fig. 28) was provided by the UoM research team in the *Google Classroom*.


BACK 2 BASICS BRIDGING THE GAP BETWEEN HIGHER EDUCATION AND LABOR MARKET BY FOSTERING DIGITAL SKILLS

SUDENT'S DIGITAL ARTIFACT

B2B PILOT COURSE	"Digital Upskilling of HE Teachers and Students: Implementing in HE Settings"
Title of the digital artifact	[Add name of the students' output here]
Student(s) name (s)	[Write the name of the students involved in this activity]
Open License	[Choose one the following open licenses for this work. Click on each picture tto find out more about each license].

LINK OF THE DIGITAL ARTIFACT: (add the link here)

Short description of the students' outpus

ADDITIONAL COMMENTS

Fig.28. Template for sharing "Students Digital Artifacts"

4.1.2 Evaluation of Results

The overall impact of the pilot was assessed by analyzing the pre- and post-questionnaires for HE teachers and students. This

evaluation helped determine how effectively the pilot met its goals of upskilling both teachers and students. Additionally, the quantity and quality of the "CoDiS Lesson Plans" and students' digital artifacts served also as key indicators of the pilot's success.

4.2 Assessing Impact: Pre and Post-Questionnaire Results from the "Back2Basics" Pilot

4.2.1 Results from the "Back2Basics" Pilot for HE Teachers: Pre-Questionnaire

The pre-questionnaire was initially administered to a cohort of ten (10) higher education teachers, comprising an equal representation of five teachers from Greece and five from Portugal. Due to some difficulties, in the end, only 8 teachers participated in the pilots: 5 Greek (University of Macedonia) & 3 Portuguese (University of Aveiro) (Fig.29).

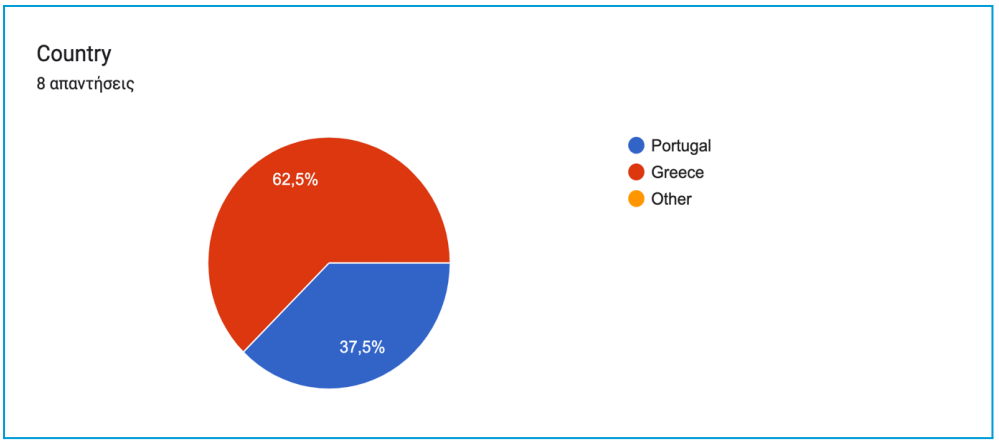


Fig.29. Number of HE teachers who participated in the "Back2Basics" pilots.

More concretely, the participating teachers are from the following universities and departments: a) University of Macedonia (UoM): Department of Economics, Department of International and European Relations, Department of Business Administration, and

Department of Applied Informatics. b) University of Aveiro (UoA): Department of Biology, Department of Social, Political, and Territorial Sciences, and Department of Communication and Art.

The teachers planned to implement their "CoDiS Lesson Plans" in the following courses: a) University of Macedonia: *English for Academic Purposes, English III: Business English, Information Systems in Economics and Business, and Introduction to E-Commerce. b)* University of Aveiro: *Mamíferos de Portugal, Sustainable Development Planning, and Digital Accessibility and Compliance.*

Teaching Experience

A significant portion of the participants had extensive teaching experience, with over half reporting more than 20 years in the field (Fig.30).

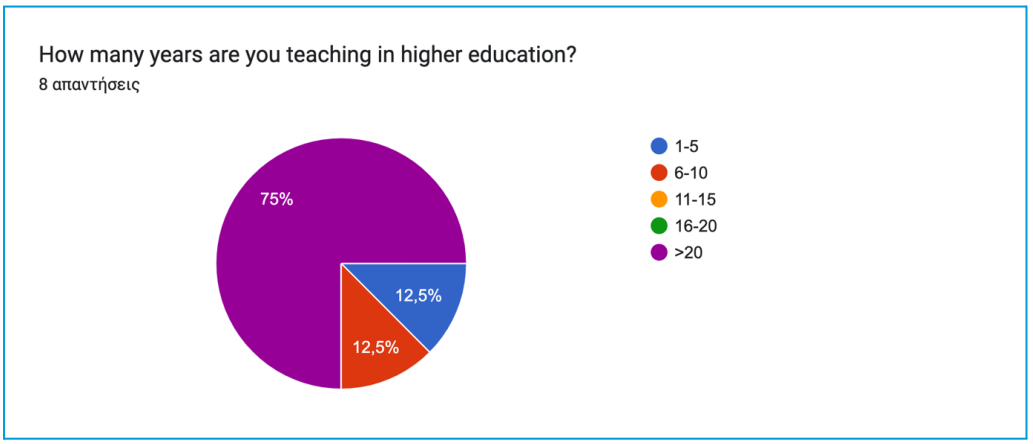


Fig.30. Teaching experience of HE teachers in the "Back2Basics" pilots

Self-Assessment of Digital Skills

Nearly all teachers agreed or strongly agreed that they possess skills in "Online Security," "Information Literacy," and "Online Communication and Netiquette." However, some teachers acknowledged a lack of proficiency in "Online Content Creation" and "Protecting Health and Wellbeing."

Additionally, most teachers found "Information Literacy" to be the most interesting area for them (Fig.31).

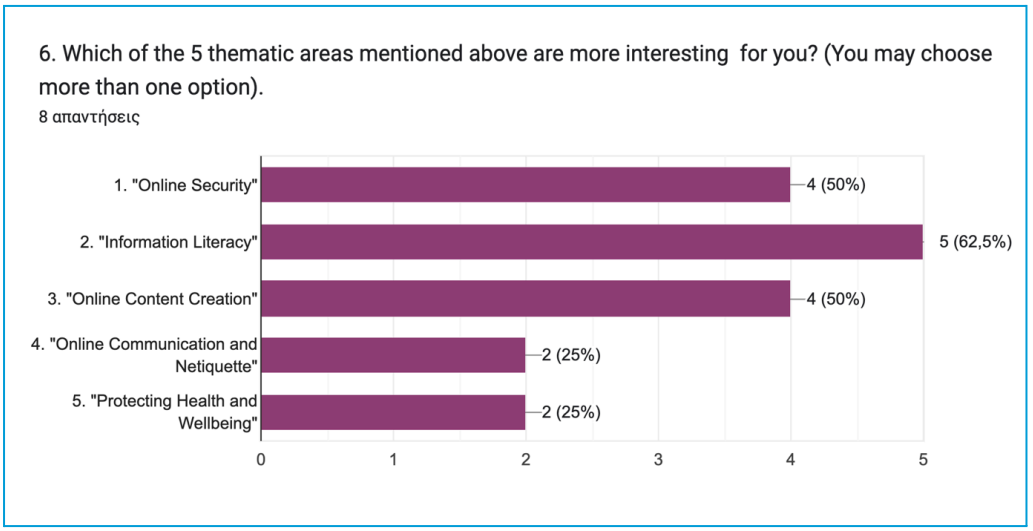


Fig.31. The most interesting digital skills thematic areas for HE teachers in the '"Back2Basics"' pilots.

The results of the content analysis indicated that most teachers feel they need to further develop their "Online Content Creation" and "Protecting Health and Wellbeing" skills. Conversely, the analysis showed that most teachers believe they do not need to further enhance their "Information Literacy" skills. Additionally, there is a growing interest in developing skills related to Artificial Intelligence.

4.2.2 Results from the "Back2Basics" Pilot for HE Teachers: Post-Questionnaire

The post-questionnaire analysis revealed that all demographic data remained consistent with the information collected in the pre-questionnaire. No significant changes were observed in participants' demographic profiles between the two surveys.

This conveys that the demographics did not change across the pre- and post-questionnaires.

Transformation of Lesson Plans into “CoDiS Lesson Plans”

Teachers had mixed opinions regarding the difficulty of transforming their traditional lesson plans into “CoDiS Lesson Plans”. Half of them reported that the process was moderately challenging, while the other half found it easy or moderately easy (Fig.32).

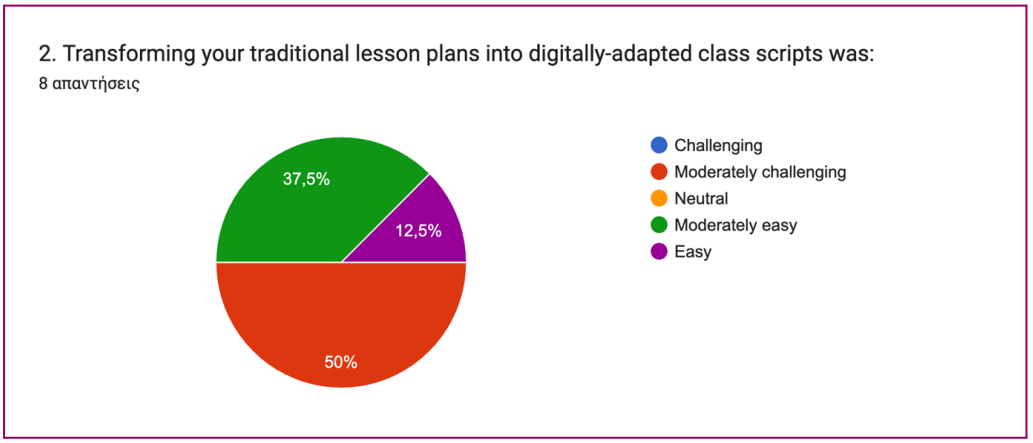


Fig.32. Level of difficulty for teachers in transforming traditional lesson plans into “CoDiS Lesson Plans” for the '"Back2Basics"' pilots.

Most reported spending approximately 2-3 hours preparing their digitally adapted lesson plans (Fig.33). The aspects they found easiest included identifying the main topic and outlining specific learning objectives of the lesson, both of which are foundational competences in teaching (Fig. 34).

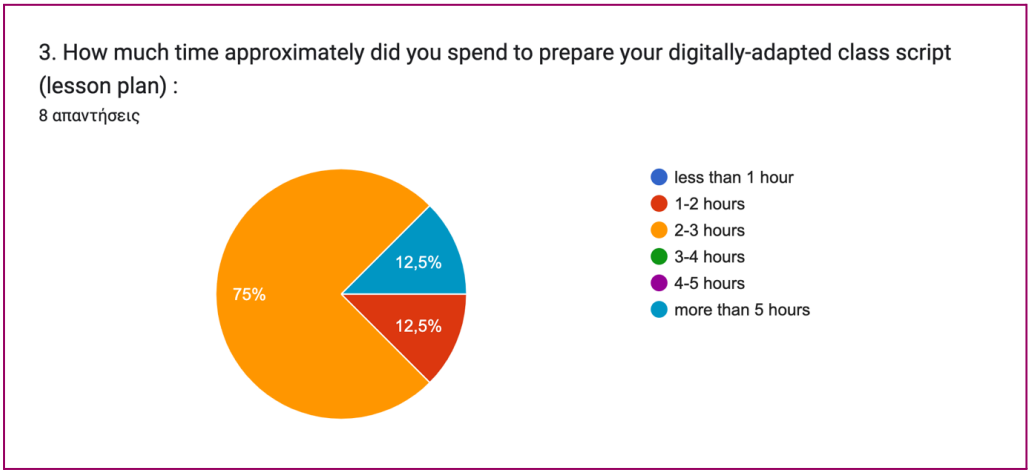


Fig.33. Time spent transforming traditional lesson plans into “CoDiS Lesson Plans” for the '"Back2Basics"' pilots.

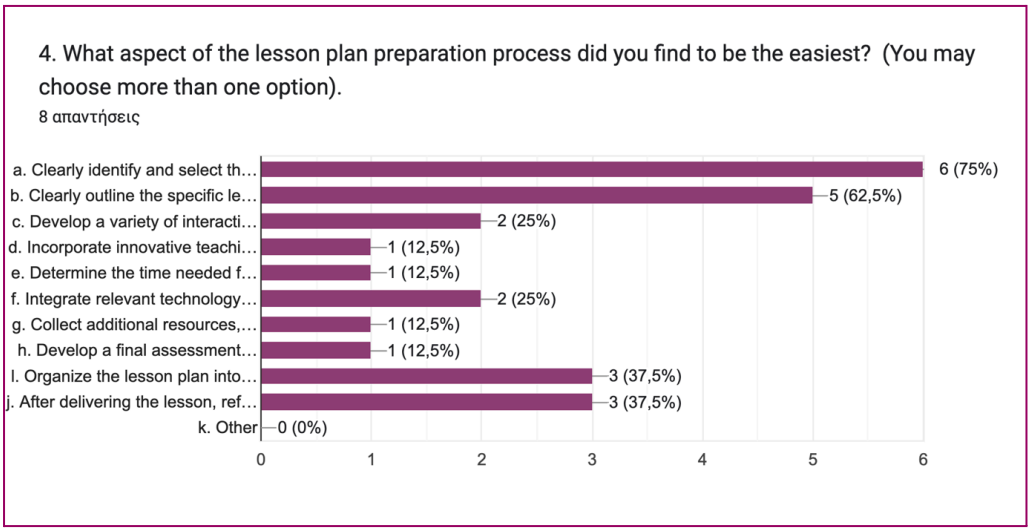


Fig.34. The easiest aspect of transforming traditional lesson plans into "CoDiS Lesson Plans" for the '"Back2Basics"' pilots.

However, the most significant challenge lies in developing a variety of interactive and engaging activities aligned with the learning objectives (Fig.35). This difficulty may be attributed to limited experience with digital tools and strategies necessary for fostering active online learning. Designing interactive digital activities requires a deeper understanding of ed-tech tools, creative instructional design, and familiarity with engaging digital resources, which many teachers may not have fully developed, making this a demanding and time-consuming part of lesson transformation.

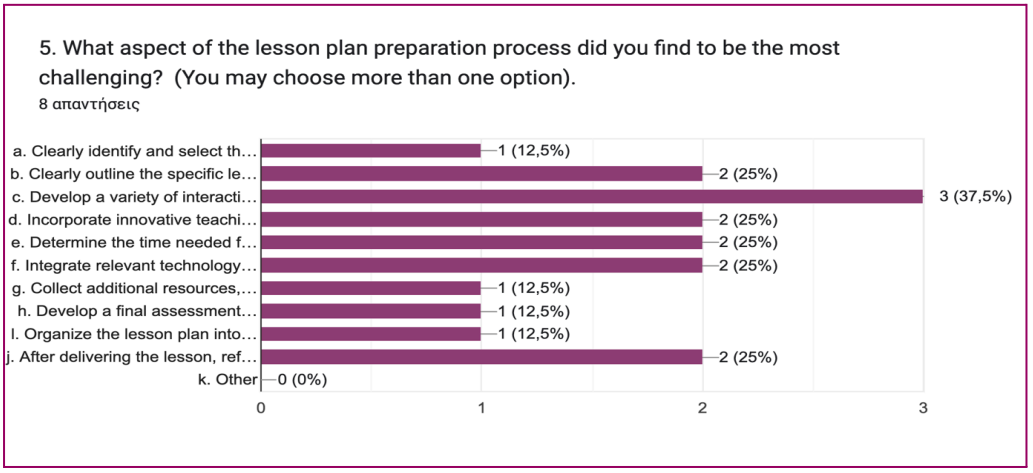


Fig.35. The most challenging aspect of transforming traditional lesson plans into "CoDiS Lesson Plans" for the '"Back2Basics"' pilots.

Implementation of Project-Based Learning

A majority of teachers employed project-based learning (PBL) in their lesson plans, which is known to enhance several critical skills among students. Project-based learning (PBL) significantly enhances student engagement and motivation by involving them in real-world problem-solving and collaborative projects. This approach fosters critical thinking, problem-solving, and communication skills while promoting self-regulated learning and independence. PBL also leads to a deeper understanding of content, as students connect theoretical knowledge with practical applications. Additionally, it encourages intrinsic motivation by allowing students to pursue their interests, and it supports equity and inclusion by providing all students with opportunities to succeed. Overall, PBL prepares students for future academic and career success by making learning relevant, meaningful, and enjoyable [12].

Tools and Technologies used

To enhance the learning experience, teachers integrated various innovative tools and technologies into their teaching, including *interactive whiteboards, ChatGPT, MS Teams, Google Docs/Forms, Google Slides, Google Meet, Zoom, MS PowerPoint, Learning Management Systems (LMS), Canva*, online videos, interactive databases, and digital calculators.

Challenges Encountered

Several challenges were noted by teachers during the implementation phase, although not all teachers experienced these issues:

1) *Low Attendance and Participation:* Many students work in parallel to their studies making it hard to balance their

commitments, leading to reduced attendance and active participation (mentioned by one teacher only);

2) *Diverse Ability Levels:* Variations in students' academic backgrounds and prior knowledge complicated lesson delivery as it's challenging to design content that suits all learners' needs;
3) *Low Digital Literacy:* Some students' limited digital literacy hindered their ability to engage fully with digital tools and activities.

Students' Engagement

Teachers observed high levels of student engagement in their classes. The majority of teachers felt that their students were engaged well or very well, showing strong interest in the activities. While a small group of teachers indicated some challenges in maintaining attention and participation, the overall feedback highlights a predominantly positive engagement among students. (Fig.36).

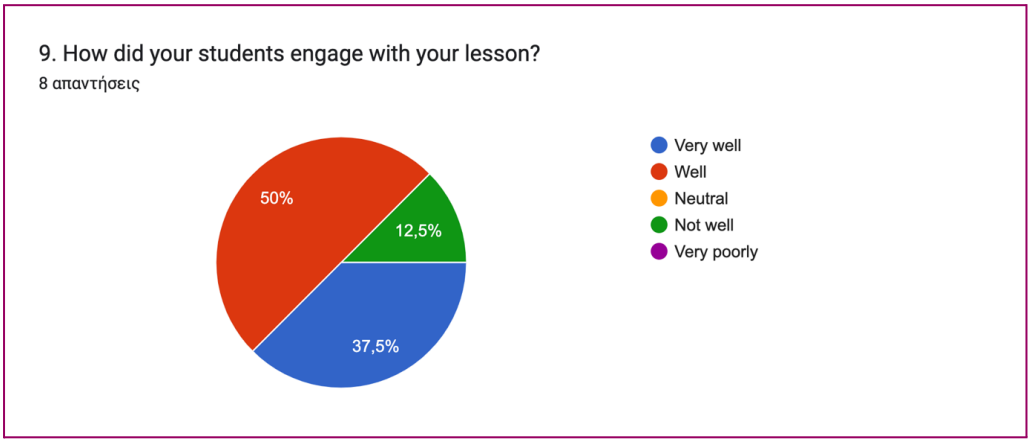


Fig.36. Students' engagement in the '"Back2Basics"' pilots.

Student Reception and Skill Development

Most teachers believed that students appreciated the use of technology as well as the lesson topics and content, suggesting an enhancement in students' work-valuable digital skills throughout the course (Fig.37).

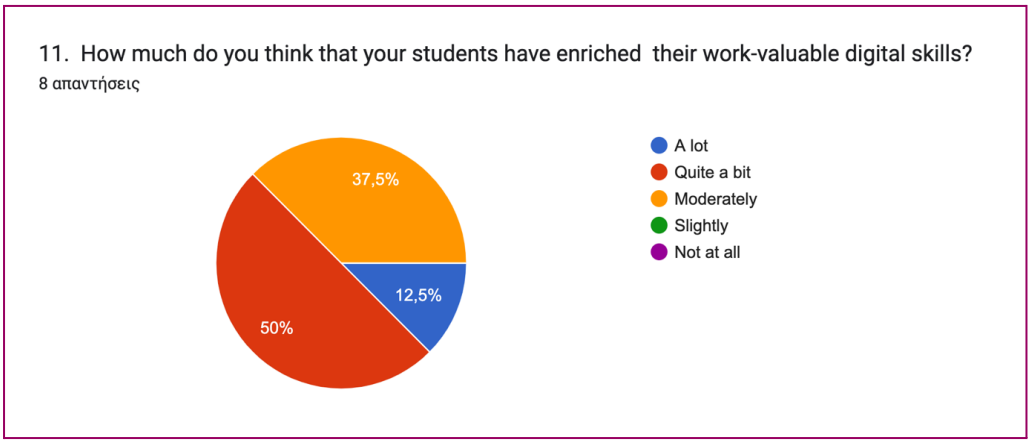


Fig.37.Teachers' Views on Students' Work-Valuable Digital Skills Development

Self-Assessment of Digital Skills

All teachers agreed or strongly agreed regarding their competencies in "Online Security," "Information Literacy," and "Online Communication and Netiquette," with slight improvements noted since the pre-questionnaire. However, some teachers still felt they lacked skills in "Online Content Creation" and "Protecting Health and Wellbeing." This discrepancy in confidence levels may result from foundational digital skills being more frequently addressed in professional training compared to the advanced skills of content creation and digital well-being.

The usefulness of the Pilot Course

All teachers affirmed the usefulness of the pilot course and reported increased confidence, particularly regarding the "Information Literacy" and the "Protecting Health and Wellbeing" topics (Fig.38).

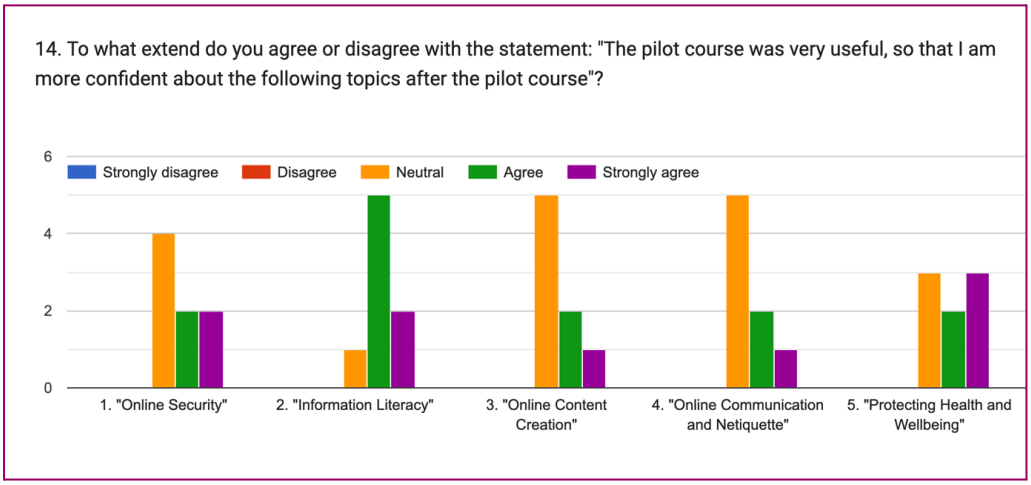


Fig.38. Teachers' confidence in developing specific digital skills during the "Back2Basics" Pilots.

Regarding the specific skills that teachers feel they need to develop further after the "Back2Basics" pilot course, there were varied responses. Two teachers identified a need for further development in "online content creation," while another two highlighted "online security" as an area for improvement. Additionally, one teacher mentioned "information literacy," and another pointed out "protecting health and wellbeing" as skills they wish to enhance.

Conversely, some teachers felt confident in certain areas and did not see a need for further development. Three teachers believed they did not require additional training in "information literacy," and another three felt the same about "online communication and netiquette." Additionally, one teacher felt confident in "protecting health and wellbeing," another in "online security," and another in "online content creation." It is noteworthy that, despite the general need for improvement in "online content creation," one teacher felt sufficiently skilled in this area and did not seek further training.

The findings suggest varying perceptions of skill proficiency and training needs among teachers. Despite many teachers lacking "online content creation" skills, some may not see additional training as necessary due to different reasons, such as a perceived lack of relevance to their teaching style, limited time to invest in new skills, or a belief that basic content creation suffices for their needs. Similarly, although some teachers feel a lack of "online security" and "protecting health and wellbeing" skills, they might not prioritize

further training because they think they can self-learn, view these areas as less critical to their teaching, or rely on institutional support for these needs. On the other hand, “information literacy” is viewed as a more established skill, leading many to believe they are already adequately trained, despite a few expressing a desire for further development. These findings reflect diverse individual priorities and the perceived importance of certain digital skills.

4.2.2 Number and quality of “CoDiS Lesson Plans”

During the "Back2Basics" pilot course, teachers produced 14 “CoDiS Lesson Plans” and implemented a total of 12 of them focused on developing work-related digital skills. The distribution of these lesson plans is as follows:

Information Literacy: Teachers created seven (7) and implemented six (6) digital lesson plans aimed at enhancing students’ information literacy skills. These plans focused on teaching students how to effectively locate, evaluate, and use information, which is essential for various professional tasks and informed decision-making in the workplace.
Online Content Creation: Three (3) digital lesson plans were dedicated to online content creation and two of them were implemented in the classrooms. The lesson plans were designed to equip students with the skills necessary to create and share digital content responsibly and creatively. They emphasize the importance of digital communication and content management in professional settings, while also ensuring students understand the accessibility norms and standards required to create accessible digital products.
Protecting Health and Wellbeing: Four (4) digital lesson plans were developed, and three were implemented in the classroom to address the topic of protecting health and wellbeing. These plans covered various aspects of digital health, including online safety, mental health awareness, and strategies for maintaining a healthy work-life balance in a digital environment.

By focusing on information literacy, online content creation, and health and wellbeing, the teachers aimed to prepare students for the digital demands of the modern workplace, ensuring they possess the necessary competencies to succeed in their professional lives.

4.2.3 Number and Quality of the Students' Digital Artifacts

All students who participated in the "Back2basics" pilot produced their digital artifacts. The number is over 300 and the variety is rich (e.g. presentations, infographics, video, etc.). From those 300 digital artifacts, 55 were selected by the teachers as the best ones. These are accessible: University of Macedonia here and University of Aveiro here.

4.2.4 Conclusions

The findings indicate a nuanced landscape of perceptions regarding digital skills among educators. Despite some teachers expressing a lack of "Online Content Creation" skills, not all felt the need for further training in this area. This variation in perceived training needs may stem from individual teaching styles, time constraints, or differing views on the relevance of advanced content creation skills. Additionally, while some teachers acknowledged gaps in "Online Security" and "Protecting Health and well-being," they may prioritize self-directed learning or institutional resources over formal training. The prevalent view of "Information Literacy" as a well-established skill suggests that many teachers feel sufficiently trained in this area, although a few remain open to further development.

These results align with the distribution of lesson plans, which indicate and confirm a strong emphasis on "Information literacy". The focus on protecting health and wellbeing also reflects a growing recognition of the importance of digital safety and mental health. However, the relatively lower number of lesson plans on online content creation and the absence of plans specifically addressing

online security highlight areas where further development and support may be needed.

These findings suggest that while teachers are making strides in integrating essential digital skills into their teaching, there are still gaps that need to be addressed through targeted professional development and curriculum enhancements. By aligning training needs with lesson plan development, educators can better prepare students for the digital demands of the modern workplace.

Overall, these findings reflect diverse individual priorities and the perceived importance of specific digital skills within the teaching context.

4.3 Results from the "Back2Basics" Pilot for HE Students

4.3.1 Results from the "Back2Basics" Pilot for HE Students: Pre-Questionnaire

Demographics

A total of 279 students participated in the pre-questionnaire for the "Back2Basics" (B2B) pilot courses. The demographic breakdown of the participants is as follows:

- *Gender Distribution:* The majority of the participants were female, comprising 53% of the total student population. Males accounted for 43%, while 3% identified as other genders.
- *Age Range:* An overwhelming majority of the students, 98%, were between the ages of 18 and 24.
- *Nationality:* The student population was predominantly Greek, with 88% of the participants identifying as Greek nationals. Portuguese students made up 10% of the cohort, and the remaining 2% were from other nationalities (Fig.39).

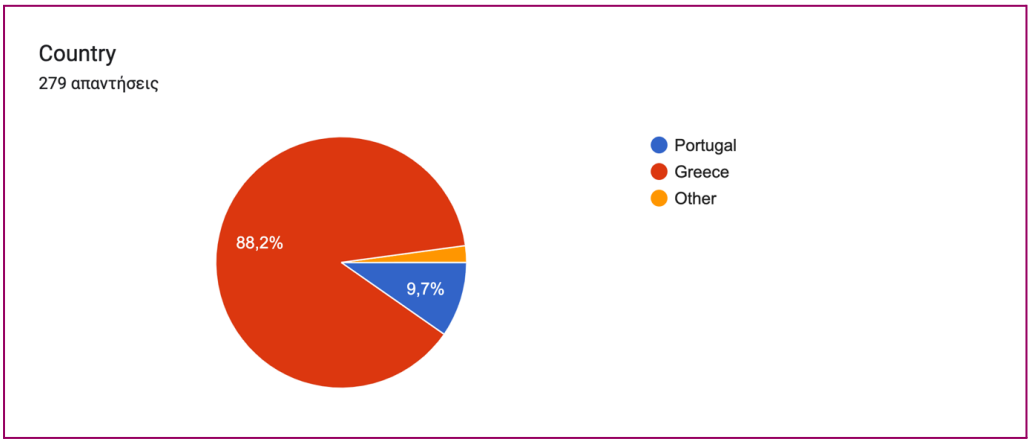


Fig.39. Teachers' confidence in developing specific digital skills during the "Back2Basics" Pilots.

These demographics provide a comprehensive overview of the student population engaged in the "Back2Basics" pilot courses, highlighting a diverse yet predominantly young and Greek cohort.

At the University of Macedonia (UoM), the majority of students were from the Economics department, comprising 76% of the student population. Other departments represented included International and European Relations, Business Administration, and Applied Informatics. At the University of Aveiro (UA), students come from a variety of departments, including Biology (8%), Social, Political, and Territorial Sciences, Languages and Cultures, Economics, Management, Industrial Engineering, and Tourism.

Additionally, at the University of Aveiro (UA), Social Sciences courses had 1% of the students, while Mammals, Biology courses attracted 9% of the students. Other courses included Management and Languages. At the University of Macedonia (UoM), English courses (English for Professional and Academic Purposes, English III: Business English) attracted 26% of the students. The most popular course was Information Systems in Economy and Business, with 51% of the students enrolled. Introduction to E-Commerce had 3% of the students.

Time spent using computers or mobile phones

Based on the survey data, the majority of respondents (34.1%) reported using their computers or mobile phones for learning purposes for 2-3 hours per day. A significant portion (29.7%) use devices for more than 6 hours daily, while 16.5% use them for less than an hour. Approximately 20% of respondents reported using devices for 1-2 hours or 3-4 hours daily (Fig.40).

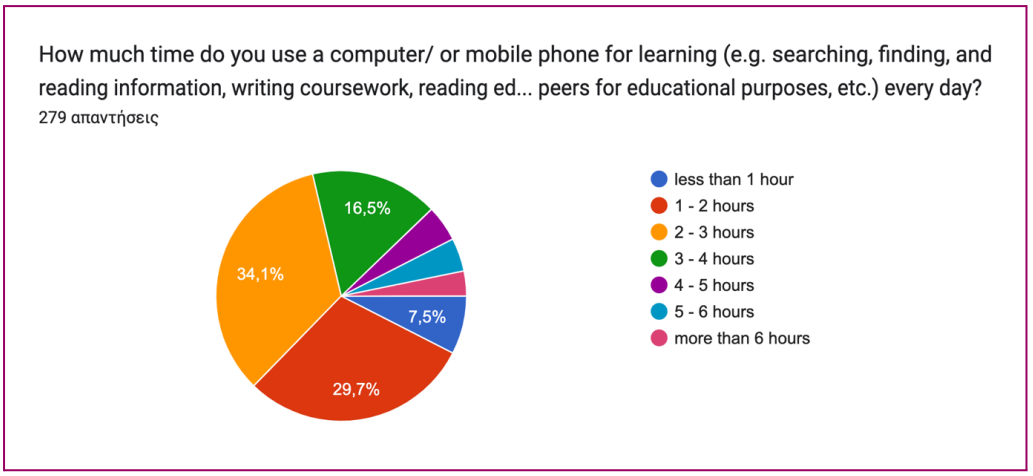


Fig.40. Teachers' confidence in developing specific digital skills during the "Back2Basics" Pilots.

These findings suggest that digital devices have become an integral part of the learning process for many HE students, with a significant number utilizing them for extended periods.

Self-Assessment of Digital Skills

The survey respondents overwhelmingly expressed confidence in their digital literacy skills. A large majority indicated proficiency in "online security", "information literacy", "online communication and netiquette", and "protecting health and wellbeing". However, a notable number of students acknowledged a perceived deficiency in "online content creation" skills.

Specifically, nearly all participants expressed confidence in their ability to: a) Recognize the risks associated with sharing personal information online; b) Critically evaluate and integrate information from diverse sources; c) Navigate, share, and explore digital content effectively; d) Respect others' privacy and avoid cyberbullying or harassment; e) Identify and address potential issues related to online addiction.

These findings suggest that the students are generally well-versed in the fundamental aspects of digital citizenship, but may require further development in areas related to content creation.Based on the survey responses, students expressed a particular interest in skills related to "Protecting Health and Wellbeing" (46%) and "Online Content Creation" (44%). These areas likely resonate with students' desire to navigate the digital world safely and creatively (Fig. 41).

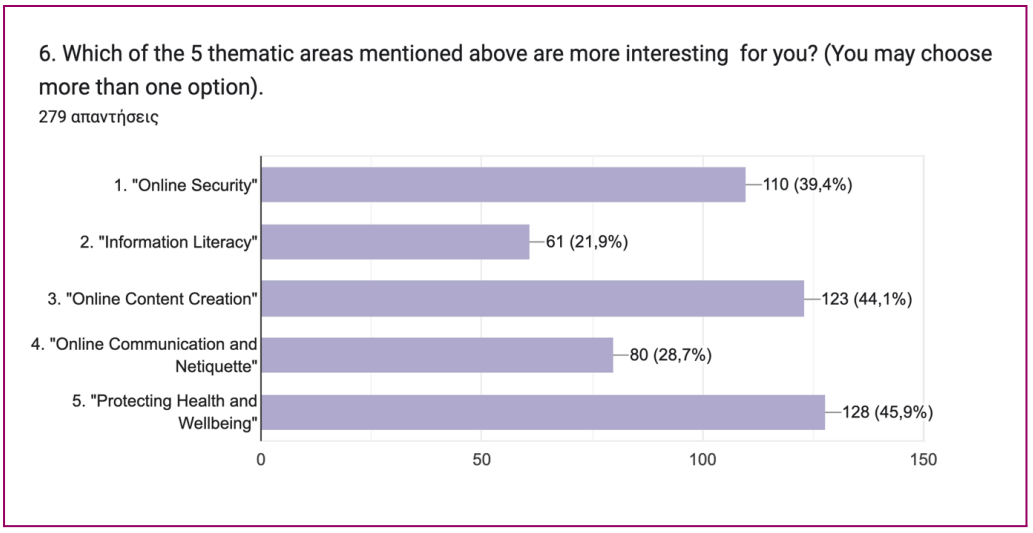


Fig.41. Teachers' most interesting digital skills thematic area

A content analysis of students' responses to an open-ended question revealed that "Online Content Creation" was the area most frequently identified as needing further development. While a significant number of students also expressed a desire to improve their skills in Online Security (fr=42), Information Literacy (fr=48),

and Online Communication and Netiquette (fr=40), the demand for enhanced content creation abilities was particularly pronounced (fr=80). These findings underscore the importance of incorporating opportunities for students to develop their digital creativity and production skills within educational programmes.

While students identified "Online Content Creation" as a key area for skill development, they expressed less concern about their proficiency in other digital literacy domains. Specifically, a majority of students felt that their skills in “Protecting Health and Well-being” (fr=65), “Online Communication and Netiquette” (fr=60), and “Online Security” (fr=59) were adequate. However, it's important to note that a smaller percentage of students did express a desire to enhance their skills in these areas, suggesting that while overall confidence is high, there is still room for improvement.

4.3.2 Results from the "Back2Basics" Pilot for HE Students: Post-Questionnaire

Demographics

A total of 136 students completed the post-questionnaire. The demographic breakdown of the participants was as follows:

- *Gender:* An equal number of female and male students participated (49% each).
- *Age:* The majority of HE students were between the ages of 18 and 25 (97%).
- *Nationality:* The HE students’ population (Fig.42) was predominantly Greek (92%), with a small percentage of other nationalities (8%).

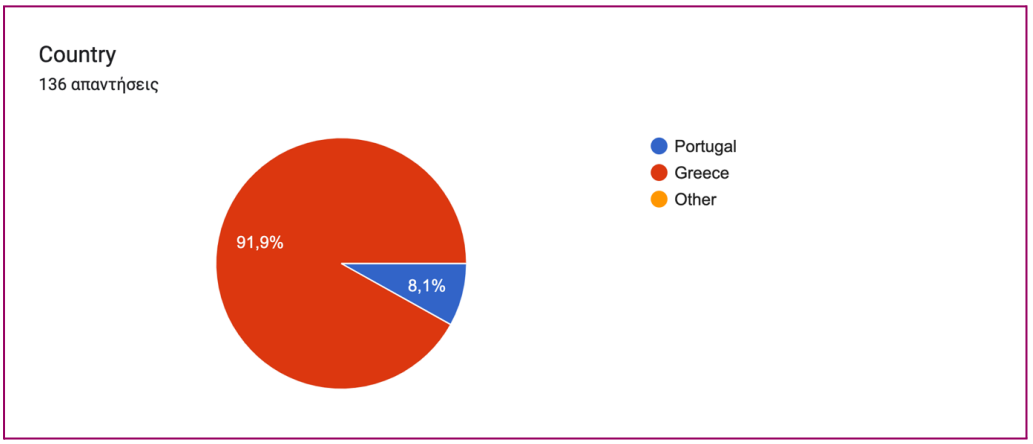


Fig.42. Students' most interesting digital skills thematic area

The participants were enrolled in various academic programmes at the University of Macedonia (UoM) and the University of Aveiro (UoA). At the UoM, the majority of students were studying Economics (74%), followed by Applied Informatics (16%). At the UoA, Biology and Social Sciences were the most represented fields of study (7% and 1%, respectively).

The courses included in the pilot programmes varied across the two universities. At the UoM, English language courses and Information Systems were the primary focus. At the UoA, a broader range of disciplines were represented, including Social Sciences, Biology, and Management.

Comparison of Pre- and Post-Questionnaire Demographics

The pre-and post-questionnaires revealed a slightly more balanced gender distribution among participants. While the initial survey showed a higher proportion of female students (53%), the post-questionnaire indicated an equal representation of female and male respondents (49% each).

The age range of participants remained relatively consistent between the two surveys, with the majority of students falling within

the 18-25 age group. This indicates that the pilot programme did not significantly attract or deter students from different age groups.

In terms of nationality, the post-questionnaire showed a slight decrease in the percentage of Greek students from 88% to 92%. This suggests a slightly more diverse student population in the post-pilot phase, with a small increase in the representation of international students.

Overall, the demographic characteristics of the participants remained largely consistent between the pre-and post-questionnaires. This stability suggests that the pilot programme did not significantly alter the composition of the student cohort.

"Back2Basics" Pilots

Students overwhelmingly expressed satisfaction with the ease of use of the digital tools employed in the course. Additionally, respondents praised the clarity and relevance of the learning objectives and course content, as well as the effective organization and planning of the curriculum. The course was widely perceived as engaging, useful, and successful in achieving its stated objectives. Furthermore, participants valued the opportunities for interaction, collaboration, and effective facilitation by the instructor. Finally, the clarity and utility of the course activities were consistently noted as positive aspects of the learning experience (Fig. 43-44).

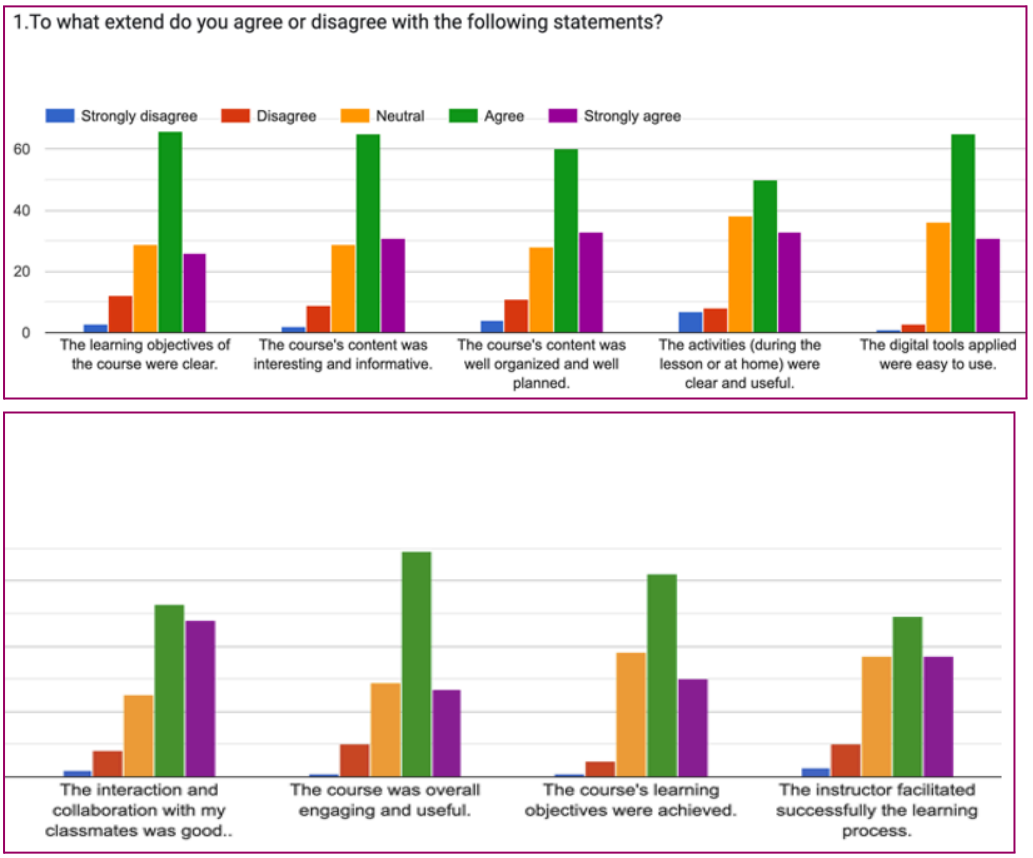


Fig.43-44. Students' views about "Back2Basics" pilot courses

Students consistently highlighted the class projects and associated digital tools as the pilot course's most valuable and beneficial components. To enhance the programme, participants suggested incorporating more detailed explanations for assignments and placing a greater emphasis on hands-on activities and tool utilization. These recommendations offer valuable insights for future iterations of the course, aiming to further optimize the learning experience.

A significant majority of students (Fig.45) expressed satisfaction with the usefulness of the pilot course and reported increased confidence in the topics covered. This indicates that the programme effectively addressed the learning objectives and provided students with the knowledge and skills they needed to succeed.

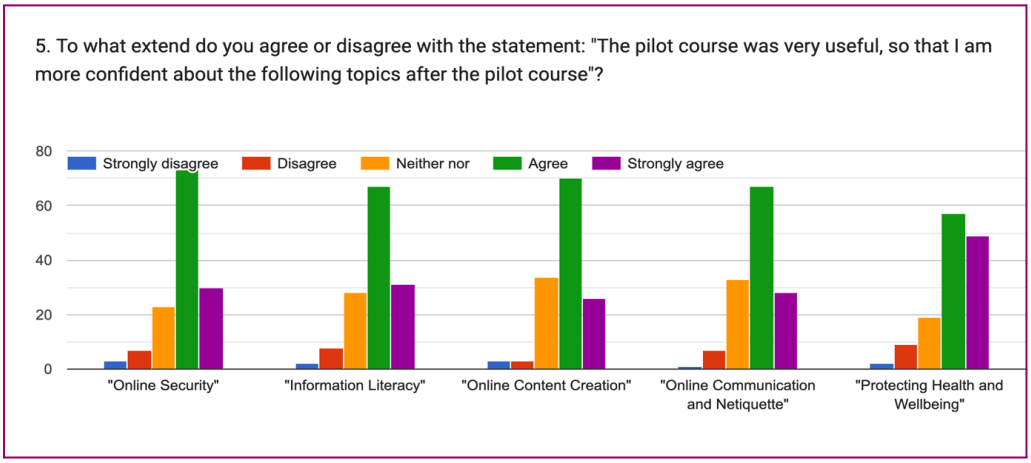


Fig.45. HE Students' views about the usefulness of the "Back2Basics" pilot courses

Self-Assessment of Digital Skills

Students reported significant improvements in their overall digital skills, particularly in the area of "Online Content Creation," which they had previously identified as a weakness. This suggests that the pilot programme effectively addressed the identified skills gap and provided students with the necessary tools and training to enhance their digital capabilities.

HE students' digital skills development

Following the "Back2Basics" pilot course, students identified several areas where they would like to further develop their digital skills. "Online Content Creation" was the most frequently cited area, with five students expressing a desire for additional training. Other areas of interest included "Protecting Health and Wellbeing" and "Online Communication and Netiquette," each with five students seeking further development. In contrast, a smaller number of students expressed a need for additional training in "Online Security" (three students) and "Information Literacy" (one student).

It's noteworthy that six students felt they did not require further development in "Protecting Health and Wellbeing," while one student expressed satisfaction with their "Information Literacy" skills, and two students felt confident in their "Online Communication and Netiquette" abilities. These findings highlight the varying levels of perceived proficiency among students and the need for targeted skill development initiatives.

4.3.3 Number and quality of Students' Digital Artifacts

A diverse range of digital artifacts of very good quality were created during the "Back2Basics" pilot courses, including infographics, questionnaires, videos, PowerPoint presentations, and more. While the initial goal was to collect 25 of the most outstanding "Students' Digital Artifacts" (five per teacher), the final count exceeded expectations, reaching a total of 55 artifacts (39 from the University of Macedonia and 16 from the University of Aveiro). All of the digital artifacts were shared under open Creative Commons licenses on the online educational environment *Google Classroom*, making them freely available as Open Educational Resources (OERs).

Comparing Pre- and Post-Questionnaire Results and Digital Artifact Creation: Conclusions

Analysis of the pre-and post-questionnaires, coupled with an examination of the digital artifacts produced during the "Back2Basics" pilot courses, provides valuable insights into the effectiveness of the program in enhancing students' digital skills.

Key Findings and Comparisons:

Persistent Demand for Online Content Creation Skills: Both the pre- and post-questionnaires highlighted a strong desire among students to develop their "Online Content Creation" skills. This consistency

underscores the importance of incorporating opportunities for digital content creation into educational programmes.

Increased Confidence in Other Digital Skills: While "Online Content Creation" remained a primary focus, the post-questionnaire revealed that students felt more confident in their abilities in areas such as "Protecting Health and Wellbeing" and "Online Communication and Netiquette." This suggests that the pilot programme effectively addressed these skill areas.

Quality and Quantity of Digital Artifacts: The creation of a diverse range of high-quality digital artifacts, including infographics, videos, and presentations, demonstrates the students' ability to apply their digital skills in practical contexts. The fact that the final count of artifacts exceeded expectations indicates the programme's success in fostering creativity and engagement.

Open Educational Resource (OER) Creation: The sharing of all digital artifacts under open licenses aligns with the programme's goal of promoting knowledge sharing and accessibility. This initiative contributes to the broader landscape of OERs and provides valuable resources for educators and learners worldwide.

5. Conclusions and Recommendations

5.1 Main Conclusions

5.1.1 Summary of key outcomes from the PR5 pilot programme:

The "Back2Basics" pilot programme successfully achieved its primary objectives, demonstrating a positive impact on students' digital skills development and the integration of innovative teaching practices.

Key findings align with the initial aims as follows:

Building HE students' basic digital skills: The programme effectively addressed students' perceived gaps in digital skills, particularly in areas such as online content creation.
Implementing innovative teaching techniques: The use of digital tools and project-based learning approaches aligned with the programme's aim to introduce innovative teaching methods such as Project-based learning (PBL).
Bridging the theory-practice gap: HE Teachers were able to apply their newfound knowledge and skills in real-world classroom settings.
Evaluating students' reactions: The pre- and post-questionnaires provided valuable insights into students' perceptions of the programme, their development of digital skills, and their experiences with digital-enhanced classes.
Transforming traditional lesson plans: HE Teachers successfully incorporated digital elements into their lesson plans, creating more engaging and interactive learning experiences.

Overall, the "Back2Basics" pilot programme has demonstrated its effectiveness in equipping students with the digital skills demanded by the labor market and promoting innovative teaching practices within higher education.

5.1.2 Final thoughts on the long-term impact of the "Back2Basics" project:

The "Back2Basics" project has significant potential to shape the future of higher education by fostering a culture of digital literacy and innovative teaching practices. Besides the very useful material that was developed in the context of the "Back2Basics" project, the "ECCE Teachers' Training Model" [11] developed in this research offers a promising framework for equipping HE teachers with the necessary skills and knowledge to guide their students in

developing the digital competencies required for success in the 21st century.

Key potential long-term impacts of the project include:

1. *Widespread adoption of the "ECCE Teachers' Training Model"*: The model's effectiveness and user-friendliness could lead to its adoption by universities and teacher training institutions worldwide.
2. *Improved digital literacy among HE students:* By training HE teachers to integrate digital skills into their courses, the project can contribute to a significant improvement in students' digital literacy levels valuable for the job market.
3. *Enhanced teaching practices:* The "ECCE Teachers' Training Model" can inspire HE educators to adopt more engaging and effective pedagogical approaches.
4. *Positive impact on student learning outcomes:* By equipping students with the digital skills they need to succeed in their future careers, the project can lead to improved student performance and outcomes.
5. *Creation of Open Community of Practice (CoPs):* The establishment of an Open Community of Practice (CoP) for higher education (HE) teachers can be facilitated by the collaborative sharing of digital lesson plans under open licenses. This initiative not only contributes to the growth and development of Open Educational Resources (OERs) but also promotes the sharing of Open Educational Practices (OEPs). By creating a space for educators to connect, exchange ideas, and share their experiences, a CoP can foster a supportive and collaborative learning environment that drives innovation and improvement in teaching practices.

5.2 Recommendations

Recommendations for HE teachers

In today's digital age, educators are tasked with preparing students for a future that is increasingly shaped by technology. The "Back2Basics" pilot program has made significant strides in equipping HE students with essential digital skills needed to thrive in the ever-evolving job market. To further enhance their teaching methods and ensure the sustainability of these skills, teachers must adopt innovative strategies that foster a dynamic and engaging learning environment. More concretely HE teachers can:

- Stay updated on the latest digital tools and technologies.
- Integrate digital skills seamlessly into their curriculum.
- Foster a culture of lifelong learning among their students.
- Collaborate with colleagues and build a community of practice.
- Make your lesson plans openly accessible under a creative commons license.
- Collaborate with industry professionals.
- Provide opportunities for real-world experience.
- Consult the 'ECCE Teachers' Training Model' for a comprehensive guide

By implementing these strategies, teachers can empower their students to become confident and successful digital learners, equipped to navigate a changing workplace.

Recommendations for HE institutions

Several key strategies can be implemented, to further enhance digital teaching methods in higher education (HE) and ensure the sustainability of digital competencies developed through the "Back2Basics" pilot programme. These strategies focus on providing ongoing professional development, fostering collaboration and networking, integrating digital skills across disciplines, and

promoting a culture of lifelong learning. More concretely HE institutions can promote:

- *Continuous professional development:* Provide ongoing training and development opportunities for faculty to stay updated on emerging digital technologies and trends.
- *Industry partnerships:* Collaborate with industry partners to identify and address current and future digital skills needs in the job market.
- *Real-world projects:* Integrate real-world projects and internships into the curriculum to provide students with hands-on experience applying their digital skills in practical contexts.
- *Mentorship programmes:* Connect students with industry professionals or students who can offer guidance, mentorship, and networking opportunities.
- *Lifelong learning culture:* Foster a culture of lifelong learning that encourages students to continuously update their skills and knowledge throughout their careers.
- *Open educational resources (OERs):* Promote the use of OERs to provide students with access to a wide range of digital learning materials and resources.
- *Digital badges and certifications:* Implement a system of digital badges or certifications to recognize and validate students' digital skills and achievements.
- *Career services and guidance:* Offer comprehensive career services and guidance to help students connect their digital skills with relevant job opportunities.
- *Students' engagement:* Maintain strong connections with students to gather feedback on the relevance of the digital skills taught and identify emerging trends in the job market.

By implementing these strategies, HE institutions can create a more digitally literate and innovative learning environment that equips students with the digital competencies necessary to thrive in the 21st century. This will not only ensure the sustainability of the skills

developed through the "Back2Basics" pilot program but also prepare HE students for a successful and fulfilling future career path.

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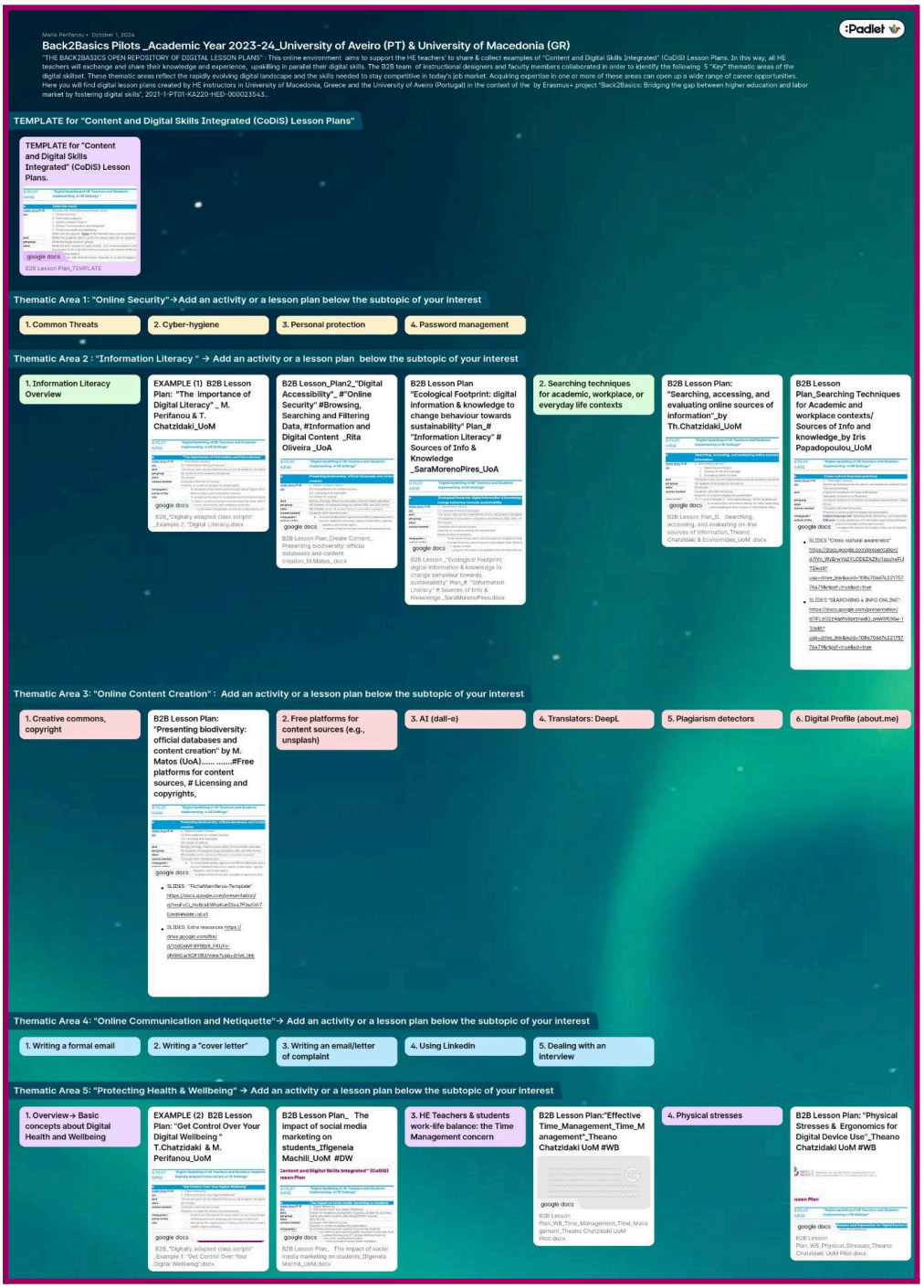
7. Appendices

7.1 *P*adlet "Back2Basics": Collection of "Content and Digital Skills Integrated (CoDiS) Lesson Plans"



https://padlet.com/mariaperif/the-Back2Basics-open-repository-of-digital-lesson-plans-back-cd83j6jzmovpliht

7.2 Collection of "Content and Digital Skills Integrated (CoDiS) Lesson Plans"

Below are presented a few "CoDiS Lesson Plans" developed by all HE teachers involved in the "Back2Basics" pilots during the 2023-24 academic year at the University of Aveiro, Portugal, and the University of Macedonia, Greece.

1. Lesson Plan: "Presenting biodiversity: official databases and content creation" by M.Matos. Piloted at the UA, Portugal.

BACK 2 BASICS BRIDGING THE GAP BETWEEN HIGHER EDUCATION AND LABOR MARKET BY FOSTERING DIGITAL SKILLS

"Content and Digital Skills Integrated" (CoDiS) Lesson Plan

B2B PILOT COURSE	"Digital Upskilling of HE Teachers and Students: Implementing in HE Settings"

Title	Presenting biodiversity: official databases and content creation
Thematic Area (1-5) / Topic	3. "Online Content Creation" 3.1. Free platforms for content sources 3.2. Licensing and copyrights 3.6. Hands-on activity
Subject	Biology; Ecology; Nature conservation; Environmental Education
Target group	HE students of biology/ecology disciplines (BSc and MSc levels)
Duration	180 minutes (or 60 + 30 minutes if Phase 2 is converted to homework)
Resources needed	Computer with Internet access
Learning goals / Objectives of the various activities	• To know fundamental, rigorous, and official databases and online sources related to taxonomy, nature conservation, species distribution, and similar topics. • To be aware of key terms and concepts on taxonomy and biodiversity conservation through browsing, searching, and using digital tools and databases, filtering data, and digital content. • To recognize the need to be digitally and information literate on the topics and to be able to evaluate data and digital content accuracy. • To be aware of copyrights and plagiarism and adopt best practices in searching and correctly citing sources. • To foster a positive attitude towards acquiring these skills for personal, educational, and workplace purposes towards the creation of trustworthy documents.
Authors	Milene Matos, University of Aveiro
Open License	This work is licensed under a Creative Commo Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0)

BACK 2 BASICS BRIDGING THE GAP BETWEEN HIGHER EDUCATION AND LABOR MARKET BY FOSTERING DIGITAL SKILLS

STEP BY STEP Procedure	
What to do	**Time/ Resources**
Preparation of the activity: Present the Back2Basics Project. Students and professors to answer the pre-survey. Teacher to prepare the template ppt for students to develop as a digital artifact.	Before the activity
PHASE 1: Intro Introduction to the topic: Share lesson learning objectives.	**min** **5'**
Warm-up Activity 1: Show/display published field guides, conservation projects, and/or webpages with information about biodiversity, conservation status, distribution maps, and lists of threats. Open plenary discussion: -Where does all this information come from? -How do we know if the information is up to date? -How do you usually search for this type of information for academic purposes? -Can you use any picture or map that shows in your search? -Are you aware of copyrights?	**min** **15'**
Activity 2: Present a PowerPoint with examples of trustworthy/official databases and sources. Explain what each source/database is for, and what kind of information can be extracted from there.	**15'**
Activity 3: Resume presentation of field guides and ask students to choose one native species (in this lesson plan, the course was on Portuguese Mammals).	**5'**
PHASE 2 "Creation" Hands-on activities: Individual activity Invite students to create a digital artifact: they should complete a ppt presentation based on a template that mimics the complete description of a species in a field guide – the students should select pictures, and maps, write texts, and correctly cite all sources.	**100'** (if needed, Phase 2 can be converted to a homework assignment)
PHASE 3: Conclusion and Recap Go through a filled-in ppt template and present it, correcting common mistakes or drawing attention to key points, and, if needed, explaining key ecological concepts related to the covered topics. Summarize the key points covered in the lesson: adequate databases, correct ways of searching and creating content, citations and copyrights.	**25'**

OTHER INFORMATION	
ASSESSMENT /EVALUATION	After Phase 3, students should do a brief self-assessment and send the teacher the digital artifact (filled-in ppt template) for assignment evaluation and feedback.

BACK 2 BASICS BRIDGING THE GAP BETWEEN HIGHER EDUCATION AND LABOR MARKET BY FOSTERING DIGITAL SKILLS

FURTHER READING	-
FURTHER RESOURCES	Project presentation. Databases presentation. Template to fill in.
USEFUL INFORMATION- Practice	
FEEDBACK AFTER THE LESSON PLAN'S IMPLEMENTATION	Challenges that colleagues need to take under consideration during the implementation of the lesson plan in their classroom: - Although this activity seems quite simple, many students were not at all aware of the topics covered. - It is important to take time to present the databases and sources of information, explaining what can be extracted from each (examples – atlas for distribution; red lists for threats; published papers on threats, ecology, and natural history; GBIF or similar for taxonomy, etc). - Many students were not familiar with ecological concepts one could think they would already know. It is thus important to verify and explain all related terms and concepts. - Similarly, many students had no idea that text and images could be protected by copyright. It's important to take some time to cover the basics of this and explain how to correctly cite sources.

2. Lesson Plan: "Searching Techniques for Academic and Workplace Contexts" by I. Papadopoulou. Piloted at UoM, GR.

BACK 2 BASICS BRIDGING THE GAP BETWEEN HIGHER EDUCATION AND LABOR MARKET BY FOSTERING DIGITAL SKILLS

"Content and Digital Skills Integrated" (CoDiS) Lesson Plan

B2B PILOT COURSE	"Digital Upskilling of HE Teachers and Students: Implementing in HE Settings"

Title	Cross-cultural business practices
Thematic Area (1-5) / Topic	2. "Information Literacy" Searching Techniques for Academic and workplace contexts/ Sources of Info and knowledge
Subject	English for Academic and Special Purposes (discipline: Economics or Business)
Target group	University students of Economics or Business Administration departments
Duration	55 min
Resources needed	Computer with Internet access A projector or smart screen to display the presentation
Learning goals / Objectives of the various activities	English language skill: Speaking skills/ delivering a ppt presentation B2B goal: To raise awareness of information-searching techniques (keyword search on Google and Google Scholar). - To recognize the need to be creative in the use of keyword combinations. - To foster the ability to make judgments of relevance and reliability in the selection of appropriate sources
Authors	Iris Papadopoulou, University of Macedonia, Greece
Open License	This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0)

STEP BY STEP Procedure	
What to do	Time/ Resources

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3.

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Preparation of the activity (optional): Students are asked to fill in a short Google Form quiz on using digital sources.	Google form
PHASE 1: Intro Introduction to the topic: Share the learning objectives. Course-related objective: raising awareness of the significance of intercultural competence and cross-cultural differences in international business. B2B project-related objective: to practise searching and evaluating online sources.	**30 min** **(5 min)**
Warm-up Activity 1: Doing a keyword search on Google. Goal: help students understand how to search for digital sources with keyword search, and evaluate them by a set of criteria.	ppt **(10 min)**
Activity 2: Cross-cultural management. Goal: raise awareness of the transnational dimensions of cross-cultural management https://www.youtube.com/watch?v=rJ4IbhXrqnc&ab_channel=InternationalHub	video **(5 min)**
Activity 3: Cross-cultural blunders. Goal: raise awareness of the potential impact of cross-cultural misunderstandings by getting students to problem-solve, guessing what went wrong in the situations described. The assignment guidelines are specified in the final slides.	ppt **(10 min)**
PHASE 2 "Creation" Hands-on activities: 1- Activity 1- in-class: The South Korean business profile. Goal: to practice the Google keyword search strategies in creating a ppt of the business profile of South Korea. 2- Activity 2: Homework assignment: Business etiquette of a country. Goal: to allow the students to apply the keyword search strategies/ source selection and PPT creation they were taught in the Intro stage. The structure is explained in class but the ppt is created by the students as a homework assignment and it is uploaded on the Uom platform, https://openeclass.uom.gr/ .	**20 min**
PHASE 3: Conclusion and Recap -Summarize the key points covered in the lesson. -Reinforce the importance of digital and information literacy skills. -Encourage students to continue developing these skills through practice and exploration. Follow-up in the next term with a more extensive assignment (20-minute presentation on a socioeconomic topic of their choice, requiring academic sources).	**5 min**

OTHER INFORMATION

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BACK 2 BASICS BRIDGING THE GAP BETWEEN HIGHER EDUCATION AND LABOR MARKET BY FOSTERING DIGITAL SKILLS

ASSESSMENT /EVALUATION	In the end, the entry quiz can be readministered and students can become aware of processes of searching for and evaluating sources of digital information. **Mini Quiz**
FURTHER RESOURCES	https://subjectguides.york.ac.uk/searching/online https://www.linkedin.com/advice/0/how-do-you-use-search-engines-effectively-find-relevant https://udc.libguides.com/c.php?g=670878&p=4722296
USEFUL INFORMATION- Practice	
FEEDBACK AFTER THE LESSON PLAN'S IMPLEMENTATION	Academic life: Students practiced conducting effective research, identifying relevant and credible sources, and critically evaluating information for their academic assignments and projects. They got to determine the quality of online information and cite their sources. Professional life: They practiced using PowerPoint for professional presentations. Some were impressed by the Design feature offered by Office 365. Three things that worked: 1- The cultural blunder problem-solving was entertaining 2- The keyword research instruction was well-received 3- The student PowerPoint presentations were well-organized and diverse Three things that did not quite work: 1- The students were not asked to complete the pre and post-quiz of the lesson plan, for fear that they might not complete the parallel B2B questionnaire they had to complete in a short time span. 2- Not all students explicitly mentioned their research process 3- There were misunderstandings about the cultural stereotype section that required students to highlight false stereotypes that need to be challenged rather than taken at face value.

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