education sciences

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University–Business Collaboration for the Design, Development, and Delivery of Critical Thinking Blended Apprenticeships Curricula: Lessons Learned from a Three-Year Project

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Abstract: University–Business partnership for collaborative curriculum design, development, and delivery is an important dimension of University–Business Collaboration (UBC), but scarce information exists on how to enhance partnership for the design, development, and implementation of new curricula. With these questions in focus, this article intends to present and discuss the perceived experience during a three-year European funded project, namely, Think4Jobs. This project exemplifies the significance and benefits of UBC in the design, development, and delivery of curricula that meet the evolving demands of the labour market while promoting Critical Thinking (CT) as a foundational 21st century skill to contribute to graduates' employability. Think4Jobs project brought together a multidisciplinary team of researchers and business organisations from five European countries (Germany, Greece, Lithuania, Portugal, and Romania) with interests in promoting and developing CT and mitigating eventual competence gaps. The project's success was attributed to key practices, including defining a common conceptualization of CT, employing Participatory Co-Design, and providing common training for university and business partners. Clear objectives, explicit roles, effective communication, and ongoing evaluation further enhanced the collaboration. Experiential learning, real-work problems, and case studies reinforced the curricula, bridging the gap between academia and the labour market. By embracing these insights, future UBC initiatives can empower graduates with the necessary skills to stand out in an ever-changing labour market, contributing to enhanced education and successful careers.

Keywords: University–Business Collaboration; Critical Thinking; curriculum co-design; curriculum development; curriculum delivery; employability; research project; labour market; higher education; soft skills

Citation: Rebelo, H.; Christodoulou, P.; Payan-Carreira, R.; Dumitru, D.; Mäkiö, E.; Mäkiö, J.; Pnevmatikos, D. University–Business Collaboration for the Design, Development, and Delivery of Critical Thinking Blended Apprenticeships Curricula: Lessons Learned from a Three-Year Project. *Educ. Sci.* **2023**, *13*, 1041. https://doi.org/10.3390/educsci13101041

Academic Editor: Vasiliki Brinia

Received: 7 August 2023
Revised: 5 October 2023
Accepted: 11 October 2023
Published: 17 October 2023

1. Introduction

Scholars have highlighted the need for Higher Education Institutions (HEIs) to consider labour market (LM) input in their study plans to increase the employability of graduates [1]. An activity anticipated to tackle the gap between academia and the LM is University–Business Collaboration (UBC), to overcome the understanding that academic curricula are slow to respond to the LM needs [2]. While the early literature on UBC predominantly focused on commercialisation and cooperative research and development,

the recent understanding of cooperation has been expanded to include a broader range of UBC activities in line with HEIs' missions of education and valorisation [3,4]. Despite its potential to enhance the professional relevance of study programmes [5], UBC in Curriculum Design, Development, and Delivery (CDDD) has received limited attention [4]. However, the benefits of UBC in CDDD are advantageous for academics, business representatives, and students, leading to improved educational relevance, enhanced practical skills and experiences, and increased employment opportunities [6–8]. Although the importance of UBC in CDDD is gaining attention in the literature, there is still no study depicting the experience and the process of collaboration between HEIs and the LM for the design, development, and delivery of curricula with emphasis on Critical Thinking (CT).

The current paper presents a three-year European funded project focusing on designing, developing, and delivering Critical Thinking Blended Apprenticeship Curricula through UBC, for which the UBC followed a Participatory Co-Design (PC-D) methodology [9] that engaged key stakeholders in various activities during the project's lifecycle. The approach was a success, based on the evaluation of the courses and the impacts it brought into students' CT, thereby supporting it as an effective tool for mitigating the mismatch identified at the beginning of the project between LM needs and academia. By integrating insights from the existing literature and drawing conclusions from the experience of a three-year project, this study aims to delve into the operationalization of the CDDD, offering a comprehensive analysis of the PC-D methodology employed by the UBC.

1.1. Critical Thinking

It has become widely accepted in educational and business discourses that the global learning and employment landscape is undergoing several reconfigurations, driven by a more demanding society and a growing economy. In response, it is strategic to use the target-identified 21st century skills in the teaching and learning process to better prepare students for careers and life in general. CT is one of the most valued 21st century skills [10–13]. Those with higher levels of CT will better cope with the challenges raised by today's societies, which are rooted in information-based economies and highly demanding in terms of dealing with unknown, unpredictable, or uncontrollable problems, requiring the ability to examine and select the relevant information, to reflect on possible solutions and the anticipation of the consequences of any decision made [14]. Consequently, in recent decades, one main goal of educational institutions is to capacitate their students with the desired high level of competencies that would allow them to succeed in their professional lives and multiple citizenship aspects. In brief, CT may be viewed as a cognitive process and a high-order thinking skill that supports decision-making and mediates problem resolution [14]. Think4Jobs ERASMUS+ project conceptualised CT as a "*purposeful mental process driven by conscious, dynamic, self-directed, self-monitored, self-corrective thinking, sustained by disciplinary and procedural knowledge and metacognition*".

Scholars have highlighted CT as an essential skill to improve graduates' employability in the modern workplace [15–17]. Employers value graduates who can analyse complex problems, think critically and creatively, make sound decisions, and connect decisions with actions [18]. In addition, CT has been considered invaluable for graduates as it is associated with less cognitive bias and heuristic thinking [19]. However, learning and instruction of CT in HEIs remains a challenging topic. UBC provides a unique opportunity to integrate real-life problems, case studies, and LM experts into the curriculum design process, to develop students' CT. Although the significance of UBC in CDDD is gaining attention in the literature, there is still limited reference to the cooperation between HEIs and the LM for the design and delivery of curricula with an emphasis on CT [5,20].

Based on the above rationale, Critical Thinking for Successful Jobs (Think4Jobs) aims to strengthen the cooperation between HEIs and the LM in designing, developing, implementing, and evaluating CT blended curricula in five disciplines (i.e., Teacher Education, Veterinary Medicine, Business and Economics, Business Informatics, and Foreign Language Teaching) across five countries (i.e., Germany, Greece, Lithuania, Portugal, and Romania),

thereby developing apprenticeships and work-based activities implemented in the classroom. Considering that CT can be promoted effectively through mentoring [21], the project utilized apprenticeships as a form of mentoring and a work-integrated learning interface, thereby developing graduates that adapt and apply theoretical knowledge in real-world learning contexts [22]. Additionally, apprenticeships can be viewed as a space, where HEIs and LM collaborate, although each party's role is usually rather vaguely defined.

1.2. University–Business Collaboration for Curriculum Design, Development, and Delivery

The quest to instil high standards of CT in university students across the curricula is challenging and deserves to be utilized in collaboration with stakeholders. Stakeholders can help fine-tune the skills needed by the LM and bring their own ideas to academic instruction. Such proximity fosters the minimisation of gaps or mismatches, reduces the impact in the transition to the LM, and bridges the research between the two partners, which also increases students' motivation [23,24].

There are multiple ways to operationalise this collaboration. Although UBC has been conceptualised in different ways throughout the years, the growing skills gaps and the global competition to recruit the best graduates to cope with the globalised and rapidly changing workplace have highlighted the need for UBC's focus on education. According to Healy and colleagues [25], various activities encompass UBC for education, such as (i) curriculum design, development, and delivery, (ii) bespoke course development, (iii) exchange and mobility programmes, (iv) continuing education and lifelong learning, and (v) entrepreneurship and entrepreneurial education. Of particular interest to the current study is the curriculum design, development, and delivery. Curriculum design and development refers to the collaboration between HEIs and the LM for the design and development of new or the refinement of existing undergraduate or postgraduate study programmes, specific courses or modules, and related content to address skills' mismatches, align curricula with the employers' needs, incorporate training initiatives, and enhance graduates' employability [23,25,26]. Curriculum delivery includes business involvement through guest lectures, placements, supervision, mentoring, or work-based learning activities [23,26]. A literature review revealed that scholars in the field have emphasised more on the barriers [3,4,25] or motivation for UBC [3,26], rather than on empirical insights describing the roles and responsibilities of each party engaged in the joint CDDD and lessons learned from the collaboration.

1.3. Current Study

The literature review revealed gaps that this study attempts to address the following aspects. First, although UBC has gained attention in academia, its application in curricular design and delivery has received limited attention [20,27,28]. Second, a literature gap is highlighted in terms of studies depicting the experience and processes of collaboration between HEIs and the LM for CT CDDD. Third, previous research has focused more on the obstacles [3,4,25] or the drive for UBC [3,26], rather than on empirical insights describing the roles and responsibilities of each party engaged in the joint CT CDDD. Fourth, the existing literature is lacking empirical insights into best practices and lessons learned from UBC, underscoring the design, development, and delivery of CT curricula. Considering the above, this study aims to address the following research questions:

> «Research Question 1: What are the key activities enforcing the collaboration between HEIs and LM for designing, developing, and delivering CT-oriented curricula strengthening undergraduates' CT?»
>
> «Research Question 2: What are the specific roles and responsibilities of HEIs and LM in the PC-D process of curriculum design, development, and delivery?»
>
> «Research Question 3: What are the best practices and key lessons learned from successful UBC initiatives in CDDD, particularly for CT-oriented curricula, and how can these insights be applied to future initiatives?»

This article presents the project roadmap for gathering the answers to these questions. It also discusses the solutions found to overcome the difficulties experienced throughout the project, namely, regarding the inter-partnership communication and expectations, the differences among disciplinary fields, possible resource imbalance, and the avenue to embrace diversity and inclusion in this collaborative project. This article is presented in a descriptive style that the authors perceived as the most comprehensible and best demonstrates the project's contribution to the field of UBC.

2. Operationalization of the University–Business Collaboration in Curriculum Design, Development, and Delivery

The Think4Jobs project was rooted in the creation of a partnership between HEI and LM organisations to create real-case situations/problems to be used in the blended curricula to trigger the students' CT (skills and dispositions) and to obtain solutions to specific, real-life problems in each profession. According to Bonk and Smith [20], "integrating employability skills and competency required for successful on-the-job performance of graduates needs strong collaboration between university and employers (industries) throughout the curriculum development process" (p. 93).

To achieve the aim of the project for the design, development, and delivery of CT blended apprenticeships curricula, the Think4Jobs consortium followed a Participatory Co-Design (PC-D) approach [9] to blend CT within the core content of courses in five programmes or disciplines: Teacher Education (Greece), Veterinary Medicine (Portugal), Business and Economics (Romania), Foreign Language Teaching (Lithuania), and Business Informatics (Germany). According to Simonsen and Robertson [9], participatory design is a methodology that emphasises stakeholders' active involvement in the design of products, services, learning environments, or interventions. It also ensures that all needs, requirements, or perspectives of stakeholders or end-users are considered during the design process. However, we refer to co-design as perceived by Sanders and Stappers [29], namely, "*the creativity of designers and people not trained in design working together in the design development process*" (p. 6). In the context of UBC, the key stakeholders involved in the Participatory Co-Design (PC-D) may include higher education teachers, students, labor market tutors), employees, and researchers.

Considering the specific objectives that the final product should meet, in our case, the CT blended apprenticeships curricula, at each phase of the PC-D methodology, various research designs and data collection approaches were utilized. PC-D often involves multiple iterations, where stakeholders are involved in continuous reflection and adaptation of ideas. However, the key steps of the PC-D methodology are needs analysis and requirements gathering, design and development, implementation, and evaluation [30]. Figure 1 is a visual representation of the iterative steps of the PC-D leading to the preparation of the CT blended apprenticeships curricula, which are described in Section 3. In addition, Figure 1 shows the main activities and methodologies implemented at each step, as well as the key stakeholders involved in each step of the methodology, providing a detailed transferable protocol.

Key Stakeholders

It is crucial at this point to provide more information regarding the actors, namely, the key stakeholders involved in the PC-D methodology. Five HEIs and four LM organisations were engaged in the PC-D. Each HEI was engaged in the PC-D with a team constituted by researchers, HEI instructors, and students. Researchers were previously engaged in research on CT and their role was to safeguard the PC-D and ensure that high research standards were followed throughout the design process of the curricula. Moreover, HEI instructors were among the cornerstones of the PC-D. Their teaching experience varied between 3 to 15 years, while some of them also had limited previous experience with CT. HEI instructors' role was to provide requirements for their training on CT as well as on the design of the CT blended apprenticeships curricula. Furthermore, they were

explicitly engaged in the design, development, delivery, evaluation, and refinement of the curricula. In addition, HEI students were engaged in the PC-D during the first step of the project, namely, the needs analysis and requirements gathering. Students engaged in this step had previously successfully completed the curricula addressed by the project or were graduates. The CT blended apprenticeships curricula were also implemented and evaluated by undergraduate HEI students. In Figure 1, the difference between the HEI students that participated in the needs analysis and requirements gathering step and the step of implementation and evaluation of the curricula is depicted, and students are highlighted with a different figure colour (i.e., orange).

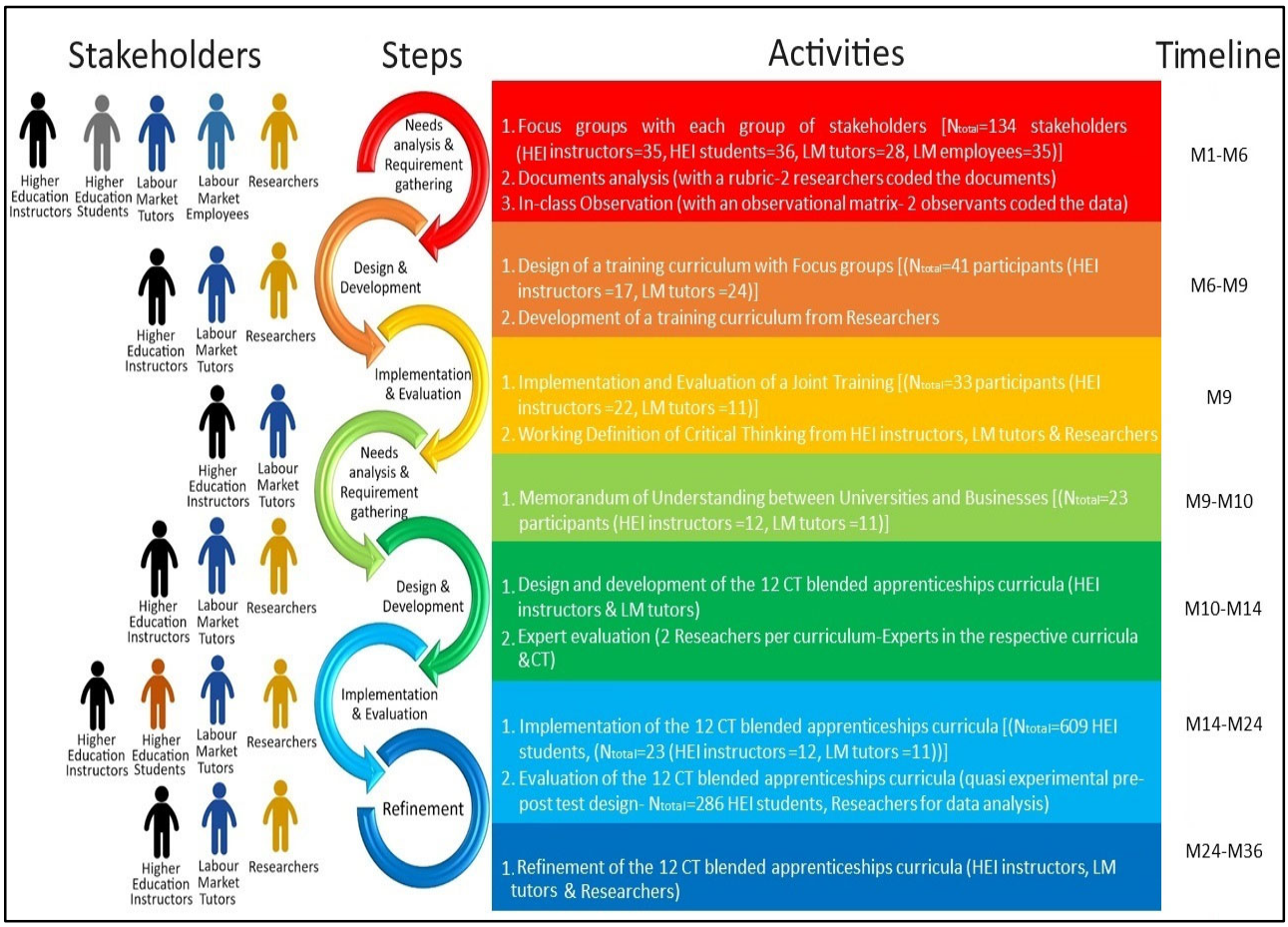

Figure 1. The Participatory Co-Design methodology used in the project and the key stakeholders involved at each step.

To underline the level of the collaboration between HEIs and the LM, it is essential to clarify the nature of the curricula. Some of the curricula targeted by the PC-D methodology (e.g., at the disciplines of Teacher Education and Veterinary Medicine) were apprenticeships curricula, namely, students were theoretically prepared and practically engaged in a real-work environment practising their professional skills and knowledge. However, some of the curricula were preparing students theoretically before they engaged in their internships at the respective LM organisations at the end of their studies. The design of the CT blended curricula engaged HEIs and the LM at a course or even a teaching program level (departmental level) but not at an organisational/institutional level [31]. Therefore, LM organisations engaged in the PC-D methodology had previously collaborated with the HEIs regarding the implementation of the apprenticeships or internships. In the case of the apprenticeships, the LM had previously played the role of a mentors for the HEI students. The LM organisations were represented in the PC-D approach by tutors, namely, by personnel holding positions in departments of human resources or teaching

and training. The exception was the LM organisation engaged in the discipline of Teacher Education, where the tutors engaged were actual teachers from a public school, who nevertheless collaborated with the HEI for the implementation of teachers' apprenticeships and practicum. Along with the HEI instructors, LM Tutors played a vital role in the process and were engaged in all PC-D steps from the step of needs analysis and requirements gathering until the refinement of the CT blended apprenticeships curricula.

3. Applying the Participatory Co-Design Methodology

3.1. Step 1—Needs Analysis and Requirements Gathering

The first step was a needs analysis and requirements gathering aimed at identifying how CT is promoted in learning and instruction both in HEIs and the LM. Particularly, multiple focus groups engaging Higher Education Instructors and students, labour market tutors, and employees as well as researchers were implemented in this step. In addition, various documents employed in HEIs and the LM, such as handbooks and training materials, were analysed. Moreover, HE Instructors and LM Tutors were observed during the provided instruction. One of the main findings underlined that HEIs and the LM are in parallel regarding their understanding and implementation of CT [32]. Therefore, the needs analysis is deemed essential for designing and developing a training curriculum that would facilitate HE Instructors and LM Tutors to develop a shared understanding of CT.

Therefore, a training curriculum was developed to create a common understanding between the HEI and LM organisations engaged in the project [33]. For the design process of the training curriculum, 41 HE Instructors and LM Tutors from all countries were involved in a focus group discussion that identified their learning needs and essential topics to be addressed during the training. The training was implemented and evaluated engaging 35 HE Instructors and LM Tutors from all countries as participants of an intensive experiential, learner-centred, online training with a duration of five days. The intensive course addressed various topics, such as the conceptualization of CT, how CT can be promoted through instruction, and how CT can be assessed. The evaluation of the training was assessed through a quasi-experimental design with a questionnaire administered prior to and after the training [33]. To foster the development of a common ground between HE Instructors and LM Tutors during the intensive training, two invaluable collaborative activities were applied, engaging the university and business partners, namely, a working definition of CT and five Memoranda of Understanding. The co-design of the definition of Critical Thinking allowed the HE Instructors and LM Tutors to decide on the theoretical frameworks that would support the design of the CT blended apprenticeship curricula, considering the specificities of each discipline. The working definition resulted from a workshop that deconstructed and reconstructed participants' knowledge of conceptual, procedural, and assessment aspects of CT following a conceptual change approach [34].

The working definition of CT co-designed by HE Instructors and LM Tutors integrated aspects from several CT theoretical frameworks [18,35–38]. We present the working definition of CT agreed and employed throughout the design and development of the CT blended apprenticeship curricula and is as follows:

> *Critical Thinking is a purposeful mental process driven by conscious, dynamic, self-directed, self-monitored, self-corrective thinking, which is sustained by disciplinary and procedural knowledge as well as metacognition (metacognitive, meta-strategic, epistemological). CT can be trained as well as developed through competence building and is scaffolded by attitudes (e.g., systematicity, open-mindedness, empathy, flexibility, cognitive maturity), and intellectual skills (e.g., reflection, self-regulation, analysis, inference, explanation, synthesis, systematicness). It triggers problem-solving abilities, enables effective communication, promotes independent, holistic thinking, and supports decision-making and participative citizenship.*

At the end of the training course, five MoU were prepared by the joint effort of HE Instructors and LM Tutors who participated in the training. One MoU was prepared

per discipline, considering the specific learning needs identified in the first step, namely, needs analysis and requirements gathering. MoU were considered as guiding documents, capturing the shared vision, learning objectives, and desired outcomes of the CT blended apprenticeships curricula. They provided a framework for collaboration, ensuring that the curricula addressed the specific disciplinary knowledge, skills, and competencies required by the labour market. The HE Instructors brought their expertise in curriculum development, pedagogical approaches, and disciplinary knowledge, and partners contributed their real-world insights and practical experiences. However, the most significant aspect of the MoU was the definition and agreement among parties on the role and responsibilities of HE Instructors and LM Tutors during the CT blended apprenticeships curricula [33]. Throughout this collaborative activity, challenges and successes were encountered. One notable challenge was achieving effective communication between the university and business partners, given the different organisational cultures and perspectives. However, through open dialogue, active listening, and mutual respect, this challenge was overcome, leading to a more harmonious collaboration. One of the major successes of the collaborative process was the finalisation of the co-design of the MoU, which provided a framework for collaboration, ensuring that the curricula addressed CT, as well as the specific disciplinary knowledge, skills, and competencies required by the labour market.

The PC-D approach allowed project partners to engage twice in a needs analysis and requirements gathering and to carefully tailor the designed CT blended apprenticeships curricula to the needs of students and employers.

3.2. Step 2—Design and Development of Blended Curricula

Following the previous step, universities and businesses collaborated on the design and development of the CT blended apprenticeships curricula [39]. The collaboration involved joint planning and decision-making to integrate theoretical knowledge with real-life problems into the curricula. Among others, the collaboration aimed to align the pedagogical approaches, learning outcomes, and assessment methods of the CT blended apprenticeships curricula. The existing curricula were refined to incorporate direct and indirect instruction of CT, problem-solving, blended learning approaches, combined online and face-to-face instruction, practical experiences, and work-integrated learning opportunities, in a process safeguarded by a signed MoU. The majority of the curricula claimed to address the CT skills and dispositions as defined by Facione [35]. However, additional skills or dispositions from other CT-related frameworks [18,36,37,40] were also integrated into the curricula but varied according to the specificities of the five disciplines addressed in the project.

Apart from the common aspects concerning CT, the curricula analysed in this study revolved around fostering active learning through constructivist teaching approaches and instructional methods. Students were presented with subject-specific problems or tasks derived from the labour market realities, requiring independent and collaborative problem-solving within high cognitive levels of Bloom's taxonomy. Instructors played a supportive role, providing the necessary theoretical content, facilitating discussions, and offering continuous feedback. The culmination of students' work was often presented at the end of the curriculum or activity, which was assessed alongside disciplinary skills. Overall, the curriculum aimed to cultivate CT by integrating it seamlessly into the learning process. Later, we attempt to describe how the curricula were further tailored to meet the needs of both students and employers, as well as describe in detail the curricula developed and the UBC per country. The curriculum design will be provided in detail later when describing the implementation of the pilot curricula.

After a preliminary design proposal, researchers evaluated the curricula along with invited experts from each discipline. After this evaluation, HE Instructors and LM Tutors refined their proposal and finalised their development using MOODLE, a free and open-source learning management system [41]. A milestone was reached with the finalisation of the development of the CT blended apprenticeship curricula. The whole process that

resulted in the development of the CT blended apprenticeship curricula lasted one year and yielded 13 curricula [39]. Table 1 presents the curricula developed per discipline and country.

Table 1. The CT blended apprenticeships curricula per discipline and country.

Country	Discipline	Curricula
Germany	Business Informatics	Design Patterns Economic Aspects of Industrial Digitalization
Greece	Teacher Education	Teaching of Biological Concepts Teaching of Science Education Teaching of the Study of the Environment
Lithuania	Foreign Language Teaching	Childhood Pedagogy English language for International Relations and Political Science
Portugal	Veterinary Medicine	Imaging Deontology Gynaecology, Andrology and Obstetrics
Romania	Business and Economics	Business Communication Pedagogy and Didactics of Financial Accounting Virtual Learning Environments in Economics

3.3. Step 3—Delivery of the Pilot Blended Apprenticeship Curricula

In the delivery of the pilot CT blended apprenticeship curricula, HE Instructors and LM Tutors were in close collaboration. A total of 609 HE students enrolled in the pilot courses. Students involved in the implementation of the curricula differ from those engaged in the needs analysis. Researchers asked in advance for students' written consent for their participation in the study. Below, we present a brief description of the activities implemented in each country and the articulation between the HE instructors and LM partners' roles in the CT blended apprenticeship curricula implemented.

3.3.1. Germany

In the development of the curricula, the aspects addressed were as follows: (1) requirements and expectations of the German university and LM partners regarding CT, (2) specific characteristics of the subject Business Informatics, and (3) the developmental level of the students (Bachelor/Master). Identified needs included a focus not only on teaching factual knowledge at HE but also on explicitly promoting CT through the practical application of this knowledge to subject-specific scenarios and use cases. CT skills and dispositions based on Facione's framework [35] were included in the intended learning outcomes of the curricula. Current research on pedagogical approaches, which support active learning, and the promotion of CT was referred. During the implementation of the curriculum, an atmosphere of acceptance and tolerance was developed to encourage students to actively engage in learning activities and conversations without fear of failure, both at the HEI and in the context of the LM.

In Germany, the two courses "Design Patterns" and "Economic Aspects of Industrial Digitalization", have been redesigned to align teaching and learning on both the delivery of subject-specific content and the promotion of CT skills and dispositions. The infusion approach was used to promote CT, integrating CT teaching into subject-specific instruction and making the general principles of CT explicit to students [42]. The general aspects of CT [35] were presented to the students. The first course was offered by the LM partner as part of its own apprenticeship educational program, while the second course was offered by the academic partner as a HE programme. In the first course, students learned how to use software design patterns to overcome typical software development challenges. The students learned to analyse software requirements that need development, and based on this analysis, to select a design pattern that is best suited to meet these requirements.

They also analysed and evaluated the consequences of selecting a design pattern where several other alternatives could have been chosen. The second course dealt with the interrelationships and interdependencies between digital technology and organisational digitalisation. Students learned to understand, describe, analyse, and evaluate the impact of digital technology on the economy, society, organisations, and individuals from different perspectives and at multiple levels.

The UBC in Business Informatics was comprehensive. A frequent information exchange took place especially during curriculum design and development. University teachers assisted LM instructors in designing and developing courses and individual learning activities to promote and to assess CT, while LM instructors contributed current issues and use cases from LM to design CT learning scenarios.

3.3.2. Greece

In the Teacher Education discipline, the LM representatives identified needs encompassing five crucial aspects. Firstly, teachers are expected to develop CT skills to handle critical incidents during instruction (e.g., problematic student behaviour or conflicts). In particular, student-teachers excel in designing lesson plans and choosing the appropriate teaching strategies but struggle at adapting to unexpected in-class situations. Secondly, they lack self-confidence in their role as teachers, which in return affects their decision-making. Moreover, understanding the complexity of teachers' roles is another issue that was identified, and exposure to ill-structured problems and case studies could help tackle it. Further, LM representatives considered that coaching student-teachers on parental communication is essential. Finally, students-teachers should be familiarised with administrative routines and collegial collaboration. Although all needs were considered imperative, some of them, such as familiarisation with parental communication, collegial collaboration, and school administration, could not be addressed as the disciplinary aims and objectives of the curricula, and the student engagement in the study deviates significantly as they focus on content-specific instruction and not on general pedagogical knowledge. However, to address the rest of the identified needs, critical incidents as well as instructional approaches, like problem-based learning and case-based learning, were incorporated in the curricula.

As far as the CT-specific needs are concerned, the LM Tutors engaged in the preparation of the MoU suggested that flexibility and reflection are two essential dispositions and skills that future teachers should depict in practice. Therefore, apart from the framework of Facione [35], these two additional skills were addressed.

Two of the three CT blended apprenticeship curricula in Teacher Training had a similar structure: "Teaching of Science Education" and "Teaching of the Study of the Environment". The students designed lesson plans for practical applications, accompanied by reflection sessions at the university. In the curriculum "Teaching of Biological Concepts", theoretical classes preceded the students' lesson plan design, with feedback provided in university classes. All curricula promoted CT with the infusion approach [42], where subject-matter instruction was combined with explicit instruction of CT. Moreover, critical incidents, problem-based learning, and case studies were further utilized to train student-teachers in CT skills and dispositions. The curriculum of "Teaching of the Study of the Environment" included additional case studies related to the design of lesson plans for further training on CT. The reflection of student-teachers' lesson plans varied among the curricula. The curriculum of "Teaching of Science Education" offered student-teachers highly guided and structured reflections, in contrast to the other two curricula.

The UBC in the discipline of Teacher Education was consolidated on the role of the LM Tutors as mentors of the student-teachers during the implementation of the curricula. The LM Tutors who acted as mentors brought their experience in learning and instruction. In addition, the mentors acted as facilitators, who guided and provided their expertise to student-teachers not only on the design of the lesson plans but also on their implementation. Moreover, their familiarisation with CT facilitated explicit support to students, while solving cases and problems requiring CT skills and dispositions. However, some differences

were spotted among the three curricula and the role of the mentors, namely, the LM Tutors. In the curriculum of "Teaching of Science Education", the mentors provided via MOODLE feedback to student-teachers in some problem-solving activities. Further, they provided feedback to the student-teachers twice, namely, after having designed and implemented their lesson plans. Moreover, in the curriculum of "Teaching of the Study of the Environment", mentors evaluated the answers student-teachers provided for the case-studies that the HE Instructor assigned to the student-teachers. Finally, in the curriculum of "Teaching of Biological Concepts", mentors only provided feedback to the student-teachers after having designed and presented their lesson plans.

3.3.3. Lithuania

The initial focus group interviews were performed for the discipline of Foreign Language Teaching and highlighted the need to provide a less constricted learning paradigm, i.e., less focused on forms, rules, and rigid frameworks. It was decided that more stress should be placed on the content and ideas necessary for the everyday use of language. In today's life, students should be critical and consider the political and historical background of the region or the people they interact with. Besides media and information literacy competencies, CT skills involve autonomy, argumentation skills, creativity, and communication. There is a conscious effort to stimulate and develop those competencies and skills in class.

For the project, two CT-blended curricula were designed. The first one was used in the study programme of Childhood Pedagogy. It was carried out but not successfully evaluated. In this course, students prepared projects describing how a particular topic could be instructed to pupils. They presented those projects to the HE Instructor and the LM Tutor, subsequently receiving feedback. Since the evaluations were deemed invalid, the results were not considered, and they were not included into the overall analysis of the results.

The second blended curriculum was a mandatory first year "English language course for International Relations and Political Science". The activities were designed according to the conceptualization of the learner as a social agent. Language activities were performed in a particular social context and real-life, according to the action-oriented approach to foreign language teaching and learning described by Piccardo and North [43] and included in the updated version of the Common European Framework of Reference for Languages: Learning, teaching, assessment [44]. In collaboration with the LM partners, different scenarios replicating authentic cases were designed, in which the students were asked to play a specific role (political advisers, political analysts, childhood education teacher, among others). Within the context of the cases, students were asked to analyse the situation, and propose a suitable solution based on core knowledge, and, finally, make recommendations. They were also requested to propose a project or a conference presentation on a given topic (to familiarise themselves with the requirements of academic writing), to be presented and discussed in class.

Other activities designed to foster CT skill in this subject were parliamentary-style debates, writing an academic essay, writing a research proposal, and describing a case study on one of the topics related to political science and international relations. Students were expected to resort to critical analysis and compare the research findings from the scientific sources and triangulate them with the social, political, or economic contexts to provide relevant examples, decide on solutions, and identify implications.

3.3.4. Portugal

In the Veterinary Medicine field, the identified needs are related to informed decision-making, whether in the clinical or non-clinical practice, for which students must critically assess a poor or ill-defined problem, distinguish between confounding factors, propose a solution, and anticipate any disruptive outcome, while being able to interact and communicate with multiple persons requesting different language levels. Trainers refer to

students as shy people, insecure and with low autonomy even when executing routine technical procedures, mainly when unsupervised. The activities were designed considering three curricula of the Veterinary Medicine Master's programme. Two redesigned curricula were "Imaging" (5th semester), a pre-clinical subject, and "Gynaecology, Andrology and Obstetrics" (7th semester), a clinical course. In the latter, some steps designed to structure the communication with clients were also introduced in the activities. Together with the LM partner, it was decided to focus on activities that need to be developed in the blended curricula for developing clinical reasoning using a sort of "how do doctors think", thereby deconstructing the clinical reasoning into multiple interwoven small steps starting with the initial evaluation of a clinical case and aiming at deciding on the most adequate solution for the proposed problem [24]. The reasoning was scaffolded by a set of questions that would provide some guidance across the students' tasks. Another curriculum was designed and implemented for "Deontology", where the focus of the designed activities was the analysis of a dilemmatic situation, the identification of a possible approach to establish legislative recommendations, and the presentation and discussion of the solutions proposed before an audience.

For each activity proposed, the representatives of the LM partners identified a set of CT skills and dispositions to be triggered within each course, and the pedagogical approach selected by the teachers of the courses according to its potential usefulness in the medical area. In general, the designed activities were intermingled with the core content of the curricula and their occurrences during a semester varied with the course. They were executed at different times in a semester, and at three specific times, for the courses "Gynaecology, Andrology and Obstetrics", and "Deontology", while for "Imaging" the activities executed in the last one-third of the semester.

The UBC was operationalised as follows. In the pre-clinical and clinical subjects, two practitioners of the Atlantic Veterinary Hospital (HVA) selected the case vignettes from their clinical records and retrieved all the clinical notes and the results from the complementary exams to construct the case. This collaboration was critical because it allowed us to bring situations occurring in real life into the classes. These colleagues also revised and proposed some changes in the rationale behind the questions that scaffolded the activities and, in the case of the "Gynaecology, Andrology and Obstetrics" course, detailed the different levels of clinical reasoning to solve each situation. Similar situations were replicated with students from the HVA that participated in the course "curricular traineeship". For the "Deontology" course, another colleague from HVA, who is also a Board Representative of the Order of Veterinary Surgeons, helped to identify critical public concerns in the profession with a dilemmatic configuration.

In all the courses, each activity was followed by the production of a document that would be evaluated. More than responding to the questions, students were asked to detail and critically analyse the reasoning that led them to the proposed solution. The documents produced were evaluated under two dimensions: (a) the factual and conceptual course-related knowledge and (b) the quality of the reasoning process and the ability to provide evidence for the procedural and metacognitive dimensions of knowledge. At the end of the activities, after assessing these documents, feedback was provided to students. Although the partners were involved in the design activities, they were not directly involved in the students' assessment, except for students in the curricular traineeship course.

3.3.5. Romania

As far as the Romanian needs are concerned in the discipline of Business and Economics, it was apparent that the LM Tutors highlighted the need to change the instructional approaches employed by the instructors at the university. This change aimed to establish a more dynamic environment centred on the students as central actors in settings that promote learning through experience and the development of competencies for easy integration into the labour market. They pinpoint the need to develop the student's self-confidence in reasoning and communication, which requires an atmosphere of acceptance

and tolerance. They also mentioned the need to develop students' ability to ask questions and to analyse the opinions and assumptions of others logically. In addition, it was highlighted that a more experiential approach to learning should be employed during learning and instruction. In that way, students would delve into understanding and constructing knowledge through their own real-life experiences.

The Romanian partners developed three courses: "Virtual Learning Environments in Economics", "Business Communication", and "Didactics and Pedagogy of Financial Accounting". All three courses aimed to develop CT skills and dispositions through an inquiry-based, constructivist teaching approach. Each module involved specific learning tasks and assessment activities. The "Virtual Learning Environments in Economics" course aimed to develop a virtual learning environment using the Google Sites solution for a subject chosen by the student. The "Business Communication" course involved analysing several case studies. The "Didactics and Pedagogy of Financial Accounting" course required the students to discover the methods, didactic approach, materials, and tools used by the trainer, as well as to design three learning scenarios for concrete lessons and textbook assessment.

From the needs analysis, we found that a bottom-up approach to teaching was preferred by the students, starting from their experience and gradually connecting concepts and moving to the theoretical part of the lesson. LM was more inclined to base their teaching on such a strategy, and half of the lessons were held by the LM trainer alone or by the LM trainer and HE teacher together. In these respective sessions, we used learning by discovery, problem-based and project-based learning, case-studies or role-plays for skills development, and metacognitive strategies to promote awareness, open-mindedness, and intellectual humility.

Together with the LM partners, case studies, trigger situations (like a set of images), and other learning scenarios were used so the students had to analyse specific situations, following the LM partners' most used framework [45]. Each group of students was given a case study (work daily situation, a set of images, or a problem) to write questions, describe concepts, make judgements, and discuss their ideas or decisions. After the time allotted to reflect on and debate the presented topic, a decision or a solution should be presented considering new contexts that may arise and identifying motivations, concrete client need, and experimentation. The LM partner participated in some sessions with a presentation on a training section they usually have during in-service training, with students in trainee roles, to provide insights on different approaches available for the design of activities or to approach communication issues.

The UBC was extensive, and all the classes were co-designed to ensure a common vision of CT development. The total curriculum time was divided into two halves, one half for the LM and the other half for the university teacher. Even though the trainer was the main teacher, the university teacher was always present in the class. Due to time limitations, the LM trainers were not present in the university teacher's classes. The classes were intertwined, meaning that the LM trainers and university teachers were conducting activities when the respective theme was just introduced into the schedule. LM teaching activities were mainly practical, with many everyday examples from working in a bank to acting as a trainer in a bank. Students were asked to perform specific tasks and think as if they were employees. Decision-making involved all the CT skills mentioned in the previous sections. The educational activities carried out by the university teachers used top-down approaches. Concept-driven and concept-making tasks were used to bring the scattered experiences accumulated with the LM trainer into the current theoretical frameworks.

3.4. Step 4—Evaluation of the Curricula Regarding CT Skills and Dispositions

Researchers were engaged in the process of evaluation of students' CT, in particular, they determined the data collection process and identified the data collection tools and methods of data analyses [46]. The consortium proposed to assess the effects of the implemented interventions on the CT skills and dispositions using a pre- and post-

test questionnaires, a scale addressing CT skills (the short-form of the Critical Thinking Self-Assessment Scale (SF-CTSAS), with 60 items) and dispositions (Student-Educator Negotiated Critical Thinking Dispositions Scale (SENCTDS), with 21 items), that were combined into one single form. In a preliminary evaluation, both the scales were validated in a population of 531 university students that originated from the five countries and proven to be suitable for our objectives (Cronbach's $\alpha = 0.969$ for SF-CTSAS and Cronbach's $\alpha = 0.842$ for SENCTDS) [46]. The questionnaire was shared with the students enrolled in the courses, piloting the CT blended apprenticeships curricula using Google Forms. Of the 609 students enrolled in the courses (44 from Germany, 156 from Greece, 61 from Lithuania, 205 from Portugal, and 143 from Romania), only 286 students (85.4%) completed the pre-test and post-test form (22 from Germany, 103 from Greece, 20 from Lithuania, 100 from Portugal, and 81 from Romania). The respondents unevenly represented the consortium, the three most represented countries being Greece, Portugal, and Romania. Also, it is important to note that each country represents a different discipline; thus, country comparisons might also represent differences among the main disciplines (ranging from Education in Greece and Lithuania to Business in Romania, Engineering in Germany, and Veterinary Medicine in Portugal). Besides the questionnaire, additional summative assessment measures were applied in relation to each curriculum, such as rubrics, essays, or students' narratives.

Overall, the comparison of pre-test and post-test responses evidenced a gain in CT skills across the participants ($p \leq 0.0001$) for the integrated skills score (gain = 5.85 units), as well as in all the skill subdimensions that were analysed (Interpretation, Evaluation, Analysis, Inference, Explanation, and Self-regulation). The gains were more pronounced in the skills of explanation (gain = 1.42 units), analysis (gain = 1.12 units), and interpretation (gain = 1.42 units). A minor gain was observed in Self-Regulation (gain = 0.61 units); however, the initial score in this subdimension was rather high (mean of 8.57 out of 12), which could make larger increments difficult. Comparing the most represented countries among the respondents (Greece, Portugal, and Romania), the changes in the overall CT skills score were higher for the Portuguese students (7.14 units), compared with the Greek (6.13 units) and Romanian students (3.43 units) ($p = 0.038$).

Regarding CT dispositions, the changes across the consortium were less perceptible. The average gain recorded in the dispositions' integrated score was equal to 0.18 and failed to reach statistical significance ($p = 0.394$). Significant positive changes were only recorded in the disposition of organization (gain = 0.18; $p = 0.011$), while a negative effect was recorded for open-mindedness (gain = -0.20; $p = 0.009$). Considering the latter dimension, the scores for this dimension were relatively high during the pre-test (average scores ranging from 5.06 in Greek students to 5.91 in Portuguese students), which makes it difficult to achieve significant changes. However, when comparing the most represented countries among the respondents (Greece, Portugal, and Romania), the changes in the overall CT dispositions score were higher for the Portuguese students (0.92 units) compared with the Greek (-0.30 units) and Romanian students (-0.25 units) ($p = 0.042$).

The different impact of the interventions on the CT skills and dispositions observed in this study may result from the fact that changing attitudes in a short length of time (like an academic semester) is harder than changing procedures (way of thinking), as the former will require an intrinsic willingness and effort to engage with, while the later represent procedural behaviour triggered by training. An unexpected finding meriting further consideration was the decrease in the score of the open-mindedness disposition after the implementation of the curricula. A possible explanation for this result is that the curricula indirectly fostered students' intellectual humility, a disposition that is interwoven with open-mindedness and for some scholars is perceived as a second-order open-mindedness [47]. On the one hand, open-mindedness is the willingness to consider new ideas, perspectives, and evidence, avoiding any personal biases, as well as it refers to the reception of challenging opinions. On the other hand, intellectual humility is the recognition of one's knowledge and the acceptance that one's beliefs or understanding

may be fallible or incomplete [47]. Previous empirical studies have identified a positive relationship between open-mindedness and intellectual humility [48,49]. We can argue that, at the pre-measurement, students enrolled in the curricula perceived themselves to score higher on open-mindedness, but after explicit instruction on CT, they became aware of their cognitive limitations. Thus, the original high score in open-mindedness decreased in the post-measurement. Future evaluation of the CT blended apprenticeships curricula could devote greater attention to the relationship between open-mindedness and intellectual humility, measuring the latter explicitly.

3.5. Step 5—Refinement of the Curricula

Finally, after having evaluated the impact of the curricula on students' CT [46], researchers suggested improvements to the curricula, which HE Instructors and LM Tutors integrated into their designs, refining the way the curricula were developed. The refined curricula are in the process of being implemented and re-evaluated.

4. Project Best Practices

So far, we attempted to present the UBC for the design, development, and implementation of the CT blended apprenticeship curricula across the three-year life cycle of the Think4Jobs project. The experience gained during the project allowed the consortium to glean some insights regarding the key success factors, namely, the most effective approaches, methods, and strategies that facilitated us to meet the objectives of the project. Below, we present a list of the best practices that contributed to the project's success.

4.1. Best Practice 1: Definition of a Common Conceptualization for Critical Thinking

Ennis [42] highlighted an essential aspect when implementing CT across the curriculum to provide a "meaning for CT". This also proved to be efficient for the current project. After mapping how CT was carried out in the contexts of University and Business, the formulation of a working definition of CT was considered imperative to derive a starting point for the shared understanding between universities and businesses. Although one can identify some variations in the CT skills and dispositions defined among the disciplines, the core conceptualization of CT was reciprocal and fundamental for the identification of needs and the modifications of curricula. A lack of agreement in the definition of CT could compromise the UBC's effectiveness in identifying and reducing existing gaps or mismatches between academia and the LM.

4.2. Best Practice 2: Employment of a Participatory Approach

The methodological approach employed in the project, namely, Participatory Co-Design, allowed for another key success factor to emerge. Participatory approaches are valuable as they ensure the active engagement and participation of key stakeholders in the design process. In our case, key stakeholders, such as LM employers and employees, Higher Education Instructors and students, were engaged in the design process of the curricula. Their input was essential and allowed us to identify teaching approaches that would meet the demands of the business sector. Therefore, the approach employed allowed us to better align the curricula to the stakeholders' needs. Moreover, the alignment of the curricula to the stakeholders' needs fostered the development of a more effective and impactful learning environment for students' CT, as revealed by our results. Other similar initiatives, regarding the design of Engineering or Accounting curricula, have highlighted the importance of a cooperative model between university and business, rendering the approach as sufficient for "bridging the gap" between the labour market needs and the knowledge provided by higher education programs [28,50–52].

4.3. Best Practice 3: Common Training

Rooted in best practices 1 and 2, the common training of university and business partners in the current project fostered the development of a shared understanding and a

common language among the involved parties. This understanding, in return, facilitated smoother interactions and a more coherent approach to curriculum design and implementation and may have led to the use of common strategies to nurture CT by either the LM or HE. In addition, the common training promoted a sense of partnership, ownership, and cooperation as the two entities addressed problem-solving in a joint and supportive way, which contributed to a positive and productive working relationship.

4.4. Best Practice 4: Clear Objectives, Explicit Roles, and Responsibilities

The development of the MoU between university and business partners proved essential, as it allowed them to align their vision and objectives for the collaboration. Eventually, this practice led to the design of curricula tailored to meet the LM's needs. Moreover, it allowed the establishment of well-defined and mutually agreed upon objectives for the curriculum design and the collaboration, per se. In that way, it ensured that the HEI and the LM had a common perspective on the expected outcomes. Beyond the clear objectives, explicitly identifying the roles and responsibilities of the university and LM parties ensured that the entities were aware of their specific contributions and obligations. This fostered a sense of accountability as each partner understood their role in achieving the collaborative objectives, but at the same time, it allowed them to track the progress more easily, identify potential challenges, and address any risks promptly and effectively. Furthermore, the explicit definition of roles and responsibilities reduced conflicts and misunderstandings between the engaged parties.

4.5. Best Practice 5: Communication and Flexibility

The UBC can be fostered by communication and mutual trust among the involved parties. It was evident in our project that ensuring transparent communication between university and business representatives allowed for exchange of ideas and better adaptability to the LM needs. In addition, communication and flexibility between universities and businesses could further sustain CDDD in time as the universities could more swiftly respond to the evolving and fast changing LM demands, allowing for the curriculum to be concurrently updated. However, effective communication and flexibility between university and business can be a driving force that transforms UBC beyond the learning experiences offered to students and graduates. Specifically, both parties, through their collaboration, are offered opportunities for achieving ground-breaking advancements that eventually could augment the institution's reputation and the business's competitiveness.

4.6. Best Practice 6: Monitoring and Evaluation

Monitoring the progress of the curriculum design, development, and delivery is of paramount importance. In the current project, the monitoring mechanisms established, such as the regular progress reporting, the regular meetings where feedback among partners was shared, and the quality assurance processes, allowed tracking the progress of the collaboration. In addition, the evaluation of the implemented curricula enabled us to monitor their effectiveness in terms of CT. Moreover, the evaluation stimulated the refinement process of the curriculum as well as of the collaboration and the roles of each party, per se. The refinement process was data-driven as the insight obtained during the evaluation ensured informed decision-making on behalf of the parties engaged in the collaboration.

4.7. Best Practice 7: Dissemination of Best Practices for the Development of a Community of Practice

Sharing successful practices and outcomes with other universities and businesses can empower the development of a culture of collaboration and learning within academia and LM. Moreover, the knowledge exchange fosters innovation, encourages the adoption of effective strategies, and stimulates the development of new approaches. Hence, a community of practice [53] will be developed with stakeholders from academia and the LM, ensuring their constant progress and retention of competitiveness. In our case, we are in the early stages of developing a network of academic and LM organisations invested in

promoting CT. The network will allow universities and business stakeholders interested in joining the network to benchmark their own performance against other organisations' standards or benefit from the knowledge and expertise of organisations already engaged in the network. Moreover, we consider that through the network, sharing successful practices and outcomes will enable the participating universities and businesses to extend their impact beyond their immediate sphere of influence to a broader audience of educational institutions and LM partners at a European or even global level. Ultimately, a community of practice might ensure that the overall quality of education and business practices regarding CT is enhanced.

5. Recommendations for Future UBC Initiatives

During the project's lifecycle, we have encountered many challenges and risks, and we implemented various mitigation strategies and identified the strengths and weaknesses of the project, as well as the key success factors. This section aims at distilling the wisdom we garnered during the project, thereby offering a comprehensive set of recommendations, namely, a set of guidelines that could be essential for the implementation of future UBC initiatives for CDDD, particularly those aiming at fostering CT or other soft skills. By embracing these recommendations, future UBC could become successful while implementing its initiatives in CDDD.

5.1. Recommendation 1: Build Strong Partnerships

We consider that effective UBC excels in the principle of synergy, namely, the combined expertise, resources, and perspectives of universities and businesses engaged in the partnership. However, for a partnership to stay strong throughout the implementation of an initiative, it is imperative to have clear objectives and long-term commitment from all parties [8]. Therefore, a careful consideration of the partners included in the partnerships is crucial [54]. Our experience revealed that business partners are highly engaged in plenty of activities, and it can be challenging to sustain their involvement and commitment in the partnership and its objectives. However, selecting LM partners that value UBC and recognize the importance of UBC can prove beneficial. However, specific strategies such as the alignment of goals and objectives, the cultivation of long-term commitment, and the sustainability of a culture of collaboration could further support the development of a strong partnership that can persist over time. The partnership should be founded on a common vision and shared understanding. To meet this objective, the partnership can implement a series of meetings, team-building activities, and common training to allow for the academic and business parties to become acquainted, realise that the academic research priorities could be aligned with the LM demands, and build a common language for communication. In that sense, the process of CDDD will be safeguarded for its scientific relevance and will be aligned with the real-world job requirements. Moreover, long-term commitment can be encouraged by the preparation of agreements and mutual understanding of the collaboration documents, such as the MoU. Such documents can directly describe the objectives, scope, and expected outcomes of the partnership as well as the roles and responsibilities of the engaged entities. A culture of collaboration can be nurtured when parties cooperate, and principles such as transparency, inclusivity and equity are fostered.

5.2. Recommendation 2: Establish Clear Objectives for the Collaboration

We further stress the importance of establishing clear objectives for UBC by formulating this second recommendation. There is extensive heterogeneity across the objectives of universities and businesses, rendering it difficult to achieve the necessary alignment required for successful collaboration [55]. This has also been proven by our own research [32]. However, scholars have highlighted the importance of clear identification of objectives and motives for UBC for the successful implementation of partnerships [51]. Among the benefits that this process provides, one is the mitigation of risks and misunderstandings

between the engaged parties. Additionally, clear objectives allow for the establishment of measurable success and impact indicators, while facilitating decision-making throughout the partnership. To successfully implement this recommendation, various activities can be implemented. First, representatives from both academia and the LM should be engaged in a participatory process that will encourage collaborative needs analysis and requirements gathering. In the context of CDDD, this could mean that universities and businesses identify their needs and requirements for the design of a curriculum that is better aligned with the LM. Another activity that could foster the establishment of clear objectives is the implementation of common training between universities and business, which enhance collaborative and networked learning [56]. Such an activity can guarantee the development of a clear communication and a common language among the parties and lead to the reciprocal identification of objectives for the partnership.

5.3. Recommendation 3: Design Transferable and Agile Curricula

Another recommendation that is a "lesson learned" from the current project, but at the same time, is reasonable in the context of CDDD is that UBC should remain flexible and willing to design transferable and adaptable curricula. One-size-fits-all curricula are not adequate to articulate with the existing differences that today's evolution has introduced in most professions. Knowledge and skills that are relevant today may become outdated tomorrow. It is imperative for UBC to respond swiftly to emerging trends, technological advancements, and changing market demands. To implement this recommendation, an agile methodology for curriculum design could prove beneficial [57]. In particular, the LM can engage in the delivery of the curriculum and suggest emerging trends and topics that could be integrated into learning. If an agile design is followed, instructional approaches such as problem-based learning or case-based learning could prove beneficial. Such approaches allow for rapid updates and modifications in the course content to meet any emerging market's demands, without requiring significant curricula modifications. Further, agile design methodology highlights that the design process is iterative and always leads to the refinement and redesign of a curriculum to better align with the LM's and learners' needs [57]. The design of the curricula presented in the present study followed an agile approach as the curricula, after their first evaluation, were refined and re-implemented. Finally, regular meetings and integration of feedback mechanisms, such as surveys or focus groups, can ensure ongoing collaboration and communication with LM partners. Hence, new skills gaps or areas of knowledge that should be integrated into the curricula could be identified more easily.

5.4. Recommendation 4: Reinforce Experiential Learning with Real-Work Problems and Cases Studies

One aspect that was addressed by almost all curricula presented in the current study was the integration of real-work problems and case studies into the curricula to reinforce experiential learning and "bridge the gap" between academia and the LM. The problems and case studies were provided by the LM partners. Our research also identified that academia employed more traditional approaches (e.g., lectures) for learning and instruction as the emphasis was on theoretical concepts and construction of conceptual knowledge [33]. However, such traditional approaches are not endorsed by the LM and are less likely to promote soft skills, such as CT [1]. Moreover, one benefit of bringing to the class authentic work situations, problems, and case-studies is their contribution to maintaining students' engagement and motivation [56], but most importantly, allows the student to perceive how the constructed knowledge will be applicable to the daily professional life and nurture the precocious development of a professional "way of acting". This recommendation can be implemented through the participatory design of the curricula that requires the engagement of LM stakeholders, who will provide real-world challenges and case studies that align with the curricula, ensuring relevance and authenticity. Moreover, the shift from more traditional instructional approaches to teaching methods, such as project-based learning, problem-based learning, or case-based learning, can facilitate students to solve problems and to

overcome challenges that they might face while in the LM. Furthermore, another valuable strategy that reinforces experiential learning is the integration of apprenticeships and internships into the curricula. Students' engagement with apprenticeships and internships immerses students in real-work environments and encourages the application of theoretical knowledge. Additionally, another strategy that fosters the implementation of the current recommendation is the integration of guest lectures or LM seminars into the curricula. LM representatives can share their experiences and case studies and foster the enrichment of the learning experiences, providing insight into the complexities of professional life.

5.5. Recommendation 5: Implement Ongoing Evaluation

Our experience from the current project corroborates that evaluation is continuous and multidimensional in UBC. One dimension of evaluation in our project was the assessment of the results obtained in terms of students' CT growth. Moreover, the effectiveness of the curricula was also evaluated through key performance indicators. Another dimension was the evaluation of the UBC per se, which was measured in different timestamps during the project's lifecycle with measurable indicators. We consider this recommendation crucial as the evaluation allows stakeholders to measure the outcomes of the collaboration as well as the impact. Ongoing evaluation allows the monitoring of the partnership's progress against certain and jointly agreed milestones as well as uncovers potential risks and challenges that the partnership might face during the implementation of an initiative. Various strategies can be implemented to effectively implement this recommendation. For instance, as described earlier, the establishment of measurable key performance indicators can allow the partnership to monitor the progress but also the quality and impact of the outcomes obtained. It is essential for UBC to align the indicators with the objectives of the initiative. To monitor the indicators, regular meetings are required. In such meetings, stakeholders from universities and businesses should partake to facilitate discussions on progress, challenges, and suggestions for improvement. Another strategy to enhance continuous evaluation is to collect feedback from stakeholders such as students, faculty members, experts, and business representatives through focus groups, interviews, or surveys. In a future implementation of UBC for CDDD on CT, such activities should be further implemented. Finally, implementing longitudinal research designs to evaluate students' employability and professional development would provide further input in the agile curriculum design process.

6. Discussion

This study aligns with the existing literature on the collaboration between HEIs and the LM, and provides significant contribution in the specific area of CT. It describes the UBC for the design, development, and delivery of CT blended apprenticeships curricula, with emphasis on the Participatory Co-Design methodology [8] used in the three-year project, Think4Jobs. It would not be possible to detail all the results obtained in the project in this article, due to the excessive length of the text it would require, but throughout the project, comprehensive reports were released detailing the various phases and outcomes [32,33,39,46] and are available on open access sources. Thus, the focus of this article was, as we mentioned in the introduction, to describe in a comprehensible way the project roadmap, and to highlight the role of the stakeholders involved, their activities, and contributions. To achieve our objective, we have presented three specific sections in this article (1. Operationalization of the University–Business Collaboration in Curriculum Design, Development, and Delivery; 2. Applying the Participatory Co-Design methodology; and 3. Project Best Practices) that in practice attempted to answer our three research questions.

> «Research Question 1: What are the key activities enforcing the collaboration between HEIs and LM for designing, developing, and delivering CT-oriented curricula strengthening undergraduates' CT?»

We presented in detail the PC-D approach followed for the CDDD, the key activities implemented at each step of the approach as well as the timeline of implementation of the

activities. By applying the Participatory Co-Design methodology, the needs analysis was essential to develop a shared understanding of CT [35,40,58,59] because "while there is general acceptance on the importance and necessity of critical thinking, there is no consensus on its definition" [59] (p. 1). By finding a definition that served as a common basis for all the partners (purposeful mental process driven by conscious, dynamic, self-directed, self-monitored, self-corrective thinking, sustained by disciplinary and procedural knowledge and metacognition), it was easier to achieve the shared development and delivery of the pilot blended apprenticeship curricula. Also, we presented the data collection procedures implemented at each step of the PC-D approach, which facilitated the design, development, delivery, and evaluation of the curricula, and the processes are detailed in previously published studies [32,33,39,46].

Think4Jobs project relied on the partnership between HEI and LM organisations to create real-life problems that could be used in the blended curricula, with the intention of triggering the students' CT (skills and dispositions) [35] and to provide solutions for specific problems in each profession [60,61]. In agreement with previous studies [20,62], the idea that connects higher education to the labour market is a strategy of the utmost importance and was reinforced. An essential outcome of the collaboration on undergraduates' CT was underscored by the evaluation process, revealing an overall increase in students' CT skills across countries and disciplines [46]. Although the overall increase in students' CT dispositions did not reach statistical significance, the outcome agrees with a previous study [48].

> «Research Question 2: What are the specific roles and responsibilities of HEIs and LM in the PC-D process of curriculum design, development, and delivery?»

We examined the specific roles and responsibilities of HEIs and the LM in the PC-D of CT curriculum design, development, and delivery and attempted to underline the contribution of these roles on the effectiveness of the curricula. To address this query, we analysed the role and responsibilities of key stakeholders involved at each step of the PC-D. According to [28], "*The advantages and importance of university–industry collaboration, particularly in curriculum design and delivery, are well-known*" (p. 616). The Participatory Co-Design approach facilitated the active engagement of key stakeholders in the design and development of the CT blended apprenticeships curricula. The close collaboration and active involvement of all stakeholders contributed significantly to the successful design and delivery of the CT blended apprenticeships curricula. This approach enhanced their professional relevance and ensured alignment with the needs of the labour market. The description of the co-design protocols, associated with the reading the various interim reports published during the project, referenced in the text, and the provided details on how the collaboration was facilitated and structured can be valuable for transferability and to readers looking to replicate or adapt the partnership model to other areas.

> «Research Question 3: What are the best practices and key lessons learned from successful UBC initiatives in CDDD, particularly for CT-oriented curricula, and how can these insights be applied to future initiatives?»

In line with the ideas identified in other studies, potential success factors [63] can be an important contribution to the research community and to HEIs and the LM, especially those interested in the design, development, and implementation of CT blended apprenticeship curricula. Based on the experience gained and lessons learned from the UBC initiatives implemented for the CDDD of the current project, we offered a comprehensive overview of best practices and recommendations that future UBC initiatives could follow to enhance their opportunities for success. The best practices that contributed to the project's success were definition of a common conceptualization for CT; employment of a participatory approach; common training; clear objectives, explicit roles, and responsibilities; communication and flexibility; monitoring and evaluation; and dissemination of best practices for the development of a community of practice. We also present a list of recommendations for future UBC initiatives: build strong partnerships; establish clear objectives for the

collaboration; design transferable and agile curricula; reinforce experiential learning with real-work problems and case studies; and implement ongoing evaluation.

7. Conclusions

University–Business Collaboration is crucial for the development of curricula aligned with labour market requirements, which must also be aligned with the main didactic and pedagogical movements required for learner-centred quality education.

We assume that curricula cannot be devoid of intentionality, and they are influenced by politics, economy, and society. Thus, when considering 21st century skills and the goals for sustainable development, the Think4jobs project clearly assumes that Critical Thinking is one of the essential skills required to achieve these goals.

To better operationalise the key term of this project and ensure a common platform of understanding for all partners, the consortium worked together to have a shared definition of CT. For this milestone, we involved various stakeholders, and we received input from university teachers, students in training, students who have recently entered the profession, and experienced professionals from the labour market. Training a student without listening to those who will be their recruiters, who define the candidate's profiles, and will incorporate them into the labour market constitutes a strategic mistake that should be avoided. Collaboration in curriculum development and implementation must be valued by both partners so that in the process of curriculum development, its feasibility and impact (short- and long-term) are considered. It is from this collaboration that the appropriate profile will emerge, i.e., a graduate who incorporates disciplinary learning (content and methods) but also has a set of skills and competences that employers require. By enabling a common training, with explicit roles and clear objectives, the process becomes more objective and will contribute to reducing the gaps between what is performed by HEIs and what is desired by the labour market.

Reflecting on the learning process is an integral part of developing CT. It will be of importance that the content is meaningful to the learners and that the strategies are explicit. These strategies require effort on the part of learners and trainers and require more time because, for example, metacognition and self-regulation require a lot of reflection to know how to think about thinking, leading students to develop a deeper understanding. Think4jobs project showed that UBC is possible and should be encouraged. It is not an easy process, and it is demanding. It requires time for dialogue, design, planning, implementation, and evaluation. However, it yields results when CT blended apprenticeships curricula offer opportunities to promote CT and learners have recognised the benefits of the implemented strategies. Some paths for future research entail mainly the need to understand whether, in practice, the interventions developed contributed to reducing the gaps in the labour market in terms of developing CT skills. For this, it is necessary to wait for the integration of these new graduates into the labour market.

Author Contributions: Conceptualization and research, H.R., P.C., R.P.-C., D.D., E.M., J.M. and D.P.; writing—original draft preparation, H.R., P.C. and R.P.-C.; writing—review and editing, H.R., P.C., R.P.-C., D.D., E.M., J.M. and D.P.; visualisation, P.C.; supervision, H.R. and P.C.; funding acquisition, D.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by the "Critical Thinking for Successful Jobs—Think4Jobs" Project, with grant number 2020-1-EL01-KA203078797, funded by the European Commission/EACEA, through the ERASMUS + Programme. The European Commission support to produce this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki. In addition, the Ethics Committee of the University of Western Macedonia approved the study (Reg. No.: 21-2023/25-10-2022).

Informed Consent Statement: Informed consent was obtained from all participants involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors without undue reservation.

Acknowledgments: We would like to acknowledge the contribution of Svetozar Postic, who reviewed the part of the article referring to Lithuania. We also want to acknowledge all researchers and other professionals of the partners involved in the project: University of Western Macedonia, University of Evora, Hochschule Emden Leer, Academia de Studii Economice din Bucuresti Vilniaus Universitetas, Orgadata AG, Hospital Veterinário do Atlântico, Experimental Primary School of Florina, and Valstybės Institucijų Kalbų Centras.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Succi, C.; Canovi, M. Soft skills to enhance graduate employability: Comparing students and employers' perceptions. *Stud. High. Educ.* **2020**, *45*, 1834–1847. [CrossRef]
2. Mears, L.; Omar, M.; Kurfess, T.R. Automotive engineering curriculum development: Case study for Clemson University. *J Intell. Manuf.* **2011**, *22*, 693–708. [CrossRef]
3. Galán-Muros, V.; Plewa, C. What drives and inhibits university-business cooperation in Europe? A comprehensive assessment. *Res. Dev. Manag.* **2016**, *46*, 369–382.
4. Meerman, A.; Galan-Muros, V.; Davey, T.; Orazbayeva, B.; Baaken, T. *The State of University-Business Cooperation in Europe: Final Report*; European Commission, Directorate-General for Education, Youth, Sport and Culture, Publications Office: Luxemburg, 2018. [CrossRef]
5. Tessema, B.; Abejehu, S. University-Industry Collaboration in Curriculum Development: Analysis of Banking and Finance Graduates' Attributes from Educators and Industries Perspective. *Educ. J.* **2017**, *6*, 87–93. [CrossRef]
6. Forsyth, H.; Laxton, R.; Moran, C.; van der Werf, J.; Banks, R.; Taylor, R. Postgraduate coursework in Australia: Issues emerging from university and industry collaboration. *High. Educ.* **2009**, *57*, 641–655. [CrossRef]
7. Van der Sijde, P.C. Profiting from Knowledge Circulation: The Gains from University–Industry Interaction. *Ind. High. Educ.* **2012**, *26*, 15–19. [CrossRef]
8. Carayol, N. Objectives, agreements and matching in science–industry collaborations: Reassembling the pieces of the puzzle. *Res. Policy* **2003**, *32*, 887–908. [CrossRef]
9. Robertson, T.; Simonsen, J. Participatory design: An introduction. In *Routledge International Handbook of Participatory Design*; Robertson, T., Simonsen, J., Eds.; Routledge: New York, NY, USA, 2012.
10. Vista, A. Data-driven identification of skills for the future: 21st-century skills for the 21st-century workforce. *SAGE Open* **2020**, *10*, 1–10. [CrossRef]
11. Dishon, G.; Gilead, T. Adaptability and its discontents: 21st-century skills and the preparation for an unpredictable future. *Brit. J. Educ. Stud.* **2021**, *69*, 393–413. [CrossRef]
12. Thornhill-Miller, B.; Camarda, A.; Mercier, M.; Burkhardt, J.-M.; Morisseau, T.; Bourgeois-Bougrine, S.; Vinchon, F.; El Hayek, S.; Augereau-Landais, M.; Mourey, F.; et al. Creativity, Critical Thinking, Communication, and Collaboration: Assessment, Certification, and Promotion of 21st Century Skills for the Future of Work and Education. *J. Intell.* **2023**, *11*, 54. [CrossRef]
13. Indrašienė, V.; Jegelevičienė, V.; Merfeldaitė, O.; Penkauskienė, D.; Pivorienė, J.; Railienė, A.; Sadauskas, J.; Valavičienė, N. The Value of Critical Thinking in Higher Education and the Labour Market: The Voice of Stakeholders. *Soc. Sci.* **2021**, *10*, 286. [CrossRef]
14. Kocak, O.; Coban, M.; Aydin, A.; Cakmak, N. The mediating role of critical thinking and cooperativity in the 21st century skills of higher education students. *Think. Skills Creat.* **2021**, *42*, 100967. [CrossRef]
15. Clarke, M. Rethinking graduate employability: The role of capital, individual attributes and context. *Stud. High. Educ.* **2018**, *43*, 1923–1937. [CrossRef]
16. Crossman, J.E.; Clarke, M. International experience and graduate employability: Stakeholder perceptions on the connection. *High. Educ.* **2010**, *59*, 599–613. [CrossRef]
17. Dwyer, C.P.; Hogan, M.J.; Stewart, I. An integrated critical thinking framework for the 21st century. *Think. Skills Creat.* **2014**, *12*, 43–52. [CrossRef]
18. Halpern, D. *Thought and Knowledge: An Introduction to Critical Thinking*, 5th ed.; Psychology Press: London, UK, 2014.
19. Facione, N.C.; Facione, P.A. Analyzing Explanations for Seemingly Irrational Choices. *Int. J. Appl Philos.* **2001**, *15*, 267–286. [CrossRef]
20. Bonk, C.; Smith, G. Alternative instructional strategies for creative and critical thinking in the accounting curriculum. *J. Acc. Educ.* **1998**, *16*, 261–293. [CrossRef]

21. Abrami, P.C.; Bernard, R.M.; Borokhovski, E.; Waddington, D.I.; Wade, C.A.; Persson, T. Strategies for teaching students to think critically: A meta-analysis. *Rev. Educ. Res.* **2015**, *85*, 275–314. [CrossRef]
22. Kinash, S.; Crane, L.; Judd, M.M.; Knight, C. Discrepant stakeholder perspectives on graduate employability strategies. *High. Educ. Res. Dev.* **2016**, *35*, 951–967. [CrossRef]
23. Plewa, C.; Galán-Muros, V.; Davey, T. Engaging business in curriculum design and delivery: A higher education institution perspective. *High. Educ.* **2015**, *70*, 35–53. [CrossRef]
24. Payan-Carreira, R.; Silva, R.; Simões, M.; Rebelo, H. Business-university collaboration in designing work-based activities fostering clinical reasoning. In *Technology and Innovation in Learning, Teaching and Education. TECH-EDU 2022. Communications in Computer and Information Science*; Reis, A., Barroso, J., Martins, P., Jimoyiannis, A., Huang, R.Y.M., Henriques, R., Eds.; Springer: Berlin/Heidelberg, Germany, 1720. [CrossRef]
25. Healy, A.; Perkmann, M.; Goddard, J.; Kempton, J. *Measuring the Impact of University Business Cooperation*; European Union: 2014; Directorate General for Education and Culture, European Commission: Brussels, Belgium, 2014.
26. Orazbayeva, B.; Davey, T.; Plewa, C.; Galán-Muros, V. Engagement of academics in education-driven university-business cooperation: A motivation-based perspective. *Stud. High. Educ.* **2020**, *45*, 1723–1736. [CrossRef]
27. Camacho, B.; Alexandre, R. Design Education. University-industry collaboration, a case study. *Des. J.* **2019**, *22*, 1317–1332. [CrossRef]
28. Valiente-Bermejo, M.A.; Eynian, M.; Malmsköld, L.; Scotti, A. University–industry collaboration in curriculum design and delivery: A model and its application in manufacturing engineering courses. *Ind. Hig. Educ.* **2022**, *36*, 615–622. [CrossRef]
29. Sanders, E.B.N.; Stappers, P.J. Co-creation and the new landscapes of design. *Co-Design* **2008**, *4*, 5–18. [CrossRef]
30. Pnevmatikos, D.; Christodoulou, P.; Fachantidis, N. Stakeholders' involvement in participatory design approaches of learning environments: A systematic review. In *EDULEARN20 Proceedings*; IATED: Valencia, Spain, 2020; pp. 5543–5552. [CrossRef]
31. Elen, J.; Jiang, L.; Huyghe, S.; Evers, M.; Verburgh, A.; Dumitru, D.; Bigu, D.; Railienė, A.; Penkauskienė, D.; Ahern, A.; et al. *Promoting Critical Thinking in European Higher Education Institutions: Towards an Educational Protocol*; Dominguez, C., Payan-Carreira, R., Eds.; UTAD: Vila Real, Portugal, 2019; ISBN 978-989-704-375-8.
32. Dumitru, D.; Christodoulou, P.; Lithoxoidou, A.; Georgiadou, T.; Pnevmatikos, D.; Drămnescu, A.M.; Enachescu, V.; Stăiculescu, C.; Lăcătuş, M.L.; Paduraru, M.E.; et al. *Think4Jobs Toolkit: Ten Work-Based Learning Scenarios*; University of Western Macedonia: Kozani, Greece, 2021; ISBN 978-618-5613-01-3. Available online: https://think4jobs.uowm.gr/results/intellectualoutput1 (accessed on 11 June 2023).
33. Pnevmatikos, D.; Christodoulou, P.; Georgiadou, T.; Lithoxoidou, A.; Dimitriadou, C.; Payan Carreira, R.; Simões, M.; Ferreira, D.; Rebelo, H.; Sebastião, L.; et al. *THINK4JOBS Training: Critical Thinking Training Packages for Higher Education Instructors and Labour Market Tutors*; University of Western Macedonia: Kozani, Greece, 2021; Available online: https://think4jobs.uowm.gr/results/intellectualoutput2 (accessed on 15 June 2023).
34. Vosniadou, S. Conceptual change in learning and instruction: The framework theory approach. In *The International Handbook of Conceptual Change*, 2nd ed.; Vosniadou, S., Ed.; Routledge: New York, NY, USA, 2008; pp. 11–30.
35. Facione, P. *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction*; American Philosophical Association: Newark, NJ, USA, 1990; pp. 1–112.
36. Paul, E.; Elder, L. *The Miniature Guide to Critical Thinking Concepts and Tools*; Foundation for Critical Thinking Press: Santa Barbara, CA, USA, 2008.
37. Ennis, R.H. A concept of critical thinking. *Harv. Educ. Rev.* **1962**, *32*, 81–111.
38. Kuhn, D.A. Developmental Model of Critical Thinking. *Educ. Res.* **1999**, *28*, 16–46. [CrossRef]
39. Mäkiö, J.; Mäkiö, E.; Pnevmatikos, D.; Christodoulou, P.; Payan Carreira, R.; Georgiadou, T.; Lithoxoidou, A.; Spyrtou, A.; Papadopoulou, P.; Papanikolaou, A.; et al. *THINK4JOBS Critical Thinking Curricula: Critical Thinking Blended Apprenticeships Curricula*; University of Western Macedonia: Kozani, Greece, 2022; ISBN 978-618-5613-03-7. Available online: https://think4jobs.uowm.gr/results/intellectualoutput3 (accessed on 12 June 2023).
40. Halpern, D.F. Thinking critically about creative thinking. In *Critical Creative Processes*; Runco, M.A., Ed.; Hampton Press: New York, NY, USA, 2003; pp. 189–207.
41. Moodle. About Moodle. 2023. Available online: https://docs.moodle.org/402/en/About_Moodle (accessed on 20 April 2023).
42. Ennis, R.H. A Taxonomy of Critical Thinking Dispositions and Abilities. In *Teaching Thinking Skills: Theory and Practice*; Baron, J.B., Sternberg, R.J., Eds.; Freeman: New York, NY, USA, 1987; pp. 9–26.
43. Piccardo, E.; North, B. *The Action-Oriented Approach: A Dynamic Vision of Language Education*; Multilingual Matters: Bristol, UK, 2019.
44. Heijltjes, A.; Gog, T.V.; Paas, F. Improving students' critical thinking: Empirical support for explicit instructions combined with practice. *Appl. Cogn. Psychol.* **2014**, *28*, 18–30. [CrossRef]
45. Dumitru, D.; Minciu, M. Critical Thinking Stance in Teaching Business and Economics. Explorative Qualitative Study in Higher Education. *Eur. J. Interdiscip. Stud.* **2023**, *15*, 106–119. [CrossRef]
46. Payan-Carreira, R.; Rebelo, H.; Sebastião, L.; Sacau, A.; Ferreira, D.; Simões, M.; Pnevmatikos, D.; Christodoulou, P.; Lithoxoidou, A.; Georgiadou, T.; et al. *THINK4JOBS Guidelines: A protocol for Critical Thinking Transfer from Curricula to the Labour Market*; University of Western Macedonia: Kozani, Greece, 2023; ISBN 978-618-5613-11-2. Available online: https://think4jobs.uowm.gr/results/intellectualoutput4 (accessed on 15 June 2023).

47. Spiegel, J.S. Open-mindedness and intellectual humility. *Theory Res. Educ.* **2012**, *10*, 27–38. [CrossRef]
48. Krumrei-Mancuso, E.J.; Rouse, S.V. The development and validation of the comprehensive intellectual humility scale. *J. Pers. Asses.* **2016**, *98*, 209–221. [CrossRef]
49. Krumrei-Mancuso, E.J.; Haggard, M.C.; LaBouff, J.P.; Rowatt, W.C. Links between intellectual humility and acquiring knowledge. *J. Pos. Psychol.* **2020**, *15*, 155–170. [CrossRef]
50. Alonso-García, M.; Blázquez-Parra, E.B.; de-Cózar-Macías, Ó.D. Planning an industrial design engineering curriculum according to the labour market based on dual training. *J. Eng. Design* **2020**, *31*, 399–425. [CrossRef]
51. Hamilton, J.G.; Johnson, R.N.; Eckroth, J.L. Critical Thinking Skills in the Accounting Curriculum. *J. Account. Res.* **2023**, *18*, 125–175.
52. Butum, L.C.; Stan, S.O.; Zodieru, A. The Role of Romanian Universities in Increasing Graduates' Employability. Curriculum Management and Development of Competences Required by the Labor Market. *Manag. Dyn. Knowl Econ.* **2015**, *3*, 431–446.
53. Lave, J.; Wenger, E. *Situated Learning: Legitimate Peripheral Participation*; Cambridge University Press: Cambridge, UK, 1991. [CrossRef]
54. Marinho, A.; Silva, R.G.; Santos, G. Why most university-industry partnerships fail to endure and how to create value and gain competitive advantage through collaboration—A systematic review. *Qual. Innov. Prosp* **2020**, *24*, 34–50. [CrossRef]
55. Hewitt-Dundas, N.; Gkypali, A.; Roper, S. Does learning from prior collaboration help firms to overcome the 'two-worlds' paradox in university-business collaboration? *Res. Policy* **2019**, *48*, 1310–1322. [CrossRef]
56. Slotte, V.; Tynjälä, P. Industry–university collaboration for continuing professional development. *J. Educ. Work* **2003**, *16*, 445–464. [CrossRef]
57. Palmer, I.J.; Ralley, J.; Davenport, D.; Studios, E. Agile curriculum design for the creative industries. In *Eurographics Proceedings*; Sousa Santos, B., Dischler, J.M., Eds.; Eurographics: Eindhoven, The Netherlands, 2016; pp. 41–44. [CrossRef]
58. Birjandi, P.; Bagheri, M.B.; Maftoon, P. Towards an Operational Definition of Critical Thinking. *J. Eng. Lang. Pedag. Prac.* **2019**, *12*, 17–40. [CrossRef]
59. Altun, E.; Yildirim, N. What does critical thinking mean? Examination of pre-service teachers' cognitive structures and definitions for critical thinking. *Think. Ski. Creat.* **2023**, *49*, 101367. [CrossRef]
60. Bell, R.; Loon, M. Reprint: The impact of critical thinking disposition on learning using business simulations. *Int. J. Manag. Educ.* **2015**, *13*, 362–370. [CrossRef]
61. García-Moro, F.J.; Gómez-Baya, D.; Muñoz-Silva, A.; Martín-Romero, N. A Qualitative and Quantitative Study on Critical Thinking in Social Education Degree Students. *Sustainability* **2021**, *13*, 6865. [CrossRef]
62. Pais, S.C.; Dias, T.S.; Benício, D. Connecting Higher Education to the Labour Market: The Experience of Service Learning in a Portuguese University. *Educ. Sci.* **2022**, *12*, 259. [CrossRef]
63. Thune, T. Success factors in higher education-industry collaboration: A case study of collaboration in the engineering field. *Tert. Educ. Manag.* **2011**, *17*, 702–722. [CrossRef]