

An Introduction to the Special Issue on Digital and Collaborative Higher Education: The Case of the Erasmus+ OpenU Project

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1. Introduction

This Special Issue casts a scholarly lens on collaboration among higher education institutions (HEIs), promoted by digital transformation and “digitalization” [1]. Particularly, we seek to glean valuable and evidence-based lessons on the impact of HEIs’ cooperation on innovative digital pedagogies, such as online and blended learning. Although these types of pedagogies are not new, different types of collaboration, i.e., delivering joint micro courses or student mobility opportunities, may pose organizational, pedagogical, and technological challenges that need further exploration.

There are two main reasons to gain knowledge on the effects of collaborative higher education. Firstly, the online collaboration of HEIs has become a practice widely considered a sign of the “university of the future”, a sign of quality and prestige, especially if collaboration ties are kept among top universities. Given that collaboration adds value to education organizations, top-down education policies coming from the European Commission have aimed for the “strategic renewal of Education in Europe” to “strengthen strategic partnerships across the European Union between HEIs” and “contribute to the international competitiveness of European Universities” (see [2]).

Secondly, collaboration between HEIs implies several often-unexplored effects that can be observed in at least three imbricated dimensions related to organizational interactions, innovative pedagogies, and technology development. Organizationally, digitalization has modified the value chain of the learning process by reshaping institutional governance within public establishments, and by creating new forms of interactions with non-educational institutions, such as municipalities, industries, and NGOs. Pedagogically, innovative teaching methods, such as blended and hybrid learning, have favored, for instance, the “virtual mobility” or “internationalization” of students so that they can access new knowledge and cultural experiences digitally in institutions other than their own. Additionally, technologically, the creation of digital platforms allows partner universities not only to manage the learning processes in new and complex ways but also to consider more precisely back-office data, such as students’ connection time, preferences, and sociodemographic attributes. Although it has been a while since digitalization has offered value to HEIs in these three dimensions, evidence about “collaborative education” outcomes is still needed, especially to elaborate educational policies and implement reforms in Europe.

The importance of designing bottom-up experimentations accounting from the effects of collaboration among HEIs has led a consortium of twenty-one European organizations to develop and execute an Erasmus+ Key Action 3 for Policy Development and Cooperation, entitled “Online Pedagogical Resources for European Universities” (OpenU). The purpose of this project has been to explore, through grassroots experiments and interventions, how cooperation and joint learning activities between HEIs can be strengthened by digitalization. The main results of the project were presented at the OpenU International Conference,



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“Experimenting with Online Pedagogical Resources in European Universities (OpenU), held on 13–14 October 2022 in Paris, France. This event hosted more than one hundred international participants, including researchers, practitioners, students, and administrative staff from different European universities.

Drawing on this Erasmus+ project, this Special Issue aims to share research produced by OpenU-related scholars, pedagogical staff, and external contributors, among others, and to provoke reflections and discussions about digital cooperation and policies. More specifically, we hope to open a discussion around critical aspects that, in our view, should be considered when exploring education policies in a “collaboration perspective”.

To introduce this Special Issue, we would like to refer to the notion of “collaborative education”, and some of its effects from the organizational management, innovative pedagogies, and technology development perspectives. Then, we push the discussion towards the notion of bottom-up “experimentations”, including their advantages and restrictions as a research method to potentially inform education policies. Finally, we briefly introduce the selected studies contributing to this edition.

2. Collaborative Education: Organizational Interactions

One of our main motivations for organizing this Special Issue is the existence of multiple angles that can be adopted in exploring collaboration among HEIs. For example, collaboration can be observed from the point of view of learning and learners, especially in the intersection of interpersonal relationships, e.g., teachers and students; technologies, mainly digital communication tools; and collaborative engagement in valued activities, i.e., actions that make sense for the students [3,4]. Collaboration can be also observed at an institutional level, in which two or more HEIs may choose to partner, for example, to create a joint master’s degree [5] and promote the so-called “internationalization”. This form of collaboration often results in an intensification of the global and local flow of people, ideas, and capital in HEIs belonging to wealthier countries [6]. Internationalization has become a key institutional strategy to brand and position HEIs in competitive markets [6]. In terms of the reasons for collaboration amongst HEIs, these may include, gathering scientific and logistic competence in a single place, improving the access to the employment market, or gaining prestige by creating reputable scientific and institutional partnerships [5].

In this Special Issue, we know that collaboration, in its different forms, implies the transfer of resources not among random individuals but among reliable actors sharing norms, values, and beliefs. Thus, a networked education can be considered as a “knowledge structure” composed of multiple organizations and stakeholders, a reliable network of people, artifacts, and institutions that generate and maintain the informational resources necessary for humans [7]. Alternatively, it can be regarded as a “social infrastructure”, whose agents emerge, for instance, around “best practices codification”, “practitioners conferences”, “learning exchanges”, and “communities of practice” [8,9]. Favored by digital education technologies, the structure of HEIs does not only act as a connecting device between the different stakeholders, but it also constitutes or reconstitutes spaces of governance where actors become authorized as key players to shape educational practice [9,10].

When collaboration is approached from a “social perspective”, we can easily recognize how digitalization has transformed universities and its cooperating partners, particularly new and non-state actors (e.g., [9,11]), into “technological hubs” (p. 716, [12]), where “power is not confined to the state or to the market but to exercises through a plethora of networks, partnerships, and policy communities” (p. 5, [13]). Thus, through our Special Call we have encouraged researchers to consider educational activities outside of their own academic institutions. We believe that a multi-stakeholder’s perspective can shed light on the challenges of education from an inter-organizational perspective.

3. Collaborative Education: Innovative Pedagogies

Networked education fostered by digitalization has favored the emergence of “digital pedagogies” which have become popular in the last three years in public HEIs. Among

those successful pedagogies, hybrid and blended learning seem to have taken the lead. Interestingly, innovative pedagogies have redefined “jobs” in the educational field. This “redefinition of jobs” consists of the reformulation of daily activities conducted by workers at their workplace. In the field of innovative education, jobs have been redefined, and new skills, duties, and responsibilities are required [12]. For instance, institutions are increasingly incorporating Learning Management Systems (LMS), which are online platforms that integrate various systems that are accessible to academics, students, and administrators. For students, LMS services include access to lecture notes, assignments, virtual classrooms, exam results, and submission of assignments, whilst for academics it includes management of course content, submission of student assessment marks, and tracking of students’ progress and attendance. LMSs, such as Moodle and Blackboard, are so embedded in the learning practice that today knowing how to use them is practically a necessity. In this context, when designing our Special Issue, we tried to encourage research on the attitudes of teachers, practitioners, and students to innovative pedagogies.

4. Collaborative Education: Technology Development

Technology also plays a crucial role for inter-university collaboration efforts, specifically in terms of the strategy (e.g., human resources, teaching and learning, finance, planning, marketing), operations (e.g., offering of approved programs, recruiting employees, applying surveys, maintaining ICTs, students’ concealing, auditing), and control functions (e.g., paying salaries, online registration) of the network [12]. Technology can also be used to monitor and control people participating in the collaboration networks. According to [14], administration across educational institutions “is increasingly data-driven, underpinned by the need to both produce and use indicators, data analytics and other forms of objective evidence” (p. 177, [14]). In networked education, once the different actors and their performances are collected, measured, evaluated, and assessed, different decisions can be made based on this information and its analysis. In this context, we have encouraged researchers in this Special Issue to consider how HEIs make ethical decisions based on participants’ information.

So far, we have presented a key discussion on how collaboration can be explored from the angles of organization, pedagogy, and technology. Each dimension may pose different challenges and benefits; in this sense, we think that a systemic analysis of networked education, including the three angles, can help us learn how to overcome such challenges and replicate, through effective education policies, those beneficial outcomes, for example, among HEIs with fewer resources. To obtain some insight, a bottom-up approach, that privileges the perspective of the actors participating in the digitalized collaborative learning practice, seems necessary. For this reason, in the present Special Issue we have prepared a call for researchers and practitioners interested in exploring the multiple dimensions of networked higher education by drawing on the notion of “experimentations”.

5. Experimentations and Policies

An experimentation is normally considered as a method that allows researchers to deal with policies in two approaches. From a top-down approach, experimentations are designed to evaluate certain institutional arrangements and encourage social and political learnings—randomized field trials of a social intervention [15]—whereas from a bottom-up approach, they are used to trigger innovations and transitions, i.e., they are treated as the “starting points” or “seeds” for desirable societal transformations [16]. In both directions, the performance of an experimentation implies considering crucial aspects, such as the political dynamics, i.e., determining the different agreements among the involved stakeholders; governance, i.e., deciding who is involved in producing the evidence on their efficacy, which kinds of information should be collected, and which rules of evidence are used; and type of learning. On this latter point, two types of learning dominate [16]: epistemic learning, which is related to the scientific understanding of the world, and political learning, which is the knowledge about changes in the preferences, goals, and

commitments of stakeholders. In this sense, we have encouraged, through this Special Issue, qualitative explorations considering HEI authorities and representatives at the policy level.

As stated earlier, one key dimension of our Special Issue has been to encourage bottom-up proposals as alternatives to top-down initiatives. Why? The literature has accounted for some criticisms: (a) the top-down approach would privilege the perspective of decision-makers, resulting in a neglect of other actors (e.g., teachers, local cultures, and institutions) who would interpret, facilitate, modify, or thwart the policy [17]; (b) it would neglect key initiatives of other policy subsystems besides central decision makers [18]; (c) its methodology would tend to assume that the framers of the policy decision (e.g., statute) are the key actors and that the others are basically impediments [19].

On the contrary, experimentations designed and conducted from a bottom-up approach (i.e., grassroots) may offer advantages that we believe can shed light on the benefits and challenges of networked education. Firstly, experimentations can provide invaluable information about the realities and experiences of permanent and emerging stakeholders of the network; and secondly, if the results of an experiment align with the preferences of decision makers, they can legitimize existing policies or alternatives that favor cooperation among HEIs. In terms of research, experimentations may lead to innovative applications of qualitative techniques that would allow researchers to adjust their projects to the local constraints and their specific social, technical, and political complexities. Finally, experimentations may allow researchers to test different theories, for example, about innovative pedagogies, such as blended and distributed learning.

In the next section, we describe how grassroots experimentations allowed researchers to test digitalization and cooperation.

6. Selected Papers

Selected studies are quite varied, including qualitative and quantitative methodologies, which range from interviews and questionnaires to observations and focus groups. The different proposals have been organized in four groups according to the experimentation objectives: (a) to describe course and platform implementation experiences, (b) to identify organizational requirements for innovative pedagogies, (c) to identify students' and teachers' perceptions, and (d) to understand the role of education policies.

6.1. Description of Course and Platform Implementation Experiences

This group includes research aiming to describe the process of designing, developing, and implementing a pedagogical activity or a pedagogical tool, such as an online platform. In "Experimental Conclusions of the Online Inter-University Creativity, Responsibility, and Entrepreneurship Course Implementation", Barbara Hegyi describes her experience at ELTE, Hungary, in designing and implementing an online course on an atypical topic, that is, social responsibility in entrepreneurship. Interestingly, when implementing a course based on non-conventional topics, it is not certain how participants will react to the subject or the delivering modalities (asynchronic versus synchronic sessions), and it is difficult to estimate the level of engagement. Questionnaires and students' performance indicators (quizzes and assignments) are considered as key inputs to understand the effects of this innovative online pedagogical activity.

In the paper "Exploratory Study on the Blended Learning of Research and Language Skills in EFL and Interinstitutional Assessment", Natalia Mora-López and Ricardo Bernárdez-Vilaboa, from Complutense University of Madrid, research blended learning, emphasizing the role of assignment assessment. Even though inter-evaluation criteria in blended modalities are an important issue, their description is still unclear or poorly defined in the literature. For this reason, the authors aimed to test the feasibility and success of a blended course and identify the (non) shared criteria when assessing students' work. The results demonstrated that instructors tend to evaluate students according to heterogeneous criteria, for example, when assessing assignments "quality".

In “Gamification Tools in Higher Education: Creation and Implementation of an Escape Room Methodology in the Pharmacy Classroom”, Ana Isabel Fraguas-Sánchez, Dolores Serrano and Elena González-Burgos present their experience in designing, developing, and implementing an active learning tool to enhance learning, motivation, and engagement among students. Escape rooms are team-based live-action games in which players are challenged to resolve a mission consisting of several enigmas. The successful implementation of this learning tool in higher education is complex, and several aspects must be considered before starting. For example, challenges must be adapted to the target students, the time should be precisely set, the tasks of the game master should be well defined, and final feedback should be included in the session. Authors stress the importance of training HE educators to successfully design such tools and mitigate the risk of failure.

In “ENCODE4OpenU and the Preparation and Delivery of an International Collaborative MOOC: A Preliminary Analysis of its Pedagogical and Technical Implementation”, Carla Salvaterra and colleagues present the main intellectual output of the ENCODE project, i.e., a MOOC that introduces teaching staff and scientific experts to the digital transition in the field of ancient writing cultures. The report provides useful insights into the differing expectations of academic staff as content producers, issues surrounding MOOC-cooperative design between universities in different countries, the usability of the tested platform and the different features provided, and sustainability, as guaranteed through the connection with digital infrastructures.

Then, three articles aimed to test online pedagogical platforms. In “Measuring and Activating iSTEM Key Principles among Student Teachers in STEM”, authors Sascha Spikic, Wouter Van Passel, Hanne Deprez, and Jolien De Meester describe how a collaborative learning environment, CODEM for iSTEM, helped pre-service teachers at KU Leuven to develop (“immerse in”, in the words of the authors) the STEM principles, i.e., “problem-centered learning”, “integration of different STEM disciplines”, “modeling”, “inquiry-based learning”, “design-based learning”, and “cooperative learning”. According to the authors, the teaching of STEM content in secondary education is usually fragmented, likely because designing qualitative iSTEM projects and implementing these in the classroom are not at all straightforward for high-school teachers. An open-ended questionnaire and more than 200 h of video recordings (200 h) from weekly student meetings comprise the main inputs for understanding the impact of this iSTEM online environment.

In “Creating an Online Social Learning Platform: A Model Approach for Open Development, Open Access and Open Education”, Kevin Schumacher, Franziska Duch, and Lisa Sielaff describe their experience in implementing an open-source-based social e-learning platform called “hocampus”, whose purpose is to serve as a model for future learning systems by linking autonomous learning, peer-to-peer communication and tutoring, and teaching. Implemented at the House of Competence, Karlsruhe Institute of Technology, the open-source platform aimed to develop students’ key transversal competences and 21st century skills through digital means. Besides providing digital tools for students to work, study, and learn autonomously, and to connect with their peers and teachers in a secure and open environment, the platform serves a didactic function and uses general design strategies and emotional design to make the interaction enjoyable and stimulating. The paper presents an overview of how to set up such a learning platform, including the benefits and possible obstacles.

Finally, in “Online Support for Education in Entrepreneurial and Intrapreneurial Competences: A Proposal for an Assessment Tool and Support for Tailor-Made Training”, Jaume Teodoro and colleagues describes an online platform—named EICAA—which supports educators and trainers aiming at teaching, guiding, or coaching students or employees in developing entre/intrapreneurial competences.

6.2. Identification of Organizational Requirements for Innovative Pedagogies

In this research category, we have included studies exploring the complexities of online learning at an organizational level. In “Towards the Mainstreaming of Online Mobility

at KU Leuven”, Mieke Clement, Ilse Op de Beeck, and Kamakshi Rajagopal explored the need to ensure, support, and coordinate this type of learning at an institutional level at KU Leuven. Although there is an established consensus in that online mobility may bring great benefits for students, it is crucial to have an effective supporting structure for faculties, departments, and individual teachers. “Although policy makers at the university may be convinced of the benefits of online mobility, faculties, departments and individual teachers need to see benefits in undertaking the effort of creating online mobility activities”. To collect data, the “Analysis and Exploration phase” is of particular interest; through this, authors collected qualitative data about the perceptions, visions, priorities, and attitudes of several actors from the university: 54 people from 11 faculties and departments, and 20 people of external institutional partner networks. This heterogeneous population allowed the authors to gain a wide perspective about the needs for successfully integrating online mobility.

6.3. Identification of Students’ and Teachers’ Perceptions

This group includes research whose purpose has been to collect students’ perceptions about digital learning. It also includes research exploring both teachers’ and student’s experiences. Some studies aim to collect participants’ experiences to propose guidelines and recommendations for best practices.

In “User-Oriented Policies in European HEIs: Triggering a Participative Process in Today’s Digital Turn—An OpenU Experimentation in the University of Paris 1 Panthéon-Sorbonne”, Marco Renzo Dell’Omodarme and Yasmine Cherif explore students’ motivations, participation incentives, and the ethical issues emerging from the institutional change linked to the digitalization process at the University of Paris 1 Panthéon-Sorbonne. Increasingly compelled by education policies, digitalization can be regarded as an indicator of an HEI’s capacity to innovate, hence the reason why most (French) institutions have started to adopt a “digital upgrade”. Following a bottom-up approach, the authors adopted a “user-centric” approach to delve deeper into the effects of digitalized education policies on different stakeholders, such as students, teachers, and staff. Drawing on such a heterogeneous sample of participants, authors explored three main questions: (1) What are the barriers to the digital turn, as seen by non-strategic members of the community? (2) How can an inclusive user-oriented participative approach be implemented in the digitalization of the university, i.e., how can participation and adherence be ensured? (3) Which ethical issues are at play when building policies based on such approaches? To answer these questions, qualitative and quantitative methodologies, including focus groups, observations, and questionnaires, were conducted from two participative experiments in the framework of the OpenU project. Results obtained from such a bottom-up or “user-centric” approach can be considered by practitioners and policy makers to facilitate discussions and debates about the current and future digitalization of the learning practice.

In “Digital University: A Study of Students’ Experiences and Expectations in the Post-COVID Era”, Katarzyna Chodak and colleagues conducted a study at the Jagiellonian University in Kraków (Poland) to explore students’ experiences on remote learning after the pandemics. For this, authors researched how students perceived distance learning, e.g., in terms of equipment, organization, and health, how they perceived the digitization of administrative matters, and how they perceived the impact of distance learning in terms of comfort while studying. By applying an extensive survey to around 800 students, Chodak et al. paid special attention to the differences in student’s attitudes, finding, for example, that participants from social and humanist faculties viewed remote education positively while the opinions of science students were mostly negative.

In “Internationalisation of Teaching and Learning through Blended Mobility: Potentials of Joint International Blended Courses and Challenges in Their Implementation”, René Perfözl and Asun López-Varela share their experiences in designing, planning, organizing, and implementing a joint international blended course between the Freie Universität Berlin and the Universidad Complutense de Madrid. Two perspectives, i.e., students’ and

teachers', were explored to understand its complexity. From the point of view of students, Perföls and López-Varela aimed to learn about their motivations for participation in the blended course and their perceptions regarding its design. From the point of view of teachers, the authors sought to understand the difficulties and challenges associated with the planification of a joint course and the possible measures to support its design and implementation. Results can be seen as a useful guide that can help course designers to plan, develop, and implement blended learning in an efficient way.

In "Barriers to Digital Higher Education Teaching and How to Overcome Them—Lessons Learned during the COVID-19 Pandemic", Nicole Draxler-Weber, Sven Packmohr, and Henning Brink aimed to identify the "barriers" perceived by university students after their learning experience during the pandemic. Collecting data through a survey applied in three institutions (Sweden, Türkiye, and Germany), the authors elaborated a set of recommendations, where offering hybrid formats, adjusting lecture design, and ensuring proper communication are particularly important.

In "Best Practices for Sustainable Inter-Institutional Hybrid Learning at CHARM European University", Daniel Griffin and colleagues discuss the challenges of delivering course modules across multiple locations at the same time, in the framework of a master's degree offered in five European university campuses. Authors focus on the concept of "hybrid classrooms", which provide spaces for students and staff to teach and learn locally and remotely. Drawing on expert judgment (in relation to technology and pedagogy), the authors elaborated a set of good practices for the implementation of hybrid learning, mainly in terms of design and development. The following statement demonstrates the relevance of Griffin's proposal: "Digital transformations within inter-institutional cooperation require collaboration, diplomacy, planning, and time", all of which have been covered in this collection of best practices.

6.4. *Understanding the Role of Education Policies*

Finally, this group of articles discusses and reflects on education policies, for example, how they can influence the development and implementation of certain forms of digital transformation and how they can be translated into effective education practices.

In "Determinants Influencing Distance Learning at Health Technology Higher Education Institutions in Portugal", Ricardo Teresa Ribeiro and colleagues research the introduction of distance learning in the health sector in Portugal. The adoption in this sector is particularly challenging, since the competencies acquisition framework is based on in vivo and clinical placement pedagogical methods. In this context, public policies play a crucial role in the creation and implementation of these digital environments. Therefore, Ribeiro's study aimed to identify the determinants influencing national public policies that foster digital learning transformation in health HEIs. After applying a questionnaire to 48 participants from different sectors, the authors claim that the driver to success is grounded in national and international cooperation between health professionals, hospitals, and HEIs through transferability processes of innovative practices.

Finally, in "Closing the Policy Gap in the Academic Bridge", Firas Al Laban, Martin Reger, and Ulrike Lucke claim that there would a vertical gap in the translation of higher-level policies to local strategies and regulations, and a horizontal gap between educational domains regarding the policy awareness of individual players, putting the bridge between secondary and tertiary education at risk. To close the identified gaps, the authors discuss the role of digitalization in the "academic bridge" by asking the following question: what value do the involved stakeholders expect to gain from educational policies? For this, they discuss two Erasmus+ KA3-based cases on policy evaluation in the educational sector (OpenU, on virtual mobility in HE; and TrainDL, on teacher training in AI and data literacy) and conclude by providing a set of recommendations. As for virtual mobility, for example, they stress the importance of (a) building a common vision among partners institutions, interested stakeholders and existing contacts between staff members and departments; (b) translating the applicable policies and strategies into practice, which would benefit

from a spiral model of experimentation; and (c) co-creating experimentation-related value through cooperation between three main players: policy makers at the institutional level, educational designers, and targeted students.

7. Final Thoughts

This short paper introducing the Special Issue has had the modest purpose of contributing to the discussion around education and its inevitable intersection with information technologies in the so-called digitalization era. We have placed emphasis on the potential of “experimentations” as a valid research method to both explore the possible effects of collaborative education and produce data-based evidence that can eventually feed the discussion at a policy level. The wide variety of methods used along the experimentations performed in the frame of OpenU allowed us to collect epistemic and political learnings in at least three imbricated dimensions, i.e., organization, pedagogy, and technology. It is important to warn the reader of this Special Issue that the experiment-based learnings presented here—if not everywhere—are context-dependent and possibilities for exploration are far from being exhaustive. Indeed, further critical topics for research may include, for example, management, storage, and protection of participants’ data (datafication), weight of institutional prestige for partnership, management and leadership in education consortia (i.e., inclusion and exclusion of partners as a financial sustainability mechanism), discursive mechanisms for the justification of strategic alliances, values and norms of partnerships, expectations and sentiments from both teachers and students in relation to digitalization (especially in terms of a “redefinition of jobs”), quality assurance mechanisms of innovative pedagogies, inclusion of vulnerable populations, post-education benefits (e.g., hiring), among other topics that may be relevant to inform the European policy level.

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