Higher Education Contemporary Learning Landscape

Virtual Collaborative Learning

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Funded by
the European Union

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Copy-Editor Dr. Igor Rižnar

Published by ToKnowPress
Bangkok · Celje · Lublin · Malta
2025

ToKnowPress is a Joint Imprint of
Kasetsart University, Bangkok, Thailand
International School for Social and Business Studies, Celje, Slovenia
Maria Curie-Sklodowska University, Lublin, Poland
MED.E.A. – Higher Education Institution for Mediterranean, Europe and Africa, Malta

www.toknowpress.net

The publication of the monograph was financially supported by the Slovenian Research and Innovation Agency

ISBN 978-83-65020-53-6 (printed)
ISBN 978-83-65020-54-3 (pdf)

Distributed free of charge

 https://doi.org/10.53615/978-83-65020-54-3

Contents

Foreword

The landscape of higher education is undergoing a profound transformation. No longer confined to physical classrooms or restricted by national borders, the learning experience is increasingly defined by digital connectivity, international collaboration, and the urgent need to equip students with the skills required for an ever-evolving global workforce. In this context, Virtual Collaborative Learning (VCL) and Collaborative Online International Learning (COIL) have emerged not only as innovative pedagogical frameworks but also as essential responses to the educational, social, and technological demands of the 21st century.

This monograph is a testament to the collaborative efforts of scholars, educators, and institutional leaders from across Europe and the Western Balkans who are pioneering new approaches to teaching and learning. Drawing on the experiences of the Erasmus+ project COWEB and previous initiatives, such as VALEU-X, the volume provides a comprehensive exploration of how VCL and COIL can be effectively designed, implemented, and integrated into higher education. Through case studies, theoretical reflections, practical guidelines, and critical perspectives, it bridges the gap between vision and practice, policy, and pedagogy.

The monograph is structured in four parts. Part 1 lays the groundwork by contextualising the pedagogical foundations of COIL and VCL, offering comparisons, implementation strategies, and evidence of their transformative potential. Part 2 expands the conversation by connecting VCL to transversal competencies, artificial intelligence, and critical educational theory, while also exploring its role in fostering intercultural competence and inclusive learning environments. Part 3 focuses on assessment, real-world applications in the Western Balkans, and institutional strategies for implementation, highlighting both the opportunities and structural challenges faced by universities in the region. Finally, Part 4 investigates the broader impact of VCL – from student engagement and intercultural dialogue to evolving pedagogical practices and supportive policy frameworks that support sustainable digital transformation in education.

The contributions in this volume demonstrate that virtual collaboration is not a temporary solution to global crises but a sustainable

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pathway toward more inclusive, flexible, and interconnected forms of higher education. By centring collaboration, interculturality, and digital fluency, VCL and COIL create meaningful learning environments that reflect the complexity of our globalised world.

This monograph also underscores the importance of institutional and policy-level support. It calls for clear regulatory frameworks, investment in digital infrastructure, and the development of staff competencies to ensure that VCL is both possible and impactful. Experiences shared here from Albania, Kosovo, Montenegro, Bosnia and Herzegovina, and beyond offer valuable lessons for universities and governments seeking to modernise their education systems and expand access to high-quality learning.

We hope that this monograph will inspire further innovation, provide practical tools for educators and institutions, and strengthen the global academic community's commitment to accessible, high-quality education for all.

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https://doi.org/10.53615/978-83-65020-54-3/7-8

Part One

The digital transformation of higher education is fundamentally reshaping how knowledge is co-created, disseminated, and applied across borders. As universities respond to growing demands for more inclusive, flexible, and globally connected learning environments, pedagogical models such as Collaborative Online International Learning (COIL) and Virtual Collaborative Learning (VCL) have emerged as key drivers of this change. These approaches combine technology-enabled collaboration with intercultural and interdisciplinary learning, equipping students to thrive in digitally connected, multicultural teams-an increasingly essential skill in today's and future workforce.

In this evolving landscape, digital pedagogy has moved from the periphery to the core of modern education. It challenges educators and institutions to rethink traditional teaching paradigms and adopt models that foster collaboration, critical thinking, and communication across geographic distances and cultures. VCL responds to this challenge by embedding real-world relevance into the learning process through realistic case studies, promoting competencies that extend beyond academic knowledge to meet the needs of a dynamic and interconnected global society.

While both COIL and VCL prioritise learner engagement, teamwork, and the strategic use of digital tools, they differ in emphasis and application. COIL is typically situated within the 'internationalisation at home' agenda, fostering cross-cultural competencies and global awareness through structured international partnerships. It enables meaningful intercultural dialogue by connecting classrooms and students across borders without requiring physical mobility. In contrast, VCL provides a more comprehensive pedagogical framework that fosters collaborative learning in both local and international contexts. It utilises virtual collaboration platforms, structured case studies, Learning Analytics, and task-based scenarios to engage students in complex problem-solving and experiential learning.

This part examines the foundational principles, pedagogical frameworks, and implementation strategies of COIL and VCL. It explores how these approaches contribute to the development of 21st-century skills-including digital literacy, intercultural communication, adapt-

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ability, and autonomous learning. Through comparative analysis, theoretical perspectives, and practical illustrations, it aims to provide a comprehensive understanding of their respective roles in reimagining collaborative learning and shaping a future-ready higher education landscape.

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Editors

https://doi.org/10.53615/978-83-65020-54-3/9-10

Chapter One

Collaborative Pedagogies in the Digital Age: Contextualising COIL and VCL

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https://doi.org/10.53615/978-83-65020-54-3/11-21

Introduction

In an increasingly interconnected and digital world, the landscape of higher education is undergoing a significant transformation. Traditional boundaries of time, space, and culture are being reshaped by the integration of technology into pedagogical practices, leading to innovative models of teaching and learning. Among these emerging models, Collaborative Online International Learning (COIL) and Virtual Collaborative Learning (VCL) have gained prominence as dynamic approaches that leverage digital tools to foster collaboration, intercultural exchange, and active learning.

Both COIL and VCL reflect a growing need to prepare students not only with disciplinary knowledge but also with the global competencies and soft skills essential for participation in an internationalised workforce. These pedagogies promote collaboration across geographical and cultural boundaries, enhance learner engagement, and provide flexible access to education through digital platforms. At the same time, they offer distinct yet complementary frameworks: while COIL is firmly rooted in the ethos of internationalisation at home and focuses on intercultural learning, VCL encompasses a broader array of digitally mediated collaborative experiences that are not necessarily bound by international contexts.

This chapter explores the definitions, key features, benefits, and limitations of COIL and VCL, providing a comparative analysis that highlights their unique contributions to 21st-century education. Drawing

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from a range of scholarly sources, the discussion offers insights into how these methodologies can be effectively implemented to enhance both academic outcomes and global engagement among learners. In doing so, it contributes to a deeper understanding of how digital collaboration is reshaping pedagogical practices in higher education.

Collaborative Online International Learning

Collaborative Online International Learning (COIL) is a pedagogical approach that facilitates collaborative educational experiences between students from different geographical and cultural backgrounds using online platforms. This framework is grounded in the broader concept of Internationalisation at Home (IaH), which seeks to incorporate global perspectives into domestic curricula without necessitating physical mobility for students. As noted by Wimpenny et al., COIL enables the co-development of tasks and learning objectives by educators from diverse institutions, allowing students to engage in joint academic activities that promote intercultural understanding and global citizenship (Wimpenny et al., 2024).

The essence of COIL lies in its capacity to create an interactive online space where students can work collaboratively across borders. Studies affirm that COIL is instrumental in fostering intercultural communication skills and cultural fluency among students, enriching their learning experiences by exposing them to different cultural viewpoints and collaborative processes (Appiah-Kubi & Annan, 2020; Anderson, 2022). Furthermore, it equips students with critical soft skills necessary for thriving in a globalised workforce, including teamwork, adaptability, and problem-solving (Swartz et al., 2020; Júnior & Finardi, 2018).

A distinctive characteristic of COIL is its emphasis on leveraging technology to bridge educational divides, allowing for meaningful interactions that may not be possible in traditional classroom settings. This approach not only enhances students' academic competencies but also addresses issues of accessibility and inclusion in higher education by providing opportunities for students who might be unable to participate in conventional international exchanges due to financial or logistical constraints (Durand & Balhasan, 2023; Guimarães et al., 2019). Additionally, the flexibility of online learning environments allows students to engage in collaborative projects that facilitate a deeper understanding of global issues, further contributing to their personal and professional development (Cotoman et al., 2021).

Collaborative Online International Learning serves as an innovative educational strategy designed to enrich the academic experience through collaborative and cross-cultural engagement. By integrating diverse knowledge systems and fostering mutual respect among students from various backgrounds, COIL stands as a vital component of modern education aimed at equipping students for a globally interconnected world.

Virtual Collaborative Learning

Virtual Collaborative Learning (VCL) is a contemporary pedagogical approach that integrates technology to enhance collaborative learning experiences among students dispersed across various geographical locations. It is built on constructivist learning paradigms, leveraging tools typically associated with Web 2.0, which extend beyond traditional e-learning frameworks. As described by Tawileh et al. (2014), VCL utilises such technologies to create interactive learning environments that engage students in a cooperative learning process, facilitating knowledge sharing and social interaction.

In VCL, participants typically engage in collaborative tasks through multi-user virtual environments (MUVES), which ensure immersive interaction and communication capabilities. Ibáñez et al. highlight that these environments enable students to engage actively in team-based projects, enhancing their learning experiences through shared goals and collective problem-solving (Ibáñez et al., 2013). The design and facilitation of activities within these virtual spaces are crucial, as effective collaboration requires careful planning and support to ensure high levels of engagement and interaction among participants (Ibáñez et al., 2013; Schmeil et al., 2012).

Furthermore, VCL includes elements such as avatars, providing a visual representation of users, which enhances social presence in virtual settings. This is particularly valuable in facilitating interactions that may not be as effective in traditional online formats. Schmeil et al. (2012) emphasise a structured approach to designing these collaborative experiences, focusing on the unique attributes of virtual worlds that can be harnessed for educational purposes. This aspect is further supported by research from Ibáñez et al., who note that successful collaborative encounters in MUVES rely heavily on well-designed learning activities that promote teamwork and effective communication (Ibáñez et al., 2013; Schmeil et al., 2012).

While virtual collaborative learning presents many benefits, such as fostering global connections and enhancing engagement among remote learners, it also poses challenges, particularly in the realms of technological accessibility and the need for robust facilitation skills. Paulsen et al. suggest that pedagogical strategies must evolve to meet the demands of immersive virtual reality environments, ensuring that they remain conducive to collaborative learning objectives (Paulsen et al., 2024).

VCL represents an innovative approach to education that capitalises on advanced technologies to foster collaborative learning across boundaries. It is characterised by a reliance on immersive environments, collaborative activities tailored to virtual platforms, and the integration of social interaction tools that enrich the learning experience for participants.

Contrasting COIL and VCL: Scope, Objectives, and Implementation

Collaborative Online International Learning (COIL) and Virtual Collaborative Learning (VCL) represent two distinct yet interconnected approaches to facilitating learning through collaboration in digital environments. While both pedagogies emphasise collaboration and technology, they differ significantly in scope, goals, and context.

COIL specifically targets international collaboration by connecting students from different countries through technology, thereby fostering intercultural communication and global citizenship. The primary aim of COIL is to enhance students' cultural competencies and prepare them for a globalised world by providing authentic international learning experiences without requiring physical travel (Niitsu et al., 2022; Appiah-Kubi & Annan, 2020; Júnior & Finardi, 2018). According to Byker et al., COIL engages students across international boundaries, emphasising project-based learning in culturally diverse settings, which contextualises academic content within a global framework (Byker et al., 2023).

In contrast, VCL serves as a broader category that encompasses collaborative learning across virtual spaces, which may not be tied specifically to international settings. This includes various forms of online collaborative activities that can occur within the same institution or among learners from different geographical backgrounds. The focus of VCL is on enhancing learning through collaborative technology use, regardless of the participants' locations or their cultural backgrounds

(Häkkinen & Hämäläinen, 2012; Darwaish & Wang, 2012). As described by Darwaish and Wang (2012), VCL environments are designed to enhance students' collaborative skills and teamwork through the use of diverse technological tools that support communication and interaction.

Both COIL and VCL leverage advancements in technology to facilitate learning. COIL uses digital platforms to create cross-cultural exchanges that nurture interpersonal skills and encourage students to share perspectives from distinct cultural backgrounds, contributing to their academic and personal growth (Niitsu et al., 2022; Marcillo-Gómez & Desilus, 2016). VCL, on the other hand, emphasizes the collaborative capacity of virtual learning environments (VLES) to enhance learning outcomes through teamwork and shared experiences, focusing on the mechanics of collaboration regardless of the participants' cultural diversity (Ibáñez et al., 2013; Darwaish & Wang, 2012; Song & Elftman, 2024).

Research has shown that both methodologies foster critical thinking and engagement among participants. For instance, studies indicate that effective emotional interaction significantly enhances student engagement in online collaborative learning, which is applicable to both VCL and COIL contexts (Wang et al., 2024). However, while COIL explicitly promotes cultural understanding, VCL typically may not prioritise this aspect unless it is intentionally integrated into the design of the learning activities.

The challenges posed by each approach also differ slightly. COIL initiatives may encounter logistical barriers such as time zone differences and varying academic expectations, as mentioned by Appiah-Kubi and Annan (2020). VCL, while similarly facing challenges such as inadequate communication and collaboration tools, can often mitigate these issues through the flexibility of synchronous or asynchronous collaborative frameworks that allow for diverse group compositions (Elenurm, 2022; Darwaish & Wang, 2012).

While both Collaborative Online International Learning and Virtual Collaborative Learning prioritise collaboration and technology in learning, COIL is expressly designed to foster internationalisation and cultural fluency through global connections, whereas VCL emphasises a broader application of collaborative practices across varied virtual environments. Understanding the distinctions between these two approaches enables educators to better implement strategies that align with their pedagogical goals and the learning needs of their students.

Benefits and Drawbacks of Virtual Collaborative Learning

Virtual Collaborative Learning (VCL) has garnered attention as a viable approach for enhancing educational outcomes in various academic disciplines through digital collaboration. This method has both positive and negative consequences that can significantly impact the overall learning experience.

Benefits of VCL

Enhanced Engagement and Motivation: VCL has been shown to increase student engagement, allowing learners to take ownership of their learning processes. Studies indicate that students often exhibit stronger motivation and accountability in virtual settings compared to traditional face-to-face environments Song & Elftman, 2024; Breen, 2013). For instance, Campbell et al. found that peer-to-peer learning strategies can foster connectedness and positive learning experiences in virtual environments, particularly within collaborative contexts like environmental management (Campbell et al., 2024).

Development of Collaborative Skills: One of the key benefits of VCL is the cultivation of collaborative skills among students. By working together in virtual teams, students can learn to leverage each other's strengths, enhancing their problem-solving and critical thinking abilities (Breen, 2013; Dincă et al., 2023). The ability to navigate team dynamics and collaborate effectively with peers from diverse backgrounds is crucial for success in today's interconnected world (Li et al., 2022).

Flexibility and Accessibility: VCL provides flexibility in terms of when and where students can engage in collaborative learning. This can be particularly beneficial for those who may face logistical challenges in attending in-person classes, as it allows for greater inclusivity (Ignacio et al., 2022; Pei & Wu, 2019).

Facilitated Intercultural Interaction: VCL can create opportunities for students to interact with peers from different cultural backgrounds, fostering global awareness and intercultural competence (Herriott & McNulty, 2022). This aspect is especially important in higher education, where understanding diverse perspectives is pivotal for future careers.

Drawbacks of VCL

Reduced Collaboration and Communication Challenges: Despite the benefits, VCL can lead to significant challenges in collaboration due to

the limitations inherent in virtual communication. Issues such as misinterpretation of messages, a lack of non-verbal cues, and technological difficulties (e.g., unstable internet connections) can hinder effective collaboration among participants (Herriott & McNulty, 2022; Andrews & Rapp, 2015) and possibly lead to decreased collaboration quality (Breen, 2013).

Technical Barriers: Not all students may have equal access to the technology necessary for effective virtual collaboration. For those who are not technologically savvy, the initial learning curve can be daunting, potentially limiting their ability to fully participate in VCL (Ignacio et al., 2022). Some students may struggle with engagement if they find the technology overwhelming or confusing (Pei & Wu, 2019).

Dependence on Group Dynamics: The success of VCL is often contingent upon positive group dynamics. When team members do not contribute equally, it can result in frustration and reduced motivation among more committed participants (Andrews & Rapp, 2015; Jackson et al., 2018). Such dynamics can undermine the collaborative spirit intended in VCL activities.

Potential for Isolation: While VCL offers opportunities for interaction, it may also lead to feelings of isolation for some students, especially those who experience difficulties in establishing rapport with peers or encounter technical issues (Herriott & McNulty, 2022). Emotional interactions are critical in collaborative settings, and the absence of face-to-face contact may affect students' engagement and overall learning experience (Wang et al., 2024).

Virtual Collaborative Learning presents a dual-edged sword of enriching educational practices with significant benefits while also introducing challenges that must be addressed to maximise its effectiveness. Educators and institutions can enhance the positive aspects while developing strategies to mitigate the negatives, ensuring a more inclusive and productive learning environment.

Conclusion: Advancing Digital Collaboration in Higher Education

This analysis has explored the distinct yet complementary pedagogical models of Collaborative Online International Learning (COIL) and Virtual Collaborative Learning (VCL), highlighting their roles in shaping modern, technology-enhanced education. Both approaches offer dynamic opportunities for student engagement, intercultural exchange,

and the development of key 21st-century competencies such as teamwork, communication, and adaptability. COIL emphasises internationalisation at home and cultural awareness through cross-border collaboration, while VCL provides a broader framework for virtual teamwork, often within immersive and interactive learning environments.

The implications of integrating COIL and VCL into higher education are significant. These pedagogies contribute to widening access to international and collaborative learning experiences, reducing dependency on physical mobility, and addressing issues of equity and inclusion. Educators present valuable strategies to foster global citizenship and digital fluency, aligning curricula with the needs of an increasingly interconnected world. Institutional implementation of these models can support strategic goals related to internationalisation, innovation, and student engagement.

However, the successful adoption of COIL and VCL is not without limitations. Both approaches face challenges related to technological infrastructure, unequal access to digital tools, time zone coordination, and the need for strong facilitation skills. Furthermore, group dynamics and emotional engagement remain critical factors that can affect the quality and inclusiveness of virtual collaboration. While COIL brings a strong intercultural component, its outcomes depend heavily on intentional instructional design. Similarly, the effectiveness of VCL may be constrained when collaborative tasks are not well-aligned with learners' contexts or when digital platforms fail to fully support social interaction.

We can conclude that COIL and VCL represent powerful and evolving pedagogical responses to the demands of globalised education. By leveraging digital collaboration, these models offer pathways to more inclusive, flexible, and culturally enriched learning environments. Future research and practice should continue to explore how these approaches can be refined, scaled, and integrated into diverse educational settings while addressing the practical and pedagogical limitations that accompany their use.

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Chapter Two

Designing Coil Courses with Impact: A Systematic Approach Using the Virtual Collaborative Learning Framework

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https://doi.org/10.53615/978-83-65020-54-3/23-33

Introduction

The Virtual Collaborative Learning (VCL) framework has become a widely used didactic approach to promote 21st-century skills, including intercultural competence, self-organisation, and digital collaboration. This chapter explores the research findings of over 2 decades of iterative research and the implications drawn from them. It focuses on the four design dimensions: Technical Platform, Realistic Case Studies, Professional Pedagogical Support and Learning Analytics (Altmann et al., 2024; Schoop et al., 2021; Altmann & Clauss, 2020).

In addition to the more than 80 VCL modules that have now been realised at the Chair of Information Systems with international partners from over 20 nations, capacity building has also been taking place since 2019 as part of the Erasmus+ projects VALEU-X and COWEB for implementation. The VALEU-X project, which was completed in January 2023, initially focused on the target country, Albania and implemented the VCL framework at 6 partner universities in a two-stage pilot phase. The follow-up project COWEB is rolling out capacity building to the

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Western Balkans region and spreading the use of VCL to universities in Albania, Kosovo, Bosnia and Herzegovina, and Montenegro (Vladi et al., 2020; COWEB Erasmus+ Project, 2023)

Virtual Collaborative Learning shares many principles with COIL (Collaborative Online International Learning), such as cross-institutional teamwork, online collaboration, and intercultural exchange. However, while COIL focuses more on international and intercultural exchange, VCL provides a framework for the design and implementation of online scenarios in local and international contexts (Altmann et al., 2024; Hackett et al., 2023). Hackett et al. (2023) stress that empirical research on COIL is currently rare and mostly on a small scale, which underlines the need for a deeper exploration with a broader sample. For this reason, this chapter deals with a summary of the VCL concept, which should serve as a basis for further research and focuses here on the design of the framework. After presenting the theoretical and pedagogical foundations, the VCL framework with its four design dimensions is presented: Realistic Case Studies, Professional Pedagogical Support, Technical Platform and Learning Analytics. The key factors of the framework are then summarised in a conclusion.

Theoretical and Pedagogical Foundations

The design of Virtual Collaborative Learning is based on current educational theories that propagate active, social, and networked learning. VCL thus responds to the challenges of globalised education by bringing together digital pedagogy with international collaboration and creating a framework for competence-oriented and technology-supported learning in transnational contexts (Altmann & Clauss, 2020; Schoop et al., 2020; Altmann et al., 2024).

The following learning theories are included in the VCL framework: Constructivism, Social Learning Theory and Connectivism:

- *Constructivism* states that learners actively construct their knowledge through experience, reflection, and engagement (Piaget, 1977; Bruner 1990). In the VCL context, learners construct meaning by solving open-ended problems in authentic real-world scenarios (Altmann et al., 2024). The framework promotes self-directed exploration and interpretation, essential for developing autonomy and problem-solving skills.
- According to Vygotsky (1978) and Bandura (1977), *Social Learning*

Theory states that social interaction plays a key role in cognitive development. Through VCL, learners enter their Zone of Proximal Development (things learners can do with help) through peer collaboration and guided support from e-tutors. The small heterogeneous groups in the VCL framework promote interdependence, mutual learning, and negotiation-core principles of social constructivism.

- *Connectivism,* according to Siemens (2005), reflects the influence of virtual networks on learning. The learning theory assumes that knowledge is not only formed in individuals, but that it is above all the connections between people and digital nodes that ensure this. VCL is a networked learning framework in which learners acquire digital and collaborative skills by engaging with different tools and platforms.

This combination of learning theories enables VCL to cultivate 21st-century skills such as critical thinking, intercultural competence, self-organisation, and digital fluency (Altmann & Clauss, 2020; Schoop et al., 2021; Altmann et al., 2024). Another foundation of the VCL framework is the integration of internationalisation and digital pedagogy. while traditional academic mobility is often possible for financially and institutionally privileged students, Virgil Collaborative Learning offers accessible and structured intercultural collaboration for all students (Altmann & Clauss, 2020; COWEB Erasmus+ Project, 2023). This blend of global perspective and digital infrastructure not only supports learners but also encourages higher education institutions to expand their capacity for innovative, transnational pedagogy (Altmann et al., 2024).

The VCL Framework

The global digital transformation and the growing need for collaborative and intercultural learning opportunities are permanently changing the higher education landscape (Redecker & Punie, 2017; Skantz-Åberg et al., 2022). Since 2001, the Chair of Information Management at TU Dresden has iteratively developed and implemented VCL in over 60 courses, with recent iterations responding to the COVID-19 pandemic by further refining its format (Schoop et al., 2021). The VCL framework is divided into four design dimensions that provide the basis for a holistic design of new modules. The design dimensions are described in detail below.

Realistic Case Studies

The VCL framework is realised through the design of realistic case scenarios. This means that students work on complex problems that have been generated from a real-life situation. These case scenarios should then be aligned with the learning objectives of the module and take into account the students' prior knowledge. In this way, the complexity of the tasks in the module should also increase step by step, as this has an influence on the students' collaboration activities. The highest level of complexity requires activity, collaboration, reflection, and critical thinking from all group members. An adjustment of the complexity can be influenced by the task design by adjusting the information provided, the guidance and the division into sub-tasks. Professional pedagogical support is always available as a first point of contact to support students in the event of uncertainty or excessive cognitive load (Altmann et al., 2024).

Nevertheless, the limited structure offers the groups a great deal of room for manoeuvre when solving problems, which includes the independent selection of methods, tools, and division of work. Furthermore, the independent organisation of the learning process promotes the interdisciplinary skills of the learners. This includes, for example, collaboration, organisational and project management skills (Schoop et al., 2021).

Figure 2.1 shows a typical VCL process that is divided into synchronous (dark in the figure) and asynchronous (light in the figure) phases. The case-based learning is organised over a period of six to eight weeks and divided into weekly phases with deadlines for project plans, project reports and tasks. The tasks are open-ended, which means that there is no single, correct solution, but the path to the solution is included in the assessment. However, the submission of results on a weekly basis is mandatory. The content-related tasks are combined with subject-specific methodological skills and the use of digital tools, which promotes the students' digital skills as well as their methodological and social skills (Schoop et al., 2021).

The current case study from the COWEB project should serve as an example to illustrate this. In this study, students from 9 different universities come together in heterogeneously mixed groups to work on a complex problem over a period of 8 weeks. In this case, the starting point is a bicycle route that will open in 2024 and run through all the

Kick-off 9/4/2025	*VCL Phase 1* 10/4/2025–23/4/2025	*Workshop* 23/4/2025	*VCL Phase 2* 24/4/2025–7/5/2025	*VCL Phase 3* 8/5/2025–21/5/2025	*Final Presentation* 4/6/2025
	Task 1 Onboarding (9/4–16/4) *Task 2* Common ontology (17/4–23/4)		*Task B1* Market analysis & brainstorming on business ideas (24/4–30/4) *Task B2* Business analysis (30/4–7/5)	*Task C1* Revenue model, budget planning & interim presentation (8/5–14/5) *Task C2* Marketing strategy & branding (15/5–21/5) Finalizing business solution development (22/5–3/6)	
VCL Basics Group division, definition of roles, & assessment criteria		Business canvas			Pitch presentation

FIGURE 2.1 Phases of a Common VCL Module (adapted from Altmann & Arnold, 2024)

countries of the Western Balkans. In addition to the participating universities, the route operator of the Trans Dinarica is also involved in the implementation of the case study. Figure 2.2 shows the call that the students receive at the beginning of the module.

As part of the module, after the synchronous kick-off event, the students first create a list of rules for their collaboration in the online phase, a so-called group work contract. This is followed by a joint ontology to bring prior knowledge up to a common level. Here, basic terms and definitions that are important in the context of the case study are identified and developed independently by the students. This is followed by a synchronous workshop in which the students learn the Business Model Canvas in application and theory. In the following asynchronous phases on the learning platform, the students gradually complete the individual building blocks of the Business Model Canvas and finally prepare a pitch, which is presented to a jury of professors at the end of the module. During the module, students are supported in any organisational and technical problems by e-tutors, whose role is described in more detail in the following section.

FIGURE 2.2 Teaser for VCL Case Study 2025

Professional Pedagogical Support

An important component of Virtual Collaborative Learning is professional pedagogical support. In contrast to conventional online learning environments, which often rely on feedback from teachers or peer interaction, the VCL framework embeds a structured e-tutoring model, which plays a central role in guiding implementation and supporting the learning process (Altmann et al., 2024; Schoop et. al., 2021).

E-tutors are usually advanced students at the master's or doctoral level who have previously been formally trained to support online case study work in small groups. Their training is based on a 'flipped classroom' format that includes didactic input, a practical phase in a VCL setting and continuous reflection (Altmann et al., 2024). This preparation helps them above all in the realisation of learner support, conflict management, intercultural communication, and digital tool literacy. It

is important to note that e-tutors are not subject experts and are not intended to evaluate the content of the students' solutions. In contrast, they function as a learning process support, helping groups to structure their collaboration on the online platform, manage their time and reflect on their methods. This aligns with constructivist and social-constructivist learning theories, which emphasise learner autonomy, self-organisation, and peer-supported knowledge construction (Dillenbourg, 1999; Schreiber & Valle, 2013).

One of the main tasks of e-tutors is the management of group dynamics in heterogeneous virtual teams. The learners have to organise themselves within different time zones, cultural backgrounds, and academic disciplines, often without previous experience in virtual collaboration. this is where the role of the e-tutor comes into play through the support of:

- *Organisational support:* Assisting with project planning, time management, and task division.
- *Technical support:* Guiding students in the use of collaborative tools and troubleshooting technical problems.
- *Social support:* Fostering a productive and inclusive group atmosphere, resolving conflicts, and promoting motivation.
- *Reflective support:* Encouraging metacognition and group reflection through structured formative feedback.

From an institutional perspective, the use of e-tutors allows for the scaling and high-quality of support within VCL modules. Modules supported by e-tutors show higher student engagement, better quality of collaboration and higher satisfaction compared to non-supported online group work (Altmann & Clauss, 2020; Schoop et al., 2021).

Technical Platform

To enable effective VCL, it is particularly important to use a technical platform that maps all the required elements. Asynchronous and asynchronous communication in channels must therefore be supported. The sharing of documents, the distribution of tasks and the visualisation of group processes. The platform should also be intuitive to use and accessible on different devices (Altmann & Clauss, 2020). The technical environment functions as a social and cognitive workspace where collaboration is not only supported but actively shaped. As Bächle (2006)

and Hippner (2006) argue, such platforms go beyond technical mediation – they are social software systems that structure group interaction and identity formation in digital environments. Altmann et al. (2024) and Schoop et al. (2021) have summarised the most important properties for the technical platform:

- *Communication Tools:* Including video conferencing, text chat, discussion forums, and collaborative whiteboards (e.g., Miro).
- *Coordination Tools:* Shared calendars, task boards (e.g., Trello-style Kanban), and role assignment features.
- *Collaboration Tools:* Real-time co-authoring in shared documents, cloud storage, and versioning (e.g., OneDrive or Google Docs).
- *Feedback Tools:* Commenting systems, peer review integration, and rubric-based self-assessment options.
- *Learning Analytics Dashboards:* To visualise interaction patterns, participation frequency, and group progress over time.
- *Digital Identity and Social Presence:* A well-designed platform fosters trust and collaboration by enabling personal profiles and informal social interaction.
- *Usability and Training:* User-friendly tools and structured onboarding are essential to reduce barriers and support effective participation.
- *Integration with Learning Objectives and Case Design:* Platform features should be tightly linked to learning goals, making tool use part of the competence development.
- *Future Directions:* AI and Adaptive Technologies – AI tools like chatbots and dashboards enhance scalability and feedback, but must be used transparently and ethically.

Platforms such as Microsoft Teams offer these features, with the special feature that they are combined in one tool and allow the integration of additional tools. The VCLS held at the TUD since 2019 rely on this social software for a smooth process and the creation of optimal learning conditions for students.

Learning Analytics

By using a digital learning platform, it is possible to collect and analyse the data traces of the learners to optimise the virtual collaborative learning experience. The aim is to support supervisors, tutors, and

learners with data-based insights into their learning process. Learning analytics will also enable formative assessment, early detection of problems in collaboration and conflicts and thus also data-supported pedagogical interventions (Altmann et al., 2024, Schoop et al., 2021).

This can be done using dashboards and visualisation tools. As part of the VCL framework, dashboards for e-tutors and education have been used since 2019 to display a visual summary of group performance. In particular, this includes changes in group activity over time, comparison of individual and group participation in the work and the density of interaction between individual group members, for example, the number of document chats, edits, and voice calls. The visualisations help to make evidence-based pedagogical decisions and reduce the cognitive burden on e-tutors. If the data is made available to the learners, this also supports the self-monitoring of the learning process (Schoop et al., 2021; Altmann et al., 2024).

In a further step to increase the scaling of the VCL module, conversational agents (chatbots) can be used. These can, for example, support automated reminders for the submission of tasks, technical or methodological FAQS, as well as prompt self-reflection. For example, a chatbot can detect that a group has not communicated for 48 hours and send the group a friendly reminder. Such automated micro-interventions can help to maintain the group's engagement in Project Bass Learning. Nonetheless, these should also be ethically reviewed and transparent in the use of data for all participants. Furthermore, students' consent should be obtained for the use of their data (Altmann et al., 2024).

Learning analytics can open the door to adaptive VCL environments in which complex support tasks can be dynamically adapted to the needs of students through e-learning, tutoring and feedback. With the current advent of artificial intelligence, this field offers great potential for scaling the VCL framework and making it attractive as a modern form of teaching in the future.

Conclusion

The Virtual Collaborative Learning Framework provides a modern and adaptable structure to implement collaborative, intercultural, and digitally supported learning in higher education. Based on the experience of over two decades of iterative development and international implementation, including capacity building in the Western Balkans through Erasmus+ projects, the framework shows how twenty-first-

century skills can be fostered through well-structured virtual environments. At its core, VCL consists of four interconnected design dimensions: realistic case studies, professional pedagogical support, technical platform, and learning analytics. Each dimension contributes to the development of learner competencies such as critical thinking, self-organisation, digital competencies, and intercultural communication. The theoretical foundations lie in the constructivism of social learning theory and connectivism, which ensure that learning is actively networked and socially meaningful. Compared to other international learning models such as COIL, VCL is deeper in detail for a systematic design implementation and evaluation of collaborative learning scenarios which makes this framework particularly attractive for long-term use and curricular integration.

Through ongoing, iterative reported research and the continuous improvement of digital tools and the potential to integrate Artificial Intelligence. Artificial Intelligence, VCL is a sustainable approach to internationalisation and digital pedagogy at the Higher Education Institute. VCL is scalable, transferable, and learner-centred and will therefore continue to be an attractive method of teaching and learning in the future.

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Chapter Three

Unleash the Potential of Virtual Collaborative Learning: A Guide for Implementation

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https://doi.org/10.53615/978-83-65020-54-3/35-45

Introduction

Alongside the digitalisation of higher education, internationalisation is also becoming increasingly important. After completing their degree, more students will take it naturally to work in a digitally networked, interdisciplinary, and international team, regardless of their field (Chang & Gomes, 2022; Uduafemhe et al., 2023). Nevertheless, digitalisation and internationalisation are complex processes requiring careful planning and preparation time. In addition to teachers, students should also be prepared for the teaching format. Institutional support is also required to ensure the success of the teaching module.

The Erasmus+ projects VALEU-X and its successor COWEB, which aim to implement Virtual Collaborative Learning in the Western Balkans region, serve as an example. The completed VALEU-X project focused on six Albanian universities. Initially, it concentrated on training the academic and administrative staff to subsequently test the VCL framework locally in a two-stage pilot phase and then implement an international VCL module with 10 European partner universities. The COWEB project that followed rolled out the concept to other partner countries in the Western Balkans (Montenegro, Kosovo, Bosnia & Herzegovina) and Albania. In addition, an intermediate stage was introduced in the piloting, which prepares the participating partner uni-

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versities even better for implementing the international VCL module.

This article takes a step-by-step look at implementing virtual collaborative learning and provides practical recommendations for implementation. Starting with creating ideal conditions for implementation at the administrative and institutional levels, the article then deals with the preparations at the administrative and content levels. This is followed by a closer look at the actual implementation and a brief discussion of the tasks after completing the course.

Building VCL Scenarios

Preconditions on the Administrative and Institutional Level

Bottom-Up Or Top-Down Implementation

Due to the still-young history of Virtual Exchange and only a few available studies that have empirically examined the programs' success, motivated teachers often implement these programs according to the bottom-up principle. However, this means that it is rarely possible to anchor the program at an institutional level, so that the implementation depends on individual committed individuals and can hardly take on a formal character (Rubin & Guth, 2015). It is, therefore, advisable to proceed according to the top-down principle for sustainable implementation and involve all participating institutions' bodies from the outset.

Readiness for Virtual Exchange

A framework for Virtual Exchange programs must first be created at the administrative level. The objectives and the expected outcome of the Virtual Exchange should be defined. For example, the aim may be to improve students' global competencies or language skills. It is also advisable to expose students to different cultural perspectives (O'Dowd, 2018, 2019). Furthermore, logistical aspects such as the selection of partner institutions, the available technical platforms used for the virtual exchange, and the available resources should be examined (Giralt et al., 2022). Key stakeholders for the Virtual Exchange program should be identified as those involved in the planning and implementation. This includes faculty members who design the curriculum and track the achievement of learning objectives (Weaver et al., 2022). It is important to ensure the ongoing support of the academic staff and students by the administrative staff and to provide the necessary infrastructure (Whatley et al., 2022).

Establishment of Partnerships

Building partnerships with international institutions is necessary for the long-term success of virtual exchange programs. Careful selection should be made of partners pursuing similar educational goals and values. Formal agreements can be used to create these partnerships, outlining the participating institutions' intentions and responsibilities and describing the nature of the collaboration. Further components can also be the learning outcomes of the students (Giralt et al., 2022). Examples of agreements are a Letter of Interest (LOI) or a Memorandum of Understanding (MOU).

Preparation

The Preparation Phase itself can again be divided into two parts: the content level preparations and the administrative level preparations. This phase focuses on establishing the framework conditions with all partners and developing a common course outline collaboratively. It addresses eight key components that must be thoroughly discussed and agreed upon with all stakeholders. These components are interdependent, meaning that the sequence of discussions may vary and might not follow a linear progression. However, ensuring that all points are comprehensively covered is crucial to laying a solid foundation for the project. Once the course contents have been established, the training phase can begin. In this phase, all involved staff are trained and prepared for their respective roles in the course.

Administrative Level Preparations

Integrating into the curriculum is crucial for successfully planning for Virtual Collaborative Learning. A suitable module should be selected that enables collaboration on a project basis. It is unnecessary to create a new module if an existing one offers the possibility of integration or adaptation. The module's learning objectives should also be adapted and supplemented with interdisciplinary and collaborative cooperation (Altmann et al., 2024). Furthermore, social learning theories such as constructivism and Connectivism can foster student engagement and enhance their competencies to work in international teams (O'Dowd et al., 2019).

In the next step, *administrative and academic staff* training should be planned. These should focus on integrating technology, intercultural

awareness, and new pedagogical methods in Virtual Exchange. Particular attention should be paid to the complexity of virtual exchange to prepare those involved and thus enable them to navigate safely through the module (O'Dowd et al., 2019).

In addition to academic staff, *students should also be prepared for virtual exchange,* particularly concerning their technological and intercultural skills. According to research by Gutiérrez et al. (2022), students often lack effective communication strategies in virtual environments. For this reason, a training program should be established for students covering digital literacy, critical thinking skills, and conflict resolution. Ideally, this training should start before the start of the virtual module. Furthermore, an exchange on the cultural and social norms standard in the countries involved in the exchange is also recommended to enable a respectful and culturally valuable exchange.

As the main point of contact for students in VCL modules, intensive *preparation of e-tutors* should occur. This can be done, for example, through a preceding qualification module. The focus here is on communication in virtual space and the unique features of virtual collaboration, conflict resolution, and navigating safely through virtual collaborative learning modules. Furthermore, supporting the student's learning process is one of the central tasks of the e-tutors. They bridge the gap between students and teachers and are students' first point of contact when organising the learning process. Special sensitisation for this task is highly recommended (Altmann et al., 2024).

Rules and standards for communication should also be defined within the framework of international cooperation. This can prevent misunderstandings and promote respectful interaction on the learning platform. Due to the absence of non-verbal clues in virtual space, there is a higher potential for miscommunication (Peng & Derain, 2022). Initially, representatives of all participating institutions should agree on a common framework. This should then be used to sensitise both the e-tutors and the students, for example, by integrating it into the training courses described above.

The legal framework is of particular importance in international cooperation. Depending on the partner structure, special requirements must be observed here. Such barriers are not uncommon in the target region of the COWEB project, the Western Balkans. This is illustrated by the example of Albania and the study by Miço and Zaçellari (2020), who describe the legal framework for digital learning as fragmented

and marginally implemented. In particular, the unclear description of the requirements leaves the concrete design open and creates uncertainty among teachers and institutions. According to practical experience in the COWEB and VALEU-X project context, compulsory student attendance is still the state of the art in Albania. This situation can only be countered by concrete measures (such as virtual collaboration during physical presence at the university). Therefore, an assessment and consideration of the legal situation in the respective partner countries is essential for the successful implementation of Virtual Collaborative Learning.

Finally, the sustainability of administrative expenses should be ensured. *Establishing a community of practice* that connects the relevant stakeholders and enables collaborative work with a low barrier to entry is essential. This can stimulate the exchange of knowledge between participants and develop joint strategies for overcoming problems in the context of virtual exchange (Whatley et al., 2022)

Content Level Preparations

The first component involves determining *which disciplines will be involved* in the course. VCL offers the opportunity to integrate multiple fields of study into group settings (Clauss et al., 2020). A key consideration is identifying disciplines that can work symbiotically on a shared topic, fostering interdisciplinary collaboration. This process may be more straightforward when the disciplines are closely related or within the same field of study, though the final decision often depends on the individual preferences of the participating partners.

The second component of the coordination phase consists of determining the *program duration.* Several factors must be considered in this decision, including the length of each semester, how the semesters align across participating institutions, and any institutional restrictions on the duration of project work.

The next component involves agreeing on *the total number of participants* and the *group size* for the course. It is important to assess the available resources, including staff and e-tutors, for the total number of participants to understand how many can be realistically supported. Additionally, the expected level of interest in the course must be evaluated to estimate potential sign-ups accurately. When deciding on group size, considerations include the number of disciplines involved and the complexity of the tasks. Research suggests a group size of four

to six participants is ideal for fostering effective collaboration and ensuring manageability (Schoop et al., 2024).

Component four focuses on defining the *key participant demographics*. This involves deciding the desired level of study or expertise for the course, such as whether participants should be bachelor's or master's students or if they are expected to have specific foundational knowledge from other modules. Additionally, it is important to determine which fields of study and specializations are most relevant for the course, ensuring that participants possess the necessary background to engage effectively with the course content and objectives.

The *selection of technology* is another crucial component of the coordination phase, as it defines the platform students will use for interaction and collaboration. The chosen learning platform must fulfil several requirements for a practical and seamless learning experience. It should provide a reliable e-learning environment or collaborative platform that is affordable, regularly maintained, and accessible on both computers and mobile devices. Additionally, it must support a wide range of functionalities, such as digital communication tools for synchronous interactions, like video or voice calls, and asynchronous exchanges, such as forums, blogs, and chats. Coordinative features, including task assignments, calendars, and checklists, should also be available alongside collaborative tools for shared documents, spreadsheets, and presentations (Altmann et al., 2024). The platform should facilitate notifications and a common storage area for learning materials. Furthermore, it should also incorporate tools for social learning analytics to analyse student interactions, providing continuous monitoring and documentation of each group's progress objectively to support summative and formative assessments and feedback (Altmann et al., 2024).

The sixth component consists of determining how participants will be *accredited for their work* in the course. Providing academic credentials is key to motivating participants and ensuring the program's success. In this context, offering ECTS accreditation is particularly important, as it formally recognises the participants' efforts and aligns the course with standard academic frameworks (Tereseviciene et al., 2011).

Component number seven focuses on *designing the actual case study*. This involves three key aspects: defining the general framework, developing the content, and structuring the workflow. First, the learning goals must be clearly defined to ensure alignment with the course's edu-

cational objectives. Second, the content of the case study must be carefully crafted. This includes selecting an engaging and relevant topic, developing a compelling cover story to provide context, and designing tasks that challenge participants while aligning with the learning goals. Third, the structure of the case study must be established, encompassing the assignment of roles, the length of the working phases, and clear deadlines.

Lastly, the eighth component establishes a *common evaluation strategy,* focusing on formative assessment. This step requires defining how various contributions will be evaluated and how much they impact the overall assessment. It is important to balance group and individual assessments to ensure fairness and accurately reflect each participant's efforts and contributions. The evaluation strategy must also specify the metrics that will be used to assess performance. These metrics could include the quality of results, the group collaboration level, individual engagement, and the achievement of the predefined learning goals.

Doing

After completing both preparation phases, the VCL can start. Once the students have enrolled in the course and have been divided into groups, they can start *working on the case study* developed during the course preparation. While the VCL is running, *adequate supervision* is crucial to ensure students remain on track and fully supported throughout their work. Supervisors, including academic staff and e-tutors, must actively monitor group progress, provide timely feedback, and address any challenges students face. *Conflict management* is key to facilitating a smooth VCL experience, particularly when addressing intercultural differences, variations in working styles, or potential dropouts. E-tutors must be equipped to manage disputes constructively, promoting mutual understanding and resolving issues to support group dynamics. Proactive measures like *regular check-ins* and conflict resolution strategies can help mitigate these challenges and ensure a positive learning environment. *Regular communication and coordination between institutional partners* are also essential during the VCL. This involves consulting on progress, addressing emerging issues, and adjusting the course.

Maintaining this close co-working relationship fosters consistency across institutions, aligns expectations, and ensures that the course objectives are met collaboratively.

Post-Doing

After completing the module, the *assessment* should be started first. Both formative and summative elements of the VCL module should be considered. Before the module begins, the distribution of the assessment between the partners should be clarified, and a common assessment standard should be defined. The elements to be assessed should also be taken into account. Finally, all involved should agree on the grades to avoid misunderstandings. If the modules available at the respective partner institutions have different ECTS or study credit point requirements, consideration should be given to a supplementary assessment at the local level (for two partners) or a general supplementary assessment for several partners.

Once the VCL module has been successfully piloted, the next step should be to consider *accreditation.* Giralt et al. (2022) state that accreditation improves the learning experience and simplifies future international exchange. It also simplifies the recognition of student performance, which students receive in the form of ECTS, or study credit points, by participating in the module. Finally, this also promotes greater student engagement in international modules, thus the university's international offering.

Furthermore, student *reflection* after completing the VCL module is a valuable addition. On the one hand, students can gain a deeper understanding of the skills they have acquired, especially intercultural competence. On the other hand, the student reflections can be used to collect data, which, once analysed, enables a goal-oriented improvement of the VCL modules. The reflections can be implemented in the form of written, fully standardised interviews and through focus group discussions or essays.

Finally, after successfully implementing the VCL module, the *sustainable use of the established partnership* should be sought. In addition to the accreditation of the VCL modules, it is also advisable to strive for a strategic partnership between the participating institutions, thus significantly broadening the range of international courses offered by the respective partner institutions (Enkthur et al., 2024).

Recommended Schedule

To successfully implement a VCL module, it is advisable to divide the implementation schedule into new and existing partnerships. In the case of a new partnership, particular attention should be paid to the

TABLE 3.1 Recommended Schedule for VCL Implementation

1–3 months	*Pre-conditions*	• Top-down or bottom up • Readiness for virtual exchange • Establishment of partnership		Timespan for new VCL collaboration
2 months	*Preparations: Administrative-level*	• Integration in curriculum • Staff trainings • Student trainings • Qualification of e-tutors • Rules for communication • Legal framework • Community of practice	Timespan for established VCL collaboration	
2–3 months	*Preparations: Module-level*	• Disciplines • Program duration • Participant number and group size • Key participant demographics • Selection of technology • Secure/agree on accreditation • Case study design • Evaluation strategy		
1–2 months	*Doing*	• Student supervision • Conflict management • Coordination with partners		
1–2 months	*Post-doing*	• Assessment • Accreditation • Reflection • Ensure sustainability		

first phase to create the prerequisites. The planning time for this phase should be at least one month, but experience has shown that it tends to take longer. Preparations should then be made at the administrative and module levels. As the administrative preparations partly serve as a prerequisite for carrying out the preparations at the module level, these phases can only be completed in parallel to a limited extent. There is a more significant potential for shortening this if a VCL cooperation already exists, as academic staff is already trained and administrative preparations from previous semesters can be used. This is followed by the VCL, where there are only marginal differences between established and new collaborations, as each module is unique in its challenges concerning student supervision, conflicts that arise, and coordination tasks. Finally, the post-doing phase can be shortened in existing partnerships through established assessment standards and sustainability already created, but here, too, student reflections should

also be collected, analysed, and considered for improvement in every new course. Table 3.1 shows a recommendation for new and established VCL collaborations.

Finally, it should be noted that this schedule is based on the experience gained from the COWEB and VALEU-X projects and represents a recommendation for future collaborations. In particular, the time needed to prepare and create the prerequisites can vary considerably depending on the partner country.

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Chapter Four

Overcoming Challenges and Embracing Opportunities: How COIL and VCL Can Boost 21st Century Skills in Western Balkans Higher Education Ecosystem

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https://doi.org/10.53615/978-83-65020-54-3/47-59

Introduction

The higher education ecosystem is undergoing a rapid transformation, driven by advancements in digital technologies, evolving workforce demands, and the increasing need for international collaboration. The shift toward digital and collaborative learning has become more pronounced in recent years, as traditional teaching methods struggle to keep pace with the expectations of a highly connected, knowledge-driven global economy. The COVID-19 pandemic further accelerated the adoption of online education, highlighting both the challenges and opportunities of virtual learning environments. In this evolving educational paradigm, 21st-century skills have emerged as essential competencies for students to thrive in modern society and the global labour market. These skills encompass digital literacy, critical thinking, problem-solving, communication, adaptability, and cross-cultural collaboration. Employers increasingly seek graduates who can work in virtual teams, leverage digital tools effectively, and engage in continuous learning to remain competitive in a fast-changing world. Consequently, higher education institutions (HEIS) must embrace innovative teaching models that integrate digital technologies with collaborative learning approaches.

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

Collaborative Online International Learning (COIL) or Virtual Collaborative Learning (VCL) represents such a pedagogical innovation that facilitates internationalisation and digital transformation in higher education. This model enables students and faculty from different countries to engage in joint academic experiences, regardless of geographical barriers. By leveraging virtual platforms, COIL or VCL promotes cross-border knowledge exchange, intercultural competence, and the development of practical skills needed for the digital economy. These approaches are particularly relevant for regions like the Western Balkans, where physical mobility and international academic collaboration have historically been limited due to economic and geopolitical constraints.

The higher education system in the Western Balkans faces several structural challenges, including limited digital infrastructure, outdated teaching methodologies, and insufficient faculty training in digital pedagogy (European Commission, 2021). Many institutions struggle with integrating digital tools into their curricula, creating disparities in access to quality education. Moreover, cross-border academic collaboration remains low, restricting students' exposure to international learning experiences. Addressing these challenges requires a strategic shift toward virtual learning models that can bridge these gaps and enhance educational outcomes.

This chapter explores how COIL/VCL can serve as a catalyst for educational transformation in the region, addressing both the challenges and opportunities associated with its implementation.

The Importance of 21st-Century Skills in Higher Education

21st-century skills refer to a set of competencies that are crucial for students to successfully navigate the demands of the modern workforce and an increasingly interconnected world (Trilling & Fadel, 2009). These skills go beyond traditional subject knowledge and emphasize critical thinking, adaptability, technological proficiency, and collaboration. In higher education, fostering these skills is essential to prepare students for lifelong learning, innovation, and problem-solving in diverse professional settings (OECD, 2018).

In the Western Balkans, where economic and political challenges have historically limited access to high-quality education and international mobility, integrating 21st-century skills into higher education curricula can help bridge these gaps (European Commission, 2021). By

emphasising digital literacy, communication, problem-solving, and intercultural competence, universities can better equip students for dynamic work environments and rapidly changing job markets.

Key Competencies

Digital literacy is the ability to effectively use digital tools and technologies for communication, learning, and professional tasks (OECD, 2018). It includes skills such as information literacy, online collaboration, cybersecurity awareness, and the responsible use of technology. In higher education, digital literacy enables students to engage in online research, participate in virtual learning environments, and develop proficiency in digital communication platforms (European Commission, 2021). The increasing reliance on online education, particularly in regions like the Western Balkans, underscores the need for students to develop these competencies to fully benefit from virtual and collaborative learning experiences (Bijnens et al., 2006).

Critical thinking involves analysing information, evaluating different perspectives, and making informed decisions (Trilling & Fadel, 2009). In a rapidly changing world, students must be able to assess complex issues, identify solutions, and adapt to new challenges. *Problem-solving* skills complement critical thinking by enabling students to apply knowledge in practical situations (OECD, 2018). In regions like the Western Balkans, where labour markets are evolving due to digital transformation, graduates with strong analytical and problem-solving skills are more prone to succeed.

Effective communication is a fundamental skill in any professional setting, but it becomes even more critical in virtual and international collaboration (Schoop et al., 2020). *Virtual teamwork* requires students to develop strong written and verbal communication skills, engage in online discussions, and work cohesively in remote teams (Bijnens et al., 2006). Given the challenges of international collaboration in regions like the Western Balkans due to mobility restrictions, virtual learning platforms provide an opportunity for students to enhance their teamwork and communication abilities while working on cross-border projects (European Commission, 2021).

The fast-paced nature of the modern economy demands that individuals continuously update their skills and knowledge (OECD, 2018). *Self-directed learning* encourages students to take responsibility for their education by setting learning goals, seeking resources, and evaluating

their progress (Trilling & Fadel, 2009). *Adaptability,* on the other hand, refers to the ability to embrace change and thrive in new environments. Both skills are crucial for students, especially in regions like the Western Balkans, where access to high-quality education and career opportunities may be inconsistent.

Intercultural competence is the ability to interact effectively with individuals from diverse cultural backgrounds (Schoop et al., 2020). As globalisation continues to shape education and employment, students must develop an awareness of different cultural perspectives and communication styles (OECD, 2018). In regions like the Western Balkans, which have diverse ethnic and cultural identities, fostering intercultural competence can contribute to social cohesion and cross-border collaboration.

How COIL/VCL Fosters These Skills

COIL or VCL methodologies play a pivotal role in fostering 21st-century skills by creating interactive and collaborative learning experiences. These approaches enable students to develop digital literacy by utilising online tools, engage in critical thinking by working on real-world problems, and refine communication skills through virtual teamwork. Additionally, COIL or VCL encourage self-directed learning by allowing students to take ownership of their projects while promoting intercultural competence through cross-border collaborations.

For students in regions like the Western Balkans, COIL or VCL offers unique opportunities to gain exposure to international academic and professional networks without the need for physical mobility. These virtual exchange programs bridge geographical and financial barriers, providing students with access to diverse perspectives, global challenges, and collaborative problem-solving experiences (OECD, 2018). By integrating these methodologies into higher education curricula, institutions can enhance students' readiness for the digital economy and improve their competitiveness in the global workforce.

The Western Balkans Higher Education Context: Needs and Challenges

The Western Balkans, a region comprising Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia, has undergone significant educational reforms in recent years to align with European Higher Education Area (EHEA) standards (European Commis-

sion, 2021). However, despite efforts to modernise higher education, many structural and systemic challenges persist. The region's universities struggle with issues such as outdated curricula, limited digital infrastructure, and a lack of international mobility for students and faculty (OECD, 2018). The Bologna Process has played a critical role in promoting higher education reform in the region by standardising degree structures and credit systems (Rampelt et al., 2019). Nevertheless, disparities in implementation continue to hinder the effectiveness of these reforms. Moreover, higher education institutions face significant financial constraints, affecting their ability to invest in digital transformation and international collaborations.

Major Challenges

Limited Digital Literacy levels remain a key challenge to the digital transformation of the Western Balkans. The region requires both time and resources to align with the EU's 'Gigabit Society' 2030 targets. According to the *Balkan Barometer* (Regional Cooperation Council, 2020), there is a pressing need to integrate digital skills more effectively into the education system, although awareness of digitalisation's potential is steadily increasing among residents. Despite the fact that today's students belong to Generation Z – often referred to as digital natives who have grown up in an era of rapid technological advancement – higher education institutions (HEIS) in the Western Balkans have largely failed to adapt. Many universities and academic staff continue to rely on traditional teaching and learning models, limiting the integration of modern digital methodologies into higher education.

One of the primary challenges facing Western Balkan universities is *limited participation in international academic collaborations* (European Commission, 2021). Due to economic constraints, political instability, and institutional barriers, many students and faculty members have limited opportunities to engage in exchange programs or collaborative research initiatives. This lack of international exposure restricts students' ability to develop global competencies and diminishes the region's competitiveness in higher education rankings.

While digital transformation is accelerating worldwide, the Western Balkans still faces significant *technological barriers* and disparities (OECD, 2018). Limited access to high-speed internet, insufficient investment in digital learning infrastructure, and outdated IT resources pose major obstacles to integrating online education and virtual col-

laborative learning. The digital divide is more pronounced in rural areas, where students have fewer opportunities to engage with online educational resources, further exacerbating inequalities in higher education access (European Commission, 2021).

Traditional teaching models and resistance to change are among the challenges, too. Many higher education institutions in the region still rely on traditional, lecture-based teaching models that limit student engagement and interactive learning. Faculty members often lack training in modern pedagogical methods, making the transition to student-centred, digital learning approaches challenging. Resistance to adopting virtual collaborative learning methods persists due to institutional inertia and a lack of incentives for faculty to incorporate innovative teaching practices (OECD, 2018).

The *shortage of faculty training* programs on digital teaching methodologies remains a significant barrier to educational modernisation (Vladi et al., 2021; European Commission, 2018; 2021). Many educators are unfamiliar with COIL and VCL techniques, limiting their ability to effectively facilitate online learning and without adequate professional development opportunities, faculty members struggle to implement new technologies and adapt their teaching methods to suit digital and collaborative learning environments.

Country-Specific Challenges in WB Higher Education

Albania

- *Limited Internationalisation:* Low student and staff mobility, especially low incoming mobility rate (European Commission, 2018).
- *Unpreparedness for Online Learning:* COVID-19 exposed gaps; 64.7% of faculty felt unready for the transition (Vladi et al., 2021).
- *Lack of Digital Education Policies:* No comprehensive national strategy for digital skills or teacher training (European Commission, 2021).
- *Need for Modernisation:* HEIS require innovation and international collaboration to enhance digital education (European Commission, 2021).

Bosnia and Herzegovina

- *Low Digital Literacy:* Only 29% of citizens use the internet for education, highlighting weak digital adoption (Regional Cooperation Council, 2020).

- *Slow Curriculum Reform:* Bureaucratic and political complexities make it difficult to update university curricula.
- *Weak University-Industry Collaboration:* Poor ties between HEIS and the private sector hinder tech-driven education.
- *Lack of Virtual Learning Integration:* Virtual collaboration is marginally recognised, and students lack digital skills for academic projects.

Kosovo

- *Limited ICT Integration:* ICT is mainly used for entertainment, with minimal presence in education.
- *Digital Skills Gap:* Senior lecturers struggle with digital adoption, limiting technology use in teaching. HEIS fail to equip students with the digital competencies required by the job market.
- *Weak Industry Alignment:* Universities do not adequately meet the growing demand for digitally skilled graduates.
- *Need for Virtual Collaboration:* HEIS must adopt virtual mobility and exchange programs to enhance connectivity and reduce barriers.

Montenegro

- *Limited Digital Integration:* Despite Bologna Process alignment, digital tools are not fully incorporated into teaching and learning.
- *Lack of Digital Competence:* HEIS face shortages of structured ICT courses, trained faculty, and digital learning resources.
- *Weak Infrastructure:* Insufficient access to computers, electronic textbooks, and subject-specific e-learning materials (UNICEF Montenegro, 2017).
- *Low Adoption of Blended Learning:* University course syllabi rarely include hybrid or digital learning approaches.

North Macedonia

- *Slow Digital Transformation:* While progress has been made in aligning with European standards, digital tools remain underutilised in education.
- *Insufficient Faculty Training:* Many educators lack the necessary training to implement digital teaching methods effectively.
- *Outdated Learning Resources:* Universities face shortages of e-learning materials, digital textbooks, and online course platforms.

- *Weak Industry Collaboration:* Higher education institutions struggle to align programs with labour market needs, particularly in digital sectors.
- *Need for Virtual Learning Expansion:* HEIS must strengthen virtual collaboration, exchange programs, and blended learning models to enhance digital competencies.

Serbia

- *Slow Digitalisation in Education:* Despite advancements in other sectors, digital tools are not fully integrated into higher education curricula.
- *Limited Faculty Training:* Many educators lack the necessary digital skills to implement modern teaching methodologies effectively.
- *Low Virtual Mobility Adoption:* Limited recognition and implementation of virtual collaboration and exchange programs hinder internationalisation efforts.

Policy Gaps and Institutional Constraints

Although efforts have been made to align Western Balkans education policies with European standards, gaps remain in policy implementation and institutional support for virtual learning (OECD, 2018). Universities require more substantial investments in digital infrastructure, faculty training, and international partnerships to fully integrate COIL and VCL methodologies in order to modernise and promote teaching and learning practices with technology-enhanced methods and tools. Furthermore, policymakers must establish clearer guidelines for recognising virtual learning experiences within national education frameworks (European Commission, 2021). Addressing these challenges requires a coordinated effort between governments, higher education institutions, and international partners.

The Potential of COIL/VCL in Addressing These Challenges

How Virtual Collaboration Can Bridge the Internationalisation Gap

One of the key benefits of COIL and VCL is their ability to foster international collaboration without requiring physical mobility (Schoop et al., 2020). Western Balkans HEIS often struggle with limited par-

ticipation in global education initiatives due to financial and logistical constraints (European Commission, 2021). Virtual collaboration provides students and faculty with access to international peers, broadening their academic and cultural perspectives without the need for travel. By integrating COIL/VCL methodologies, universities can increase global engagement and ensure that students gain valuable international experience, thus bridging the internationalisation gap (OECD, 2018).

The Western Balkans face significant disparities in educational infrastructure, with some institutions lacking adequate funding for modernising classrooms and investing in advanced learning technologies. Digital and blended learning models offer a viable alternative by reducing dependency on physical resources and increasing access to high-quality educational content (European Commission, 2021). Virtual learning environments provide students with interactive coursework, real-time collaboration opportunities, and flexible access to global academic resources (OECD, 2018). By implementing digital and blended learning, HEIS can mitigate resource constraints and provide more inclusive education opportunities for students across the region (Trilling & Fadel, 2009).

COIL/VCL as Cost-Effective Solutions for Cross-Border Collaboration

International student mobility programs, such as Erasmus+, often require substantial financial investments that many Western Balkan universities and students cannot afford (European Commission, 2021). COIL/VCL offer cost-effective alternatives that enable cross-border learning experiences without travel expenses (Schoop et al., 2020). These virtual models allow institutions to establish joint courses, collaborative research projects, and shared curricula with international partners, significantly lowering costs while maintaining the quality of international engagement. Moreover, virtual learning experiences can be seamlessly integrated into existing curricula, making them an efficient means of fostering global partnerships (OECD, 2018).

Enhancing Faculty Skills through Training and Digital Tools

A significant barrier to educational innovation in the Western Balkans is the lack of faculty training in digital pedagogy (Vladi et al., 2021). Many educators are unfamiliar with online teaching methodologies,

limiting their ability to facilitate effective virtual collaboration (European Commission, 2021). By implementing structured faculty training programs, universities can equip educators with the skills needed to incorporate COIL and VCL into their teaching strategies. Training initiatives should focus on:

- Integrating digital tools for virtual collaboration.
- Developing online course content and interactive learning activities.
- Adapting assessment methods for virtual environments.
- Enhancing intercultural competencies for effective cross-border teaching.

By investing in faculty development, HEIS can improve the overall quality of virtual learning experiences and ensure that students receive high-quality instruction regardless of geographical constraints.

The Role of Policymakers in Supporting Digital Education Initiatives

To fully realise the benefits of COIL and VCL, policymakers must actively support digital education initiatives through funding, regulation, and institutional incentives. Governments in the Western Balkans should prioritise:

- *Infrastructure Development:* Investing in high-speed internet access and digital resources for HEIS.
- *Faculty Training Programs:* Providing grants and support for professional development in digital pedagogy.
- *Accreditation and Recognition:* Establishing formal policies for recognising virtual learning experiences as part of degree programs.

COIL and VCL provide practical solutions to many of the challenges faced by HEIS in the Western Balkans. By leveraging these methodologies, universities can expand international collaborations, improve digital accessibility, reduce costs, and enhance faculty capabilities. However, successful implementation requires coordinated efforts from educational institutions, faculty, students, and policymakers to ensure sustainable and impactful digital transformation.

Conclusion

This chapter explored the transformative potential of Collaborative Online International Learning (COIL) or Virtual Collaborative Learning (VCL) in addressing key challenges faced by higher education institutions in the Western Balkans. The discussion highlighted the importance of 21st-century skills such as digital literacy, critical thinking, problem-solving, and intercultural competencies. COIL/VCL methodologies provide effective solutions to bridge the internationalisation gap, enhance digital accessibility, and foster cross-border academic collaboration. Despite significant challenges, including limited digital infrastructure, traditional pedagogical approaches, and a lack of faculty training, the Western Balkans has the potential to integrate virtual learning into higher education successfully (European Commission, 2021).

COIL and VCL are more than just technological solutions; they represent a paradigm shift in how higher education institutions engage with global learning opportunities. By fostering international partnerships and integrating virtual mobility into curricula, universities can offer students a high-quality education that is both globally relevant and locally accessible. Furthermore, these methodologies democratize access to international education, reducing the financial and logistical barriers that have historically limited student mobility in the region.

The ongoing digital transformation in higher education underscores the need for long-term commitment to virtual learning models. Higher education institutions must embrace innovative pedagogical approaches and invest in sustainable digital infrastructure (OECD, 2018). Additionally, policymakers must implement regulations that recognise and accredit virtual learning experiences, ensuring that students receive official credit for their participation in COIL and VCL initiatives.

Call to Action for Educators, Policymakers, and Institutions

To fully realise the potential of COIL or VCL in the Western Balkans, a coordinated effort is required among universities, faculty, policymakers, and international partners. The following actions are recommended:

- *For Educators:* Faculty members should actively participate in training programs to develop skills in digital pedagogy and virtual collaboration. By incorporating COIL/VCL elements into their

courses, they can enhance student engagement and foster international academic exchange.

- *For Policymakers:* Governments should develop national policies that support the accreditation and recognition of virtual learning experiences. Increased investment in digital infrastructure and faculty training programs will be essential to scaling COIL/VCL initiatives.
- *For Higher Education Institutions:* Universities should integrate COIL/VCL into their strategic development plans, ensuring that digital learning becomes an institutional priority. Establishing international partnerships and securing funding for technological advancements will further enhance their global competitiveness.

The future of higher education in the Western Balkans depends on the region's ability to embrace digital transformation and international collaboration. By leveraging COIL/VCL, universities can provide students with the skills needed to thrive in a rapidly evolving world, ensuring that higher education remains inclusive, innovative, and internationally connected.

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Part Two

Amid accelerating digitalisation and growing global interconnectivity, higher education is undergoing a fundamental transformation-one that reshapes not only how knowledge is accessed and exchanged but also how learners engage, collaborate, and co-create meaning within virtual environments. Building on the conceptual and pedagogical foundations laid in Part 1 – where the principles, practices, and impact of Collaborative Online International Learning (COIL) and Virtual Collaborative Learning (VCL) were introduced – Part 2 looks decisively toward the future. At its core, this part engages with a critical question: *What lies ahead for VCL in an era increasingly defined by Artificial Intelligence, critical digital pedagogies, and persistent regional and global disparities in access and implementation?*

The purpose of Part 2 is threefold. First, it investigates the emerging role of AI in transforming the virtual learning landscape, focusing on how intelligent technologies can enhance personalisation, learner autonomy, and collaborative dynamics in online education. Yet this is not merely a matter of technical enhancement – it is a profound pedagogical inquiry into how AI intersects with the human dimensions of learning, including trust, engagement, equity, and agency.

Second, this part examines how VCL can serve as a platform for cultivating transversal key competencies essential for lifelong learning, such as critical thinking, intercultural awareness, communication, and adaptability. These competencies are explored through the lens of VCL and wider digital learning strategies, revealing both the opportunities and tensions in aligning educational aims with rapidly evolving societal needs. Part 2 also raises the important question of whether Virtual Collaborative Learning (VCL) promotes inclusive, equitable education or reinforces inequality and exclusion, depending on its design and implementation.

Additionally, this part features regional implementations and case studies – illustrating how VCL is being adapted to diverse socio-cultural and institutional contexts. These examples underscore that while VCL holds promise as an inclusive and scalable educational model, its success is contingent upon local relevance, institutional preparedness, and meaningful cross-border collaboration.

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Collectively, the contributions in Part 2 portray VCL as a dynamic and evolving educational practice. They highlight the importance of research-informed design, interdisciplinary engagement, and ethical foresight in shaping the future of collaborative digital learning. More than simply reacting to technological advancements, they call on educators, researchers, policymakers, and institutional leaders to play an active role in directing these transformations.

As VCL enters its next phase – augmented by AI and embedded in increasingly complex educational ecosystems – Part 2 serves as both a roadmap and a reflective space. It challenges us to reimagine virtual collaborative learning as not only technologically advanced but also human-centred, socially just, and globally responsive in a rapidly changing world.

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https://doi.org/10.53615/978-83-65020-54-3/61-62

Chapter Five

AI and Virtual Learning: The Future Forward

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https://doi.org/10.53615/978-83-65020-54-3/63-85

Introduction

The rapid advancement of digital technologies and artificial intelligence (AI) is reshaping education, driving the shift toward virtual learning. The post-pandemic era has accelerated digital transformation, highlighting the need for innovative, flexible, and technology-driven pedagogical approaches.

According to UNESCO, one and a half billion students around the world were engaged in remote learning at the height of the COVID-19 pandemic in March 2020. New learning approaches and strategies are arising, characterised by efficiency, just-in-time delivery, solution orientation, anywhere access to learning material, as well as an internet-based learning process, especially after the pandemic crisis.

Virtual learning environments are no longer an alternative but an essential mode of education, fostering a shift from traditional classroom-based learning to an interactive, AI-driven, and just-in-time knowledge-sharing ecosystem.

Digital transformation in education has redefined learning methodologies, moving beyond static content delivery to dynamic, interactive, and AI-powered solutions.

Web-based learning platforms, Massive Open Online Courses (MOOCS), Learning Management Systems (LMS) and the development of Virtual Collaborative Learning (VCL) have played a crucial role in this

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shift. These technologies allow students to engage in flexible learning, access resources anytime and anywhere, and participate in collaborative activities across geographical boundaries.

With the development of the skills required in the digital transformation era, the higher education sector needs to include digital technologies in their pedagogical approaches, implementing online teaching in learning environments that use a diverse range of digital tools. Web-based, or online, teaching is grounded in cyberspace and allows students the flexibility to learn anytime and anyplace, and at a time when they choose to focus on the course content. The creation of a virtual learning environment gives opportunities for eliminating many of the barriers related to traditional classroom learning. In these new learning processes, learners are not simply passive recipients of know-how and expertise, but rather co-creators of their just-in-time and action-based learning, more characterised by interpretation, experimentation and problem solving rather than description and analysis.

Researchers emphasize the importance of considering technological, social, and educational affordances when designing effective technology-mediated collaborative learning processes (Herrera-Pavo, 2021; Kirschner et al., 2024). They assert that it is essential to consider the virtual learning environment that facilitates collaboration, the dynamics of social interactions and group work, and the specific learning context to ensure an optimal learning experience.

To exploit the real potential of digital transformation in learning, it is necessary to reshape the processes that support designing, development, and delivery of learning in a just-in-time, and action-oriented manner, and to integrate it into day-to-day activities.

In addition, today AI is transforming digital education by creating adaptive, intelligent learning environments. It is being argued that AI have a significant influence on the way education is both delivered and received today, and it has potentialities to enhance virtual learning by making learning more responsive, interactive, and customised to each learner's needs (Pereira et al., 2022). Instead of a one-size-fits-all approach, AI ensures that educational content is relevant, structured, and tailored to individual learning styles.

Although literature highlights the numerous advantages AI brings to education, it is still in its early stages and remains underdeveloped. In this chapter, we aim to explore the role of AI in virtual learning and its impact on higher education through a Structured Literature Review

(SLR). The goal is to envision a future research agenda for the integration of AI in virtual collaborative learning environments and to contribute to shaping the future of digital learning ecosystems.

This chapter is structured as follows: In the next section, we describe the methodology used for conducting the Structured Literature Review (SLR). Third section presents the descriptive analysis of the literature, while fourth section provides the cluster and content analysis. Finally, fifth section discusses the findings and outlines a future research agenda.

Methodology

The methodological approach used to address the research questions of this chapter is a structured literature review that focuses on Artificial Intelligence and Virtual Learning. The SLR is a methodology used to depict and synthesise the state of the art on a given topic (Christofi et al., 2019; Danese et al., 2018; Nofal et al., 2018; Tranfield et al., 2003). The aim of a systematic literature review (SLR) is to identify how the literature has developed so far and to define a future research agenda, including implications for both theory and practice (Kraus et al., 2022).

Many researchers have provided guidelines and approaches for realising a comprehensive SLR. Different authors, such as Massaro et al., 2016; Petticrew and Roberts, 2006; Tranfield et al., 2003, argue that one of the first steps is to define relevant research questions to increase the reliability and validity of the study and to better identify relevant and significant research papers to be analysed for the scope of the study.

Therefore, to initiate the SLR process, we formulated research questions focusing on the literature's development, its focal points, and potential implications (Massaro et al., 2016).

The identified research questions were as follows:

RQ1 How is literature on AI and virtual learning evolving?

RQ2 What is the specific focus of the literature?

RQ3 What are the implications of this research?

It has been argued that the quality of an SLR is influenced by the sources used to conduct it. Scopus and WOS databases are considered the most reliable ones. We chose the Scopus database for two main reasons:

- Scopus has consistently demonstrated broader and more comprehensive coverage of academic journals-encompassing over 20,000 peer-reviewed publications – when compared to Web of Science (WOS) (Mishra et al, 2017; Thelwall, 2018).
- An analysis of journal coverage in Scopus and WOS revealed that the number of journals indexed exclusively in WOS is relatively lower (Mongeon & Paul-Hus, 2016). In fact, nearly 97% of journals included in WOS are also indexed in Scopus (Waltman, 2016).

The identification of reliable search keywords is also a very relevant process. For the scope of our study, the search string – AI OR 'artificial Intelligence' AND 'virtual learning' OR 'eLearning' in the title, abstracts and keywords was used. This process allows us to extract 652 research papers in the first stage. Data was collected in January 2025, and the time horizon chosen for the articles to review was fixed at 2015–2025, as we are interested in seeing how the recent literature has been evolving, given the recent development of AI.

However, it is worth noting that the concept of AI is relatively new in scientific literature. Some exclusion criteria were used to effectively address the study aims and research questions, such as research topics, publication type and language (Crossan & Apaydin, 2010; Follmer & Jones, 2018; Kauppi et al., 2018; Nguyen et al., 2018). We included in our sample only articles written in the English language, published in the field of computer science, social sciences, engineering, business management and decision sciences. The initial sample was further analysed to reduce false negatives and increase false positives (Petticrew & Roberts, 2006) through a further abstract reading.

The exclusion criteria, applied to titles, abstracts and keywords (Kauppi et al., 2018), returned a sample of 174 articles, which allowed us to include in the final sample only papers relevant to addressing our research questions (Christofi et al., 2019). The final sample was analysed to identify the evolution and distribution of papers over time, the geography of the publications, the most cited and influential authors, the keywords, and citations.

Finally, through a bibliographic coupling analysis (Kessler, 1963) and a content analysis based on the data extracted, we constructed a final sample of 12 publications for realising a deeper content analysis that allowed the identification of research areas and future directions. Bibliographic coupling analysis (Van Eck & Waltman, 2017), performed

TABLE 5.1 SLR phases

Phases	Steps
1st Step: Material selection	Definition of database used for the material collection phase Definition of keywords Definition of time span considered for the review Definition of inclusion and exclusion criteria.
2nd Step: Descriptive analysis	Distribution of papers over time Distribution of papers among journals and subject areas Keywords frequency Most productive countries
3rd Step: Content analysis	Clusters identification using citation matrix Discussion of papers and identification of future research agenda

through VOSviewer software, measures the connectivity of each research paper in the sample on the basis of the references that they share (Boyack & Klavans, 2010). The strength of relatedness increases when a document receives more citations. This kind of analysis reveals the similarities in leading works' subject matter in the forms of papers, sources, authors, organisations, and countries. In this case, the unit of analysis was 'document,' and the threshold was 'a minimum of one citation for document.'

The content analysis consists of reading all papers classified in the clusters created through bibliographic coupling with the aim of identifying the commonalities of the research, the main research themes that emerge and the open questions and issues for future research.

The steps followed in the review process are illustrated in Table 5.1.

Descriptive Analysis

Moving from a descriptive analysis of the previous literature at the intersection of the fields of AI and Virtual learning, our aim is to provide an overview of the trends of publications, a geographical analysis of authorship and citations, the distribution of papers in journals, citation trends, and, ultimately, an overview of the publications on the phenomenon under investigation.

Publication Trends

Descriptive analysis started with the study of the evolution of publications over time. As shown in Figure 5.1, it is evident the increasing number of publications in the last 10 years (thus from 2015 to 2025). The

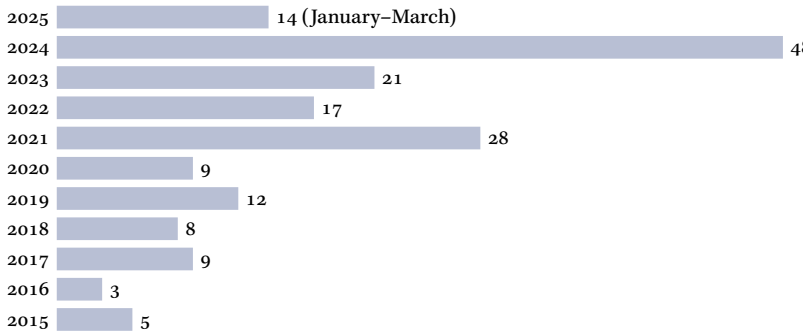

FIGURE 5.1 Publications Trend

trend grows steadily, and in 2024, there is a peak of 48 publications. A growing trend is also expected for 2025, considering that fourteen papers have already been published in the first two months.

Geographical Analysis of Co-Authorship and Citations

Table 5.2 presents the distribution of publications by country, in terms of the number of articles. The country is identified based on authorship for each publication. In the case of authors from different countries, the article is counted once for each different nationality. The total number of countries identified is 54. Figure 5.2 shows a high modularity of publications, as all countries are in the initial phases of publication in the field of AI and virtual learning. The analysis demonstrates that the UK have the highest number of publications (15), followed by the USA and India (14) and Saudi Arabia (13). Other countries have a very low level of research paper production in the field, as the number of publications ranges from one to five, except for Spain, with 8 publications.

TABLE 5.2 Publications per Country

Ranking	Country	Documents	Ranking	Country	Documents
1	United Kingdom	15	8	Peru	5
2	India	14	9	Taiwan	5
3	United States	14	10	Australia	4
4	Saudi Arabia	13	11	Canada	4
5	Spain	8	12	China	4
6	Czech Republic	5	13	Indonesia	4
7	Malaysia	5			

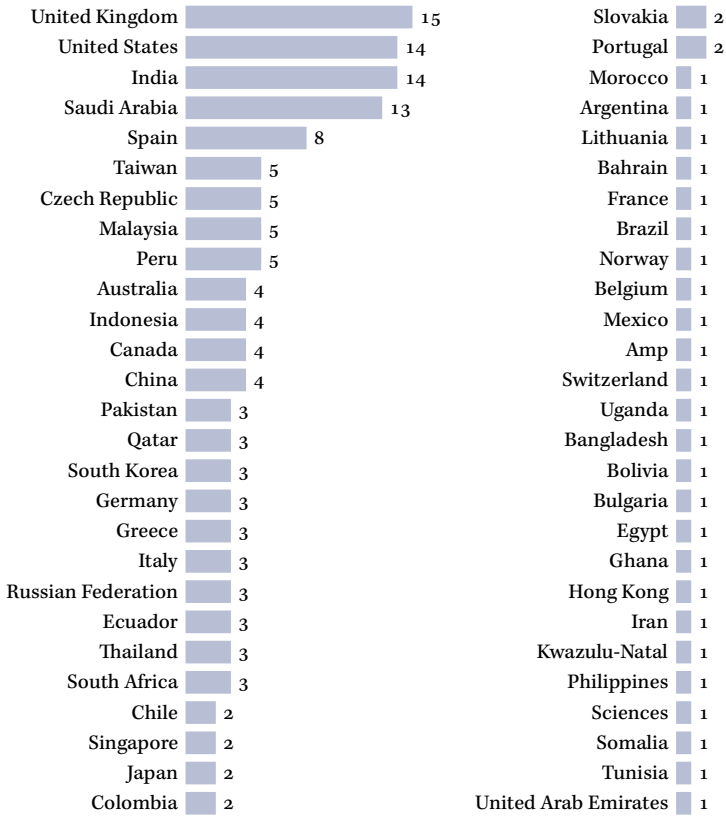

FIGURE 5.2 Publications per Country

TABLE 5.3 Top Three Citations per Country

Country	Citations	Number of publications
Saudi Arabia	318	13
United Kingdom	213	15
United States	207	14

Concerning the citations per country, as can be seen in Table 5.3, the top three countries are Saudi Arabia (318 publications), the UK (213 publications) and the USA (207 publications).

Table 5.4 illustrates the trend of publications and citations by country. The table reveals a high level of fragmentation in terms of the countries contributing to research on this topic, further highlighting the underdeveloped state of the literature in this field.

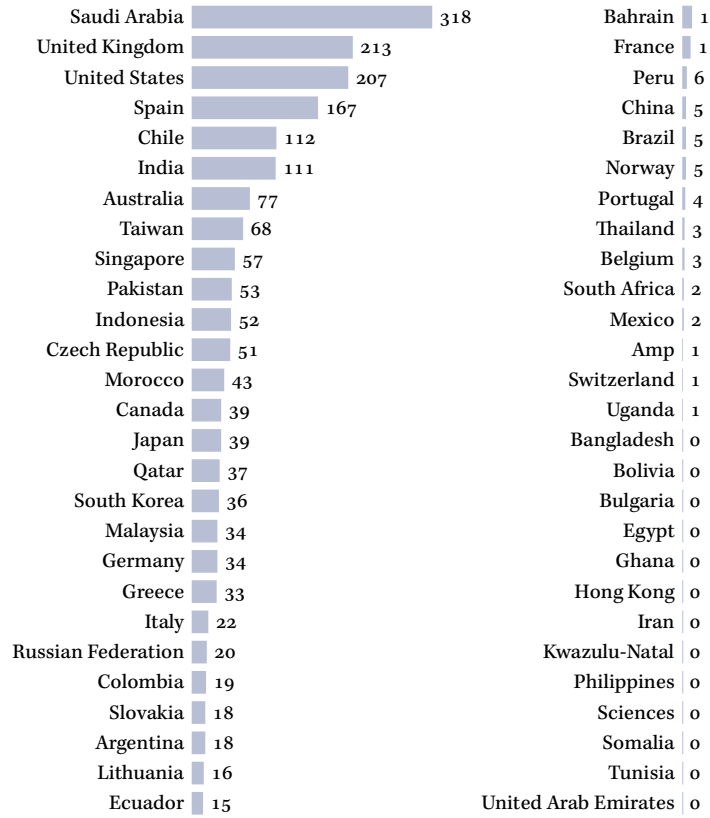

FIGURE 5.3 Number of Citations per Country

Distribution of Papers by Journals

To identify where the papers are mostly published, we analysed the distribution of publications by source of journals, following Dumay and Cai's (2014) indication. The findings revealed a high fragmentation in the distribution of papers in journals, too. As could be evinced by Appendix 1, the 174 articles in the sample analysed were published in 109 scientific journals. The three top journals result to be *Lecture Notes in Computer Science* (with 11 publications), *Communications in Computer and Information Science* (with nine publications), and *IEEE Access* (with nine publications), with the remaining journals having less than six and 89 journals having just one publication (Table 5.5 and Figure 5.4 on p. 72). The findings also underlined that those contributions came not only from the field of management but also from information systems.

TABLE 5.4 Trend of Publications and Citations by Countries

Country	(1)	(2)	Country	(1)	(2)
Saudi Arabia	13	318	Bahrain	1	13
United Kingdom	15	213	France	1	11
United States	14	207	Peru	5	6
Spain	8	167	China	4	5
Chile	2	112	Brazil	1	5
India	14	111	Norway	1	5
Australia	4	77	Portugal	2	4
Taiwan	5	68	Thailand	3	3
Singapore	2	57	Belgium	1	3
Pakistan	3	53	South Africa	3	2
Indonesia	4	52	Mexico	1	2
Czech Republic	5	51	Amp	1	1
Morocco	1	43	Switzerland	1	1
Canada	4	39	Uganda	1	1
Japan	2	39	Bangladesh	1	0
Qatar	3	37	Bolivia	1	0
South Korea	3	36	Bulgaria	1	0
Malaysia	5	34	Egypt	1	0
Germany	3	34	Ghana	1	0
Greece	3	33	Hong Kong	1	0
Italy	3	22	Iran	1	0
Russian Federation	3	20	Kwazulu-Natal	1	0
Colombia	2	19	Philippines	1	0
Slovakia	2	18	Sciences	1	0
Argentina	1	18	Somalia	1	0
Lithuania	1	16	Tunisia	1	0
Ecuador	3	15	United Arab Emirates	1	0

NOTES Column headings are as follows: (1) documents, (2) citations.

Analysis of Keyword Frequency

This section presents a cluster analysis of the most frequently used keywords in titles and abstracts to identify key areas within this field. Keywords were extracted and grouped into clusters (Figure 5.5) using VosViewer software, which generated a map based on their occurrence frequency in the sampled papers. Specifically, we defined the threshold

TABLE 5.5 Top Ten Sources

Source	Documents
Lecture Notes in Computer Science (including subseries *Lecture Notes in Artificial Intelligence* and *Lecture Notes in Bioinformatics*)	11
Communications in Computer and Information Science	9
IEEE Access	9

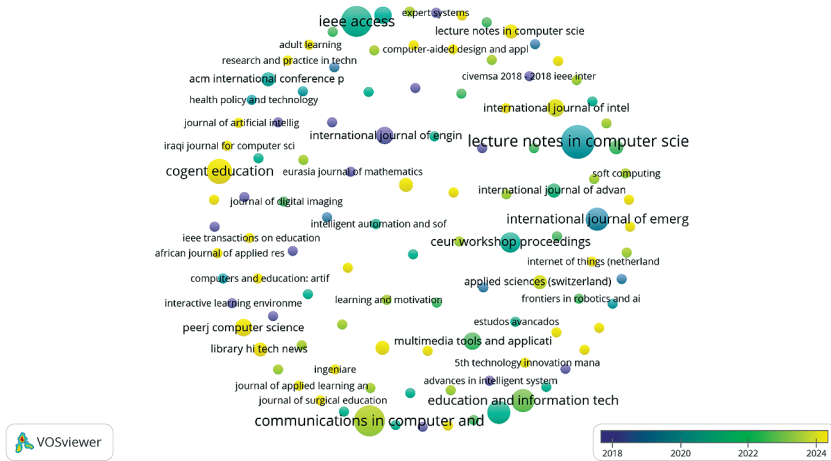

FIGURE 5.4 Main Journals

as the minimum number of occurrences of a keyword equal to 3, and VosViewer generated a co-occurrence clustering map in the field of artificial intelligence and virtual learning. Through the co-occurrence chronology of keywords, the first co-occurrence time between keywords can be clearly displayed, which will help us understand the research in the field.

Top Three Cited Papers

The analysis also focused on finding out the most cited paper and the citations of papers per year and per author. Table 5.6 shows the citations received per paper and per year. The most cited paper resulted in the paper by Mehmood et al. (2017), followed by the paper by Vázquez-Cano (2021) and the paper by Muniasamy and Alasiry (2020). Obviously, the papers published recently have fewer citations and thus are useful to analyse the most influential papers (authors) in terms of citations.

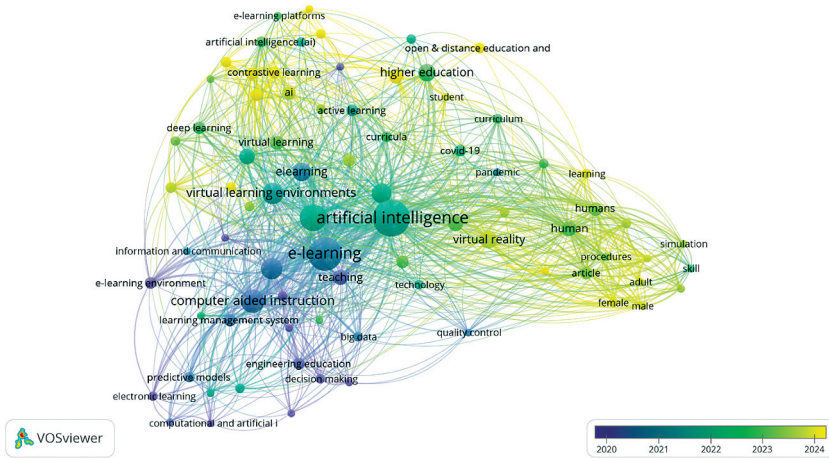

FIGURE 5.5 The Co-Occurrence Chronology View of Keywords

TABLE 5.6 Top Three Cited Papers

Author	Citations
Mehmood et al. (2017)	122
Vázquez-Cano et al. (2021)	112
Muniasamy & Alasiry (2020)	73

Cluster and Content Analysis

The phase of content analysis commenced with coupling analysis (Kessler, 1963) performed through VosViewer software, which measured the connectivity of each research paper of the sample based on the references that they share (Boyack & Klavans, 2010).

Bibliographic coupling refers to the connectivity of objects and is measured on the basis of the number of references they share. The strength of their relatedness (coupling) increases when a document receives more citations. It provides the similarities of the two works' subject matter in the form of documents, sources, authors, organisations, and countries. As described by Martyn (1964, p. 236), 'two papers that share one reference contain one unit of coupling, and the value of a relationship between two papers having one or more references in common is stated as being of strength one, two, etc., depending on the number of shared references.'

To facilitate the content analysis of the selected papers, we employed the clustering algorithm developed by Van Eck and Waltman (2017).

TABLE 5.7 Bibliographic Coupling Cluster

Cluster	Authors	Key words
Cluster 1	Hu (2024)	AI, chatbot, ethical dilemma, thinking aloud pair problem solving, virtual learning companion
	Polakova & Ivenz (2024)	Chat GPT, classroom practice, EFL, gen Z, higher education, language teaching & learning, open & distance education and elearning, writing assistance tool, writing skills
	Vázquez-Cano et al. (2021)	Artificial intelligence, chatbot, communication, education, mobile learning, virtual learning environments
Cluster 2	Bernal (2024)	Automated assessments, eLearning, GPT, large language models, natural language processing
	Vandamme & Kaczmarski (2023)	Accusation, AI, AI chatbot, AI ethics, AI misuse, argumentation, assessment, case study, Chat GPT, computer-based education, defense, dyssocial, dyssocial techniques, e-learning, education, explanation, generating fake news, gnost, hidden curriculum, higher education, justification, large language models, lying, manipulation, OPENai, personality, plagiarism, prediction, primary school education, skills, ZEROgpt
	Yang & Wen (2023)	AI, college students, online education, personalised learning

Continued on the next page

The strength of relatedness increases when a document receives more citations. As outlined in the methodology section, the units of analysis were documents and sources, and relevance was assessed by considering articles that predominantly shared at least 1 reference (Boyack & Klavans, 2010). The outcome of this analysis resulted in 4 clusters and 12 papers, grouped with different colours in the map created by the tool (Table 5.7). Cluster 1 includes three papers, cluster 2 comprises three papers, cluster 3 contains three papers, and cluster 4 has three papers.

The utilisation of clustering was intended to avoid the fragmentation of results and the scattering of related topics across various domains. These clusters were established to amalgamate articles that represented a distinct topic or approach.

Starting from these clusters, the full text of these papers has been read, and the main topic areas have been identified to synthesise the body of knowledge. After carefully analysing the papers extracted from the cluster analysis and considering that research in this field is still

TABLE 5.7 *Continued from the previous page*

Cluster	Authors	Key words
Cluster 3	Demertzi & Demertzis (2023)	Adaptive educational system, eLearning, machine learning, ontologies matching, recommendation system, semantics
	Idowu et al. (2024)	Bias mitigation, data science applications in education, evaluation methodologies, human-computer interface
	Saleem et al. (2024)	Artificial intelligence, CHATgpt, e-learning, heutagogical tool, heutagogy, higher education, learning, medical education, medicine, open & distance education and elearning, Shuyan Wang, The University of Southern Mississippi, United States
Cluster 4	Gomez et al. (2021)	ambient intelligence, artificial intelligence, computer aided instruction, cooperative systems, electronic learning, intelligent agents, learning management systems
	Lutfiani et al. (2023)	artificial intelligece, bibliometrics, chatbot, eLearning, LMS
	Nagro (2021)	AI in education, artificial intelligence, conventional education, COVID-19, e-learning, pandemic

TABLE 5.8 Topic Areas

Themes	Authors
Theme 1: Integration of AI Tools in Virtual Learning Platforms	Hu (2024); Vázquez-Cano et al. (2021); Bernal (2024); Lutfiani et al. (2023); Yang & Wen (2023).
Theme 2: AI's Role in Enhancing Customized Learning and Optimizing Educational Management Systems	Demertzi & Demertzis (2023); Gomez et al. (2021); Idowu et al. (2024); Nagro (2021); Polakova & Ivenz (2024); Saleem et al. (2024).

in its early stages, we have classified the papers into two main themes (Table 5.8).

In the next section, we will provide a discussion of the key papers related to these themes.

Discussion

Theme 1: Integration of AI Tools in Virtual Learning Platforms

The papers grouped in cluster 1 have a common theme, the use of AI tools in education platforms, with the aim of enhancing the outcomes

of the learning process. Specifically, the study of Hu (2024) explores the role of an AI chatbot to support interactive virtual learning involving 135 university students in Taiwan. The authors experiment with what happens when an AI chatbot is used to support students in comparison to two control groups that followed the traditional problem-solving methods. The study indicates that the AI-assisted approach improved problem-solving skills, ethical reasoning, and learning motivation, demonstrating its effectiveness in fostering deeper engagement with ethical decision-making. Polakova and Ivenz (2024) emphasise the role of AI in providing instant, tailored feedback that helps students refine their writing skills more effectively than traditional methods. By conducting a quasi-experimental study with 110 university students, the authors assessed the writing proficiency through pre-tests, post-tests, questionnaires, and focus group interviews. The results emphasized the importance of integrating AI-driven technologies into language learning to support evolving educational needs.

The study of Bernal (2024) focuses on exploring how large language models (LLMS) such as GPT could enhance interactive learning if integrated into e-learning platforms. The authors demonstrate with this study the high transformative potential of Generative AI models in redefining online education, creating opportunities for more personalised learning experiences as well as for improving students' interaction, adaptability, and the overall effectiveness of online learning platforms.

The study of Lutfiani et al. (2023) highlights how it is possible to personalise content delivery, facilitate interaction between students and teachers, and enhance accessibility through AI-powered recommendation systems.

How AI algorithms and tools could impact enhancing knowledge representation in eLearning environments and optimising student engagement, comprehension, and retention is the focus of the studies of Vandamme and Kaczmarski (2023) and Yang and Wen (2023). Both studies, however, emphasise the essentiality of critical thinking and the ethical concerns of AI related to transparency, bias, and data privacy.

These studies within this theme demonstrate the relevance of increasing confidence in AI-driven learning tools to create more engaging, personalised, and effective educational experiences, through real-time feedback, interactive engagement, and greater flexibility. Additionally, the researchers agree that AI has the potential to transform

radically virtual learning approaches. Yet they also emphasise the need for ethical and responsible use of AI as well as the importance of human control in AI-generated learning experiences.

Theme 2: AI's Role in Enhancing Customised Learning and Optimising Educational Management Systems

The papers grouped in cluster 2 have as a common focus the role of AI in creating personalised learning experiences by creating customised content, monitoring students' learning process and enhancing teaching practices. The studies also emphasise the relevance of AI tools in optimising resource and their management.

The study of Demertzi and Demertzis (2023) points out the role of adaptive educational systems (AESS) in tailoring content to individual student needs based on their skills and experiences. The authors argue that by combining machine learning techniques such as semi-supervised classification and recommendation mechanisms, it is possible to customise educational content, ensuring that students receive instruction suited to their competencies and learning styles.

While the study of Idowu et al. (2024) focuses on analysing the importance of fairness in AI-driven education. They analyse how AI models used for educational assessment may be unfairly influenced by factors such as age, gender, and disability. The study proposes the use of AI tools to provide actionable, personalised feedback to students with the aim of ensuring fairness.

The study of Saleem et al. (2024) titled 'CHATgpt As an Innovative Heutagogical Tool in Medical Education' focuses on arguing how ChatGPT could be used as a heutagogical (self-directed learning) tool in medical education. The authors explore the potentialities of generative AI as a virtual instructor, for content creation, implementation of personalised learning, skills development, and assessment (in the context of medical studies). The study also addresses the ethical issues of integrating AI into higher education with a particular emphasis on assuring accuracy and responsibility for the professions.

Gomez et al. (2021) argue that AI tools are very relevant for the management of resources and activities in virtual learning environments. Gomez et al. (2021) argue that the use of multi-agent systems (MAS) can significantly enhance adaptive learning experiences by tailoring resources to individual needs, thereby improving student satisfaction and engagement in virtual learning environments.

In summary, the papers under this theme highlight the potential of AI tools and solutions to enhance learning management, automate assessments, and provide intelligent support for both students and faculty. Notably, all studies emphasise that AI integration requires careful design, ensuring adaptability, accessibility, and ethical considerations to maximise its benefits in education.

Conclusions

This chapter, which analyses the current state of the literature on AI and virtual learning, demonstrates that while there is a growing academic interest in understanding the role, potential, and risks associated with AI in virtual learning environments, the literature in this field remains underdeveloped.

The systematic literature review (SLR) highlights that AI is set to play a transformative role in virtual learning platforms and educational management systems. Research suggests that AI tools and solutions hold transformative potential for:

- Customising learning experiences
- Optimising resource management
- Enhancing student engagement and outcomes

Nevertheless, the success of AI integration depends on:

- Ethical and responsible implementation
- Active involvement of both educators and learners
- Cultivation of creative and critical thinking alongside AI use

However, given the growing interest in AI for virtual learning, we have identified at least three research lines for a future research agenda.

- *Explore Hybrid AI-Human Learning Models:* It is crucial to explore hybrid AI-human models to better understand the interaction and to identify which processes can be automated, augmented, or innovated through AI implementation.
- *Institutionalising AI Integration in Education:* Research focused on defining strategies for institutionalising AI in educational platforms is essential. Establishing the best practices for AI integration at the institutional level could significantly contribute to increasing awareness and understanding of the importance of de-

veloping and implementing AI-driven educational tools. These tools can support customised, flexible, and tailored learning experiences, enhance content management, and optimise resource allocation and assessment processes.

- *Prioritise Ethical and Inclusive AI Use:* To fully harness the benefits of AI in education, ongoing research must prioritise the ethical and responsible use of AI-driven technologies. This involves addressing critical issues such as bias, transparency, data privacy, and equitable access to AI-powered learning environments. Researchers should develop strategies to mitigate AI-related biases and ensure that AI tools are designed to support diverse learning needs, fostering inclusivity rather than reinforcing existing inequalities.

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Appendix 1: Distribution of Articles by Journal

Lecture Notes in Computer Science (including subseries) – 11
Communications in Computer and Information Science – 9
IEEE Access – 9
Cogent Education – 6
Education and Information Technologies – 5
International Journal of Emerging Technologies in Learning – 5
Proceedings of the International Conference on Virtual Learning – 5
CEUR Workshop Proceedings – 4
International Journal of Engineering Education – 3
International Journal of Information and Learning Technology – 3
International Journal of Intelligent Systems and Applications… – 3
Multimedia Tools and Applications – 3
PEERJ Computer Science – 3
ACM International Conference Proceeding Series – 2
Applied Sciences (Switzerland) – 2
Computers and Education – 2
Ieee Transactions on Learning Technologies – 2
International Journal of Advanced Computer Science and Applications – 2
International Journal of System Assurance Engineering… – 2
Lecture Notes in Computer Science (including subseries) – 2
Library Hi Tech News – 2
2016 IEEE Conference on E-Learning, E-Management and E-Services – 1
2022 IEEE European Technology and Engineering… – 1
35th Bled Econference: Digital Restructuring and Human (Re)Action – 1
5th International Conference on Artificial Intelligence, Big Data,… – 1

5th Technology Innovation Management and Engineering Science… – 1
Adult Learning – 1
Advances in Intelligent Systems and Computing – 1
African Journal of Applied Research – 1
African Journal of Hospitality, Tourism and Leisure – 1
Applied Ergonomics – 1
Applied Mathematics and Nonlinear Sciences – 1
APTISI Transactions on Technopreneurship – 1
British Journal of Guidance and Counselling – 1
CIVEMSA 2018 – 1
Cluster Computing – 1
Computer Applications in Engineering Education – 1
Computer-Aided Design and Applications – 1
Computers and Education: Artificial Intelligence – 1
Cyberpsychology, Behavior, and Social Networking – 1
Development and Learning in Organizations – 1
E-Learning and Digital Media – 1
EASEAI 2021 – 1
Educational Technology and Society – 1
Elearning and Software for Education Conference – 1
Estudos Avancados – 1
Eurasia Journal of Mathematics, Science and Technology Education – 1
European Journal of Dental Education – 1
European Journal of Engineering Education – 1
Expert Systems – 1
Formacion Universitaria – 1
Frontiers in Education – 1
Frontiers in Robotics and AI – 1
Frontiers in Virtual Reality – 1
GMS Journal for Medical Education – 1
Health Policy and Technology – 1
IEEE Latin America Transactions – 1
IEEE Transactions on Education – 1
IEEE Transactions on Neural Systems and Rehabilitation Engineering – 1
IEICE Transactions on Information and Systems – 1
Indonesian Journal of Electrical Engineering and Computer Science – 1
Ingeniare – 1
Intelligent Automation and Soft Computing – 1
Intelligent Systems Reference Library – 1

Interactive Learning Environments – 1
International Journal of Advanced Science and Technology – 1
International Journal of Artificial Intelligence in Education – 1
International Journal of Civil Engineering and Technology – 1
International Journal of Data Mining and Bioinformatics – 1
International Journal of Education and Practice – 1
International Journal of Educational Research and Innovation – 1
International Journal of Educational Technology in Higher Education – 1
International Journal of Engineering Pedagogy – 1
International Journal of Information Technology and Decision Making – 1
International Journal of Instruction – 1
International Journal of Intellectual Property Management – 1
International Journal of Interactive Multimedia… – 1
International Journal of Mobile Learning and Organisation – 1
International Journal of Performability Engineering – 1
International Journal on Advanced Science, Engineering… – 1
Internet of Things (Netherlands) – 1
Iraqi Journal for Computer Science and Mathematics – 1
Journal of Applied Learning and Teaching – 1
Journal of Artificial Intelligence and Technology – 1
Journal of Digital Imaging – 1
Journal of Ecohumanism – 1
Journal of Information Systems Engineering and Management – 1
Journal of Metaverse – 1
Journal of Research On Technology in Education – 1
Journal of Surgical Education – 1
Knowledge Management and E-Learning – 1
Learning and Motivation – 1
Lecture Notes in Business Information Processing – 1
Library Philosophy and Practice – 1
Mechanical Systems and Signal Processing – 1
Nurse Education Today – 1
Obrazovanie i nauka – 1
Proceedings of Connect 2021 – 1
Research and Practice in Technology Enhanced Learning – 1
Revista de gestao social e ambiental – 1
Revista iberoamericana de tecnologias del aprendizaje – 1
Scientia paedagogica experimentalis – 1
Smart Innovation, Systems and Technologies – 1

Societies – 1
Soft Computing – 1
Studies in Computational Intelligence – 1
Sustainability (Switzerland) – 1
Technology, Knowledge and Learning – 1
TEM Journal – 1
Turkish Online Journal of Distance Education – 1

Chapter Six

Developing Transversal Key Competencies for Lifelong Learning through Collaborative Online International Learning

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https://doi.org/10.53615/978-83-65020-54-3/87-105

Introduction

Key competencies for lifelong learning were first proposed by the European Commission (EC) in 2006. In 2018, the concept was redesigned, and minor changes were made to the definitions of the eight key competencies. The Council Recommendation of 22 May 2018 on Key Competences for Lifelong Learning (2018) emphasises that educational systems should include the idea of developing key competencies in formal, non-formal, and informal education, all in the function of individual and societal well-being, with a focus on the individual who, by learning throughout life, has high adaptability to a changing society, especially in the work environment. Educational systems address the introduction of key competencies in various ways.

Three key competencies are traditionally recognised as part of formal education in all educational systems and are taught as separate subjects. These include communication in the mother tongue and in

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

foreign languages, as well as competencies related to mathematics and the natural sciences (STEM). The other key competencies are, by nature, transversal, meaning that their elements belong to and can be developed through various subjects, interdisciplinary themes, and so on. Transversal key competencies, therefore, need to be developed through the intersection of different teaching subjects, as well as through teaching and learning methods, techniques, and strategies – i.e., by creating an appropriate teaching methodology and a rich learning environment.

Collaborative online international learning (COIL) is one form of virtual mobility and, at the same time, an educational opportunity for learning that extends beyond subject content, where numerous transversal competencies can naturally be connected. Since COIL involves international groups and teams learning together, communication competencies can be encouraged through various activities. At the same time, COIL is mostly oriented towards problem-solving, research-based, or project-based learning, so it creates a potent digital learning environment (DLE) in which many cross-sectional competencies, including key competencies, may be upskilled by students and by teachers.

In this chapter, we discuss the possibilities for developing transversal key competencies in the pedagogical environment provided by COIL. COIL is presented here as a concrete and structured model of Virtual Collaborative Learning (VCL), which offers rich opportunities for acquiring, applying, and transferring transversal competencies across cultural and disciplinary contexts. The chapter is structured as follows: first, we define the system of key competencies for lifelong learning (LLL), then we describe COIL. In the third part, we highlight the opportunities that COIL offers to develop competencies.

Key Competencies for LLL in the Contemporary Educational Context

In the second half of the 20th century, traditional educational programs were mainly content-oriented. However, the rapid development of science and technology significantly changed the labour market, revealing that formal education focused on knowledge accumulation does not provide sufficient transfer value or adaptability. Learners trained in such systems often struggle to adapt to changing work conditions, especially if they lack opportunities for upskilling or retraining.

In such circumstances, which were already visible in the 1990s, it was necessary to reform the curricula, i.e. find the possibility of their different orientation to increase the transfer value of school learning and to learn those elements (knowledge, skills, attitudes, values, etc.) with high functionality, time-resistant, future-resistant, sustainable, etc. These elements help the individual in adapting to new circumstances in the living and working environment.

By the 1990s, it became evident that curricula needed to be reoriented toward more functional, sustainable, and adaptable forms of knowledge, those that enable individuals to respond to lifelong challenges in personal and professional domains. This shift gave rise to the growing importance of competency-based education, conceptualised as a dynamic integration of knowledge, skills, and attitudes (Buscà Donet et al., 2017; OECD, 2005).

The Lisbon Strategy (*Lisbon European Council 23 and 24 March 2000,* 2000) positioned the EU as a global knowledge economy, prompting the alignment of education systems with the needs of the so-called 'knowledge society.' This led to the promotion of learning outcomes-based education, underpinned by transferable and functional competencies. Caena (2011) and Vukasović (2006) both emphasise the holistic nature of competence, combining cognitive, behavioural, and affective dimensions. In addition, at the end of the 20th and the beginning of the 21st century, the internationalisation of education pointed to the necessity of comparing processes and effects in the education sector and directed the emergence of initiatives that could contribute to the harmonisation of education systems. The most important among these initiatives is PISA (Programme for International Student Assessment), launched in 1997 and first implemented in 2000 (OECD, 2001), which is a three-year cycle that checks the levels of student skills in the basic areas of literacy (reading, mathematics, science) and enables vertical and horizontal comparison. Results and some important contextual factors that influence learning, such as motivation, learning strategies, attitudes toward learning, and beliefs about oneself as a student, are also a part of the PISA database. PISA deals with literacy in a functional sense, i.e. it tests the functional literacy of fifteen-year-olds. The PISA research methodology is aimed at assessing the adoption of basic skills in contextualised problem situations, i.e. in problem-type tasks. PISA tests cannot be done successfully if the focus of learning is not on understanding what was learned.

Another important initiative concerns the definition of the concept of universal key competencies for LLL, which has the task of enabling individuals' success in professional and personal life (e.g. DeSeCo – Definition and Selection of Key Competences) (OECD, 2005; Council Recommendation of 22 May 2018 on Key Competences for Lifelong Learning, 2018).

The DeSeCo project was born from the idea that international assessments of student achievements must include the so-called new competencies, skills that are not limited to individual subjects but are cross-curricular, and for them, it is possible to state an exceptional general importance, hence the name key (Marušić, 2018). Therefore, in contrast to professional competencies, which concern a specific area and are needed by individuals exclusively in that area, key competencies are general or generic (Gonzales & Wagenaar, 2005). As such, not specific to only one area, they are used and learned transversally, through different subjects. Key competencies are not limited only to the cognitive area but also include various elements that belong to the affective area, such as attitudes, values, and emotions. They enable the individual to successfully face various complex, troublesome situations, to adapt to new work and living environments, to respond well to changes, and to often tolerate uncertainties.

The PISA and DeSeCo initiatives have focused attention on learning outcomes, which may be understood more broadly than the usual subject perspective. Student achievements in PISA or competencies as described by DeSeCo have directed education's attention towards curricula oriented towards achievement, i.e., learning outcomes. As a result of reforms towards competence-based education, the European Qualifications Framework (EQF) was set up in 2008 and later revised in 2017. National qualifications frameworks are closely related to the EQF, so each of them operates in terms of competencies and sub-terms such as knowledge, skills, and attitudes.

Lifelong learning (LLL) is understood as education and training that spans the entire life course, occurring in formal, non-formal and informal settings embedded in school, workplace, home, and community (Laal, 2011). From the early 21st century onward, LLL has been promoted as the appropriate response to rapid social change (Gibbs et al., 2007) and as a way to satisfy both personal and societal needs (Billett, 2009). European policy documents further present LLL as a lever for resilience, social inclusion, and innovation (Smidt & Sursock, 2011; Ceschi

et al., 2021). Within this perspective, key competencies conceived as a dynamic blend of knowledge, skills, and attitudes, equip individuals to perform effectively not only in the workplace but also in everyday life (Sartori et al., 2018), and thus lie at the heart of contemporary education and employment strategies.

The shift from DeSeCo's three broad domains of competence (working with others; working with knowledge, technology, and information; acting autonomously in society) (OECD, 2005) provided the foundation for the European Commission's Recommendation on Key Competences, first adopted in 2006 and revised in 2018. This Recommendation establishes eight transferable key competencies needed for personal fulfilment, active citizenship, social inclusion, and employability (European Commission, 2018).

With the first EU Recommendation on key competencies, Europe started a reform based on this approach. So, studies indicated several attempts to adjust educational systems (Dumitrescu et al., 2014; Halász & Michel, 2011). However, 'It is concluded that there is still unfinished business for educational researchers in critically engaging with framing and defining competencies for the twenty-first century, their causes, impact, and consequences for schooling and learning internationally, as well as how competence-based education is recontextualised into specific national contexts' (Tahirsylaj & Sundberg, 2020, p. 131).

Based on a meta-analysis of articles published from 1997 to 2017, Tahirsylaj and Sundberg (2020) rightly state that in the papers they analysed, if definitions of competence-based education appear at all, they are based more on DeSeCo and/or EC documents, reports, and recommendations, than on definitions derived from theories of learning (to which it really belongs in a scientific sense). For the purposes of this work, we will also use the European Commission's definition because the subject of our investigation is directly derived from the EC's concept.

The eight key competencies are (European Commission, 2018):

- Literacy competence
- Multilingual competence
- Mathematical competence and competence in science, technology, and engineering
- Digital competence

- Personal, social, and learning to learn competence
- Citizenship competence
- Entrepreneurship competence
- Cultural awareness and expression competence

The first three are commonly addressed through subject-based instruction. The remaining five are considered transversal, acquired over subjects and situations and are central to this chapter. These competencies are foundational for navigating uncertain and diverse environments, and they align closely with the pedagogical opportunities provided by COIL.

Collaborative Online International Learning (COIL)

Collaborative learning is strongly recommended as a model with exceptional results in cognitive and affective student achievement in face-to-face, traditional teaching/learning. Digital tools offer even more intensive opportunities to expand options for this type of learning.

Digital tools and generally the digital learning environment (DLE) unexpectedly bridge the barriers of time and place and create a frame of reference in which students who are physically distant and may not even be in the same time zone learn simultaneously and in collaboration. Such possibilities were unimaginable until recently, but in the modern educational milieu, they are a real fact, expected to be used for LLL, which can certainly contribute to group and individual success. In a world where numerous jobs can be done online, the need for COIL learning opportunities is also increasing. Given that current students expect working conditions in which international cooperation will often be a condition for success, COIL represents an excellent foundation for such conditions.

COIL is an educational approach that uses online learning opportunities and helps universities internationalise (Rubin, 2017). Internationalisation, by its very nature, develops intercultural competencies, due to contact among individuals, cultures, languages, etc. It has become the basis of modernisation, progress, learning, and research at almost all universities. The globalised world order requires universities to offer a wide range of skills, knowledge, and technologies, making it difficult to expect any one university or even one country to meet all market demands.

Thanks to international cooperation, universities can help each other provide comprehensive skills for the modern labour market. In addition to the development of expertise and the exchange of technologies, the diversification of the working and cultural environment is of great importance for the academic and non-academic staff of the university, and especially for the students themselves, who are the main motive for the development of international cooperation. One faculty or one environment cannot present all the possibilities of the global academic community. This is the main reason constant communication between universities is necessary: gaining insight into market trends, sharing good practices and skills, and continuously working on removing physical boundaries among those whose basic vocation is the search for knowledge. Therefore, joint, collaborative, and teamwork represent the imperatives of modern university teaching.

Collaboration is an important transversal skill seen as a prerequisite for many jobs in different work environments (Marutschke et al., 2019). In the context of dominant learning theories, primarily social constructivism, the collaborative way of learning leads to the active construction of knowledge. Social constructivism as a learning paradigm comes predominantly from the socio-constructivist theory of Leo Vygotsky (1986), defined in the 1930s of the 20th century (first published in 1934). Vygotsky (1986) determined, through experiments, the external origin of higher mental activities, that is, the fact that the child first builds knowledge in a social environment, in cooperation with adults, which then moves to the internal plane through the process of interiorisation and functions there under the child's control. The same process exists in both traditional and online learning environments.

Therefore, knowledge was created and continues to be constructed in social interaction, which makes its transmission impossible. Vygotsky's theory singles out *the zone of proximal development* as important for cognitive progress – learning occurs in situations that are slightly above the child's current abilities, in which the child interacts with those who know more than him/her (teacher, peers). The same principles related to the social construction of knowledge apply to learning at all ages, so students also construct their knowledge systems in interaction with professors and peers. Interaction in the learning function can be realised directly, in face-to-face classes, but also in different online learning environments. Knowledge exchange occurs in social interaction, and COIL is one type of virtual exchange (Hackett et

al., 2024), along with tele-collaboration, online intercultural exchange, e-tandem, global virtual teams, and globally networked learning environments (O'Dowd, 2018, p. 4).

As mentioned earlier in this chapter, COIL is a teaching methodology that focuses on creating collaborative learning experiences across geographical and cultural boundaries, which is one of the prerequisites for higher education (HE) internationalisation (de Wit et al., 2015; O'Dowd, 2018; Beelen & Jones, 2015). De Wit et al. (2015) underline that COIL is one of the basic methodological instruments for HE internationalisation: 'It is thus necessary to give increased attention to digital and blended learning as instruments to complement the internationalisation of higher education, not only through MOOCS but also through virtual exchange and collaborative online international learning' (p. 30). In COIL, students are engaged in cross-cultural cooperation (Duus & Cooray, 2014), meaning that it allows students from different parts of the world to engage in shared academic projects by utilising online platforms, without physically moving from home (Beelen & Jones, 2015). The approach is built around a strong foundation of cross-cultural interaction, which enhances subject matter understanding and fosters global competence and collaboration (Rubin & Guth, 2022). The nature of COIL encourages active learning, requiring students to engage critically with both the subject matter and each other's ideas.

Students working on joint projects navigate cultural differences, adapt to various communication styles, and arrive at solutions that incorporate diverse perspectives. This active engagement fosters critical thinking, communication skills, and flexibility, competencies crucial in today's interconnected world. The collaborative nature of COIL also encourages self-reflection, as students often reflect on their cultural biases and how these influence their academic approach and decision-making process.

At the core of COIL is the course design, which is a joint effort between faculty members from different institutions (Rubin & Guth, 2022). These instructors collaborate to create a shared syllabus that blends their academic expertise and aligns with the learning objectives or learning outcomes of both institutions. This joint design allows for the integration of interdisciplinary and culturally relevant content, ensuring the course is cohesive and relevant for students from diverse backgrounds. The faculty members agree on key components, such

as assessment methods, collaborative activities, and the use of suitable digital tools for communication. The design of these courses often emphasises not only academic goals but also promoting the development of intercultural understanding, encouraging students to engage with different perspectives. This means that the courses are not only focused on cognitive but also affective elements of teaching and learning, making them more relevant for social and emotional upskilling.

The success of COIL courses relies heavily on the use of technology to bridge the distance between students. Communication tools, such as video conferencing (e.g., Zoom or Microsoft Teams), online discussion forums (e.g., Moodle or Blackboard), and collaborative workspaces (e.g., Google Docs or Padlet), are employed to facilitate interaction. These digital platforms allow students to collaborate in real time, even if they are in different time zones (Rubin & Guth, 2022).

Technology facilitates not just formal communication but also informal exchanges, where students share experiences and ideas outside the confines of the traditional classroom. This part of students' interaction is beneficial for their personal growth because DLES may build student groups from diverse cultural settings. That is, an essential component of COIL is the intercultural exchange that occurs during these collaborative projects. By working together on academic tasks, students from different countries and regions bring their unique cultural perspectives, enriching the learning experience. These projects typically involve group work, where students are paired or grouped with peers from other countries. In this collaboration, students learn from each other's viewpoints, cultural contexts, and problem-solving approaches. It is an opportunity for students to engage in peer learning, where they teach and learn from one another in a shared academic space.

Assessment in COIL courses is designed to evaluate not only academic outcomes but also collaboration and intercultural competence (de Wit et al., 2015), and it also needs to be formative and summative (Altowairiki, 2021). Students are typically assessed based on the quality of their project contributions, their ability to work as part of a diverse team, and their reflective insights. The final assessment often includes a project that demonstrates the collective work and shared learning of the students. Peer assessments, where students evaluate the contributions and teamwork of their group members, and self-reflections, where students assess their growth in terms of intercultural communication and global collaboration, are also common (de Wit et al., 2015).

While some COIL projects are designed as short-term collaborations, the methodology often aims to create lasting international learning networks (de Wit et al., 2015; Rubin & Guth, 2022). These networks can provide long-term benefits for students and faculty, as they offer opportunities for future collaborations, research partnerships, and career development in a globalised context. By engaging in COIL, students are not only learning academic content but also developing the skills and perspectives that are essential in today's global workforce.

Recent experience, gained during the COVID-19 pandemic, drew the attention of the global academic community to DLE. How teaching and learning at the University of Montenegro were organised during the lockdown period can best be described by the term emergency remote education (ERE), because the teaching methodology was mostly not adapted to DLE, online connections only enabled the transmission of content as it was planned for direct teaching (Vučković & Premović, 2023). The research carried out with students and teachers showed that both were faced with numerous challenges during the ERE, and that their attitudes were binary towards the future of teaching/learning in DLE – while some are strictly and exclusively against any form of online learning and teaching and underline the lack of socialisation effects, weak concentration of participants, weak feedback, and many ethical questions related to taking exams, others also pointed to the numerous advantages and opportunities brought by the possibility of learning in DLE (Vučković & Premović, 2023). Among other things, students indicated difficulties with concentration, attention, communication, and interaction, but at the same time, they had numerous insights that indicated the perception of some possibilities (Lodge et al., 2021; Vučković & Premović, 2023). Both students and teachers drew attention to the need for training on digital tools and the way of working in DLE (Vučković & Premović, 2023).

In summary, COIL is a dynamic teaching methodology that uses online collaboration to foster academic and intercultural learning. It is realised in DLE, allowing students from different countries to work together on meaningful projects, enhancing their understanding of the subject matter and the world around them. Through digital platforms, collaborative activities, and intercultural exchange, COIL creates an enriching and transformative learning experience for students, preparing them for success in an increasingly interconnected global society. However, for COIL to work, training for students and teachers is necessary in at least two areas: in the use of technology to create DLE and in

the psychological, pedagogical, and methodological aspects of teaching and learning in DLE.

Linking Key Competences for LLL and COIL

Transversal competencies are acquired in one context or mastered in a special situation/problem and can be transferred to another context. This means that they have a high transferability, e.g., may be used in a situation that significantly differs from the situation in which they have been mastered. These competencies are, e.g., problem-solving, decision-making, negotiating, strategic and innovative thinking, etc. The term transversal competence is not synonymous with key competencies, but there is a connection between the two. Namely, each key competence for LLL has its transferable elements, those knowledge, skills, and attitudes that may be used in many situations. For example, for civic competence, it is of utmost importance to develop skills for negotiation, so if we teach/learn about negotiation to develop civic key competence, we also develop transversal competence, which may be used interdependently, not only for problem-solving in civic matters, but in many other situations. Furthermore, COIL supports problem-solving, which is an important element of each key competence for LLL. In COIL courses, students work together on real-world, often interdisciplinary problems, requiring them to think critically and creatively. These problems are approached from multiple cultural and academic perspectives, encouraging students to develop solutions that are more innovative and inclusive. By collaborating with peers from different backgrounds, students learn how to solve complex issues using diverse methods, which strengthens their problem-solving abilities.

Connecting COIL with the key competencies for LLL offers an insightful perspective on how COIL, as an innovative teaching methodology, nurtures essential skills that are crucial for students' ongoing personal, academic, and professional development. Below is a breakdown of how COIL supports the transversal key competencies for LLL, as outlined by the Council Recommendation of 22 May 2018 on Key Competences for Lifelong Learning (2018) and other global competence frameworks.

Cultural Awareness and Expression, and COIL

Of the effects concerning key competencies, the most research attention has been devoted to intercultural competence, so Hackett et al. (2023), Liu and Shirley (2021), and Mundel (2020) determined the

success of COIL in developing intercultural competence. The very nature of COIL involves students working in cross-cultural, international teams. These collaborations require students to navigate cultural differences in communication, work styles, and expectations. Through this process, students develop skills such as negotiation, conflict resolution, leadership, and mutual respect. One of the central goals of COIL is to create a space in which students from different cultural backgrounds can collaborate. This is compatible with the key competence of cultural awareness and expression, which includes understanding and respecting cultural diversity. Through COIL, students participate in intercultural exchange, share academic knowledge, and exchange perspectives and experiences shaped by their cultural context. By working on joint projects with peers from different countries, students learn to appreciate cultural nuances, which helps develop their intercultural competence, essential for personal and professional development in an increasingly globalised world. Recent meta-analyses confirm that students who participate in COIL projects show measurable improvements in intercultural sensitivity, open-mindedness, and communication across cultural boundaries (Schwab & Thees, 2023; Hackett et al., 2023). These findings are consistent across short- and long-term COIL implementations in higher education.

Digital Literacy and COIL

A foundational component of COIL is its use of digital technologies to facilitate international collaboration. Students need proficiency in various digital learning environments. Through the COIL experience, students naturally improve their digital literacy by using these tools to communicate, collaborate, and create. These skills are not only important in academic settings; they are also highly transferable to the workplace and essential for lifelong learning (LLL), especially as technology continues to reshape how we interact, work, and learn. COIL experiences also lead to gains in digital self-efficacy, particularly in collaborative workspaces and digital communication, as students navigate real-time problem-solving in unfamiliar technological settings (Leone & Cristóvão, 2022).

Digital Literacy has become a mandatory skill, leaving questions such as whether someone is familiar with the application of digital technologies in the past and asking how effective and broad their skills are. New generations that are coming to universities will not remember

the days without artificial intelligence. This will lead to their proficient use, or a quick getting-to-know process, with any new technologies that come in the future. Such energy will need to be supported and guided by universities, and one way to do so is by introducing students to COIL opportunities. It is essential to show young people and current professionals not only how they can be proficient and apply current digital tools (from video conferencing platforms, collaborative workspaces, project management software, VR, and Artificial Intelligence) but also how to be prepared for other innovations.

Needless to say, COIL environments will push students to improve their digital literacy by using these tools to communicate, collaborate, and create. These skills are not only important in academic settings but are also highly transferable to the workplace and essential for lifelong learning (LLL), as technology continues to reshape how we interact, work, and learn.

Since COIL relies on the use of digital platforms, students and educators must learn basic cybersecurity rules and skills to protect themselves and their data. Some of the basic skills they would be exposed to include using strong passwords, multi-layer authentication, recognising phishing attacks, etc. Additionally, it is crucial to develop familiarity with laws for data protection (such as GDPR) and various ways different websites are memorising and further (mis)using their data.

Personal, Social, and Learning to Learn Competence and COIL

COIL fosters self-directed learning and encourages students to take responsibility for their learning process. As they collaborate with peers across different time zones and cultures, students must manage their time effectively, adapt to new learning environments, and navigate diverse academic perspectives. These experiences help them develop strategies for learning throughout their lifespan, how to stay motivated and organise their studies without constant supervision. COIL pushes students to reflect on their learning styles, adapt to different methods, and continuously seek new knowledge, which is key for adapting to changing academic and professional contexts.

Not only will students develop their own personal learning styles, but they are encouraged to personalise learning goals and strategies. Furthermore, by following different teaching methods from COIL professors and being exposed to other learning styles among their online classmates, they can gain insight into new, useful learning practices

and tools and alternative viewpoints of learning materials (cultural subtext, etc.). Additionally, such an environment will help boost their learning flexibility, problem-solving skills, critical thinking, and tolerance of ambiguity, etc. Furthermore, by navigating the learning process with their peers, students develop skills for time management, they better understand their emotional background for and in the learning process, so they develop personal competence.

Civic Competence and COIL

COIL fosters civic competencies by encouraging students to engage with a global community, consider global citizenship, and participate in virtual communities. Through collaboration, students gain experience in working with people from diverse backgrounds, which helps them build empathy, respect, and the ability to navigate different social contexts. This is vital for LLL, as it prepares students to work in multicultural environments, contribute to discussions on global issues, and engage in collaborative decision-making processes that consider multiple viewpoints and contexts.

This is for young adults who come from culturally, ethnically, or racially uniform backgrounds and have not been exposed to societal diversity in a satisfactory measure. COIL will help them build their civic competencies, learn how to be global citizens, and develop culturally sensitive and knowledgeable approaches to different subjects and topics. Besides, skills such as empathy and cultural awareness will help them ease into the future workspace, no matter where they decide to live.

Since many COIL students have diverse backgrounds, this will also be a great opportunity to discuss various topics related to global issues and social injustices and share thoughts and experiences on how to give back to communities.

Entrepreneurial Competence and COIL

While COIL is primarily an academic tool, it also fosters entrepreneurial skills in students. Working in teams from different parts of the world, students need to be entrepreneurial; they must take initiative, manage their projects effectively, and adapt to new approaches and perspectives. This experience encourages innovation, resourcefulness, and creativity, all of which are important for entrepreneurship. A recent study by Min et al. (2022) found that participation in cross-border COIL

projects fosters entrepreneurial intention and project management skills among students, particularly when tasks involve real-life problems requiring innovation and initiative. Additionally, COIL projects often require students to find innovative solutions to complex problems, nurturing an entrepreneurial mindset-skills essential for adapting to an ever-changing global economy and for continuous personal and professional growth.

Although there are specific subjects in school curricula for teaching and learning foreign languages, it is important to mention here that COIL fosters the key competence entitled communication in foreign languages. While communication within COIL is typically in a common language (often English), the experience encourages students to develop their language and communication skills. Further, users of digital technologies need to be reminded that communication in real life and online communication can be vastly different and have their own rules (from Internet slang to adjusting tone and clarity to come across as intended). COIL's collaborative nature demands that students articulate their ideas clearly, using digital tools and overcoming language barriers. This process enhances their foreign language proficiency, as students become more comfortable engaging with peers from different linguistic backgrounds. The necessity to communicate across cultures pushes students to develop strategies for effective communication, a key competence for LLL in diverse environments.

Conclusion

In the context of COIL, students gain hands-on experience in developing the key transversal competencies required for LLL. COIL promotes academic growth and fosters critical skills that students will continue to rely on in their lives, both personally and professionally. With its emphasis on cross-cultural communication, digital literacy, problem-solving, and global collaboration, COIL prepares students to become active, adaptable, and competent lifelong learners capable of thriving in an interconnected world. By engaging in the international learning community through COIL, students are participating in academic exchange, besides enhancing the key competencies crucial for navigating the challenges of the 21st century.

COIL, in many ways, expands the learning environment, i.e. the traditional classroom in which students of the same age work on tasks, often

and independently of each other, into a digital learning environment, which is already rich in technological possibilities and tools and will be even more so in the future. In such an environment, the barriers of place and time for learning are completely overcome, so students from different global points can study and work on the same task. In addition to the excitement that this fact in itself brings to the learning process, DLE provides COIL with cultural, personal, and social diversity that is rarely possible in traditional classrooms. Vygotsky pointed out that learning in social interaction represents how individuals construct knowledge systems, so the wealth of social interactions that COIL brings certainly has the potential to improve learning and teaching in COIL and beyond.

Key Takeaways and Action Recommendations:

- Embed COIL in credit-bearing courses so transversal competencies are planned and assessed
- Tie each project to a clear target competency
- Train faculty & students in intercultural pedagogy and virtual-team tools
- Use real global challenges to drive negotiation, creativity and problem-solving
- Assess with a mix of artefact + self/peer reflection to capture competence growth
- Secure sustainable partnerships and basic IT support (stable LMS, video conferencing) to keep COIL running smoothly

These measures give educators and policymakers a concrete roadmap for leveraging COIL as a systematic driver of transversal key competencies and, ultimately, resilient lifelong learning systems.

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Chapter Seven

Virtual Learning as Liberation or Commodification? A Critical Perspective

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https://doi.org/10.53615/978-83-65020-54-3/107-122

Introduction

This chapter analyses the monograph's contribution to empirical and design-based practices by incorporating Marxist critiques alongside Habermas (1984, 1989, 1998) and Ferrara (1993, 1998). The shift in higher education has led to the development of Virtual Collaborative Learning (VCL), a prominent and increasingly visible teaching methodology. VCL enables active and international education while fostering collaboration, critical thinking, and global participation. With all the mentioned benefits, evaluating them against persisting inequalities and structural challenges is crucial, particularly in developing nations (Garrison & Anderson, 2003).

VCL moves away from the confined traditional classroom learning into a more innovative space, which is digital. Such spaces allow students to solve problems, construct knowledge, and accomplish collective tasks while being located far apart (Reinhardt et al., 2021). DeLuca and Bellara (2020) indicate that VCL assists colleges and universities in creating flexible, interactive, and international learning opportunities, enhancing students' educational experience. The nature of VCL offers the opportunity to participate with each other, which improves learning outcomes through the engagement of peers (Helm 2020). Students sharing insights and perspectives have aided in broadening the learning outcome (Deardorff, 2022). This model motivates active participation, critical thinking, and problem-solving skills vital for the changing demands of the 21st-century job market (Collier & Evans, 2021).

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The asynchronous nature of VCL also enables students to learn at their own pace, accommodating various learning styles and needs (Means et al., 2014). VCL's interactive learning approach not only boosts engagement but also develops digital literacy and technical skills, which are essential in today's connected world (Siemens, 2005; Wang, 2015). Integrating digital tools into learning encourages students to become more skilled at using technology, preparing them for a future where digital skills will be increasingly necessary (Castells, 2009). Furthermore, VCL promotes social learning by building relationships among students. Sharing ideas and working together helps students learn from one another, gaining fresh perspectives and deepening their understanding of the material (Smith & MacGregor, 1992). This is especially important in higher education, where encouraging critical thinking and diverse viewpoints is a key goal (Brookfield & Preskill, 2005). However, despite its successes, concerns about VCL arise, particularly in developing countries. In the next section, we will apply the Marxist critique of commodification and exclusion to address this issue.

Marxist Critique: Commodification and Exclusion

VCL and other forms of education, including traditional ones, can be analysed through Marxism's lens, which has developed and gained popularity since the 19th century. In simple words, Marxist theory revolves around one's economic status and social relations. It claims that, like other institutions, education seeks to further class differences and usually operates to benefit the ruling class more than the working class. Regarding VCL, a Marxist perspective critique would note how contemporary education facilitated by technology is market-driven and reinforces many demand and supply principles of the economy, which limits its capacity to fully democratize learning. The perception of education as an asset one can purchase is fundamental to Marxist critique. For developed economies, education is increasingly perceived as a good or service offered to people, which they can purchase, and therefore access is often restricted to those with financial means (Harvey, 2005). VCL is usually ascribed to this paradigm of relegation despite its innovative nature. Access to VCL usually presupposes the availability of certain technological prerequisites, such as computers, stable internet, and relevant software tools that are not evenly accessible worldwide. Thus, students from wealthier families benefit more from the innovations, while poorer families are left behind. From a Marxist per-

spective, the absence of socioeconomically disadvantaged students is the most significant challenge for VCL. There are three concepts that better explain Marx's ideas. Respectively, the digital divide, the process of commodification and alienation.

Digital Divide

The lack of technological equipment and internet connections creates a gap in society called the digital divide. This gap exists between people with and without access, extending beyond basic hardware. It includes access to internet connections, literacy, and adequate support for utilising these technologies (Warschauer, 2003). This gap is largely visible in third-world countries and developing countries. The primary INSTAT data indicates that almost 850,000 families living in Albania, only 82.2 per cent, have internet access. Approximately 153 thousand families deem online learning unattainable for their children. INSTAT shares another concerning statistic stating that 29.6% of children under 17 are living in relative poverty, unable to afford a smartphone, tablet, or a computer. Wealthier families enable their children to fully leverage cutting-edge learning tools like VCL, whereas poorer families are excluded from such opportunities. This situation deepens societal inequalities since the more vulnerable groups within the free-market economy are pushed further behind because of the digital divide. Moreover, even within wealthier countries, the digital divide persists along lines of class, race, and geography. For example, rural areas often have less reliable internet access than urban areas, and low-income students are less likely to have access to personal computers or high-speed internet at home (Selwyn, 2010). This uneven access to digital resources exacerbates existing educational inequalities, as students from disadvantaged backgrounds can participate less in the collaborative, interactive learning experiences that VCL offers (Brouns et al. 2020).

The Process of Commodification

A Marxist critique would highlight how VCL perpetuates labour exploitation, knowledge commodification, and access concerns. VCL is just one example of how education in free market societies is becoming more focused on creating workers who can satisfy the labour market demands. VCL responds to the needs of the global free market economy, which values these abilities in workers, by prioritising teamwork, communication, and problem-solving skills (Schneider &

Preckel, 2017). Although there is no denying the value of these skills, the emphasis on creating 'market-ready' workers reflects the larger commodification of education, where knowledge is viewed as a good to be bought and education is a way to make money. VCL platforms frequently prioritise employability and marketable skills over critical consciousness to further the interests of tech companies. Students may lose touch with their teachers, peers, and the learning process in virtual environments. Albania is a prime example of these difficulties, where, according to INSTAT reports, 29.6% of children live in poverty, and more than 150,000 families cannot access dependable internet. These numbers demonstrate how wider social exclusions are reproduced by digital inequality.

Alienation

Marx's theory of alienation is another important idea for evaluating VCL. Marx (1976) argued that workers in capitalist systems are cut off from their coworkers, the production process, the results of their labour, and human potential. When students feel cut off from their peers, the subject matter, and the learning process, alienation can appear in the classroom. VCL can worsen this feeling of alienation, even though it encourages cooperation. Due to the virtual environment, students may become estranged from their teachers and the course material. They may become more isolated and less engaged in the learning process if they are not in the physical setting of a classroom (Johnson et al., 2006).

In a nutshell, different regions and social classes have unequal access to devices and the internet. VCL platforms frequently prioritise employability and marketable skills over critical consciousness to further the interests of tech companies. Students may lose touch with their teachers, peers, and the learning process in virtual environments (Freire, 1970). Albania is a prime example of these difficulties, where, according to INSTAT reports, 29.6% of children live in poverty, and more than 150,000 families cannot access dependable internet. These numbers demonstrate how wider social exclusions are reproduced by digital inequality.

The Influence of Technology on Free Market Dynamics

Many people believe that technology has a neutral role in education. On the other hand, it represents capitalist interests from a Marxist

standpoint. Businesses specialising in educational technology make money by treating education like a product through Virtual Collaborative Learning (VCL). The potential for personal freedom may be overshadowed by this change, which links educational objectives with the labour market demands. According to Marxist theory, technology is influenced by and serves the interests of the wealthy, making it non-objective. The technology used in VCL to facilitate online collaboration is usually developed and run by private businesses that profit from the sale of hardware, software, and digital resources to educational institutions. In order to grow their market share and earnings, these companies are keen to encourage the broad use of VCL. The emergence of educational technology companies that purport to provide cutting-edge educational solutions makes the connection between technology and capitalism evident. These businesses, however, are motivated by profit, and their goods frequently meet the demands of the market rather than those of students. For instance, rather than emphasising critical thinking or social equity, many VCL platforms emphasise abilities that employers value, such as problem-solving and teamwork. Consequently, VCL supports an educational system that prepares workers for the economy.

Moreover, the focus on virtual collaboration might reduce chances for face-to-face interaction, which is crucial for building meaningful relationships and a sense of community in education. In Albania, major gaps in access to virtual learning arise from the digital divide, hitting low-income and rural students the hardest. Research shows that internet access is limited in certain areas, with many students lacking vital tools like reliable internet and digital devices necessary for full participation in online education. The problem worsened during the COVID-19 pandemic, when education shifted to online platforms, leaving many underserved students behind. Many testimonies from students at EUT after the pandemic revealed the impossibility of accessing internet resources or technological tools such as a tablet or a laptop. Furthermore, UNESCO (2023) highlights that while Albania has made progress in educational accessibility, digital inequalities remain significant barriers to fair education, especially for students from economically disadvantaged backgrounds in rural areas. Gelvanovska-Garcia et al. (2023) also stress the need for greater investment in digital infrastructure and more inclusive digital policies in Albania and other countries to close this gap and ensure equal access to online learning.

Therefore, policy initiatives should concentrate on increasing affordable internet access, enhancing digital literacy, and providing technological support to students in underserved communities to address these issues. When developing and executing VCL programs, educational institutions must also put equity first, ensuring all students can engage in virtual learning regardless of their financial circumstances or backgrounds. In addition to preparing students for the workforce, schools should foster environments that promote social justice and critical thinking. By addressing these problems, VCL can be used to promote equity in education rather than exacerbate already-existing disparities. To make this shift, education funding and structure must be completely redesigned, moving away from the commodification of knowledge and toward a model that puts social justice, inclusivity, and fairness first (Giroux, 2010).

Habermas and the Limits of Communicative Action

Perceiving educational technology as objective ignores its Marxist connections to capitalist incentives. By commercialising learning, companies in the educational technology sector benefit from adopting VCL. This shift diminishes education's liberating potential by tying it to labour market demands. Leading social theorist of the 20th century, Jürgen Habermas (1984), offers a framework for assessing innovative teaching strategies like VCL. His communicative action theory is a good framework for analysing how VCL promotes authentic communication and democratic learning because it emphasises the value of discussion, agreement, and involvement in education. According to Habermas' paradigm, the VCL's efficacy is based on its capacity to foster open communication and collaborative decision-making, rather than just how well it imparts knowledge or raises academic achievement. The central tenet of Habermas's communication theory is that mutual understanding and agreement can be fostered through rational dialogue. Open communication should be a part of learning, where teachers and students exchange ideas, question presumptions, and collaborate to expand knowledge.

According to Habermas, education fosters critical thinking, knowledge sharing, and active democratic participation. Theoretically, by establishing virtual environments for student collaboration, dialogue, and engagement, VCL holds promise for fostering communicative action. Digital platforms allow students from different backgrounds to

collaborate, exchange ideas, and complete projects. As a tool for communication and comprehension, this cooperative learning aligns with Habermas's educational philosophy. A Habermasian analysis, however, might raise doubts about whether VCL fosters the free, democratic discourse that Habermas advocates. Although VCL platforms promote cooperation, they frequently do so in a top-down, structured way, with organisations or educators establishing the parameters of the partnership. Due to established learning objectives, assessment standards, and technological constraints, this hierarchy restricts students' ability to participate in communicative action. The public sphere, where people congregate to discuss shared concerns and reach a consensus through reasoned debate, is another key concept in Habermas's work. In education, the classroom can be viewed as a miniature version of society, where students engage in discourse and debate to investigate diverse viewpoints and acquire more profound understandings.

According to Habermas, the perfect discourse environment is one in which everyone can freely participate in conversations without feeling dominated or under duress. In this ideal scenario, participants converse logically to reach mutual understanding rather than to win arguments. Therefore, regardless of background or social status, all students should have an equal learning opportunity. VCL frequently falls short of establishing this ideal discourse environment, even though it encourages collaboration. As previously stated, accessing VCL necessitates technological resources such as dependable internet, computers, and software. Due to a lack of these resources, students from underprivileged backgrounds, particularly those in developing countries, may be unable to engage in virtual learning fully. Due to this disparity, equal participation is undermined since some students can participate in discussions while others cannot. Generally speaking, VCL platforms prioritise productivity and efficiency over free-form discussion. Although this emphasis can facilitate teamwork, it also reduces students' opportunities for unplanned, impromptu conversations, which are essential for fostering creativity and critical thinking. VCL occasionally replicates hierarchical structures where some voices predominate and others go unheard, rather than encouraging free discussion. Habermas also challenges the notion of technological determinism, which holds that society is fixedly shaped by technology. This critique pertains to the rise of VCL in education, which is commonly offered as a remedy for contemporary issues like increasing accessibility and

raising student engagement and performance. However, from a Habermasian perspective, VCL's effectiveness should be assessed based on its capacity to promote substantive discourse and democratic participation as well as its technological prowess.

VCL's reliance on digital platforms is a major drawback, as it may make communication difficult for students who are not tech-savvy or do not have access to the required materials. While VCL can increase some students' engagement, it can also isolate others, especially those from underprivileged backgrounds or those with limited digital skills. This digital divide weakens VCL's capacity to establish an inclusive learning environment. Additionally, emphasising technology in the classroom risks undervaluing the human element of instruction. According to Habermas, education fosters open communication, develops relationships, establishes trust, and digitally exchanges knowledge. Although VCL can promote collaboration, it frequently prioritises productivity and efficiency over deep communication. As a result, rather than being active co-creators of knowledge, students may feel alienated and treated as merely participants in a preset educational process.

To overcome such a milieu, educational institutions must concentrate on establishing forums for candid discussion and democratic engagement in virtual learning environments in order to address the drawbacks of VCL from a Habermasian standpoint. This entails switching from a top-down, institution-dictated approach to VCL to a more inclusive model where students direct the learning process. One method is using participatory decision-making to involve students in developing and implementing VCL programs. Students may have a say in choosing learning goals, evaluation criteria, and group projects. VCL can develop into a more democratic and inclusive educational model by allowing students to co-create the learning process (Ke & Hoadley, 2009). Institutions should also endeavour to guarantee fair access to VCL, including investing in technology infrastructure, particularly in developing nations, to enable all students to engage in online learning fully. All students, regardless of their particular needs or abilities, can actively participate in the learning process if VCL platforms have accessibility features (Aloni, 2008).

According to Habermasian theory, we should assess VCL based on how well it communicates knowledge, enhances learning outcomes, and establishes forums for candid dialogue and democratic participation. VCL frequently fails to create the inclusive, democratic learn-

ing environment Habermas envisioned, despite its capacity to promote collaboration and interaction. It can advance education in a way consistent with Habermas's concept of communicative action and democratic engagement by tackling the digital divide, fostering participatory decision-making, and emphasising equity in access. Also, it can fulfil its promise as a progressive educational resource for students from all backgrounds and in affluent communities in this way. To sum up, Habermas' advocacy of communicative action emphasises the importance of discussion and understanding between students.

In the following, we will delve into the paradigm of another author, Alessandro Ferrara (1993, 1998), whose concept of authenticity serves as another perspective to assess the shortcomings of VCL.

Ferrara and the Question of Authenticity

According to Reeves and Herrington (2010), authentic learning is a crucial strategy for teaching in the twenty-first century. They emphasise the value of educational opportunities that reflect the difficulties and circumstances encountered in the real world. They contend that because traditional education frequently focuses on abstract ideas, passive learning is insufficient to prepare students for the complexity of modern life and the workplace. Students are encouraged to participate in worthwhile, real-world activities through authentic learning, which fosters teamwork, critical thinking, and problem-solving skills. The goals of this teaching approach and VCL are similar in that they both seek to establish learning environments that extend beyond conventional classrooms and promote practical knowledge. However, Alessandro Ferrara's viewpoint on authenticity offers a more thorough critique of this model.

Ferrara's concept of authenticity, which has its roots in postmodern and existential philosophy, helps us raise the question whether learning activities can be genuinely 'authentic' by simply simulating real-world tasks. Ferrara argues that authenticity is more about relating one's behaviour to freedom and deeply held beliefs than replicating real-life circumstances (Ferrara, 1993). Therefore, authentic education should mirror the working world while assisting students in critically evaluating their values, social settings, and larger political and economic systems. Consequently, even though Reeves and Herrington's (2010) authentic learning model greatly increases student engagement and learning outcomes, it is still not fully developed. Without

incorporating authenticity as a tool for ethical autonomy and critical self-reflection, these models risk upholding existing power structures rather than promoting the individual and group transformation Ferrara (1993) advocates. This criticism suggests that for educational experiences to be truly authentic, they must address the existential and moral dimensions of student development in addition to simply mimicking real-world tasks. By more general ideals of social justice and individual liberty, authenticity entails 'doing' actual work and 'being' critical and reflective (Dweck, 2006).

Policy Recommendations

According to our analysis above, VCL presents a viable way to increase access to high-quality education in developing nations. However, intentional, and context-sensitive policy interventions are needed to realise its full potential. Innovation in technology alone is insufficient in these situations. The developing states must systematically address structural issues like uneven internet access, low digital literacy, and a legacy of educational inequality. Governments must first acknowledge that foundational infrastructure is necessary for equitable participation in VCL. This entails funding digital literacy initiatives, broadband internet coverage, and reasonably priced digital device access. There is still a digital divide within and between nations, separating linguistic minorities, urban and rural areas, genders, and income levels. Without intentional state action, VCL risks escalating rather than resolving these inequalities.

Therefore, equity must be the guiding principle for public investment in internet infrastructure, guaranteeing that underserved and remote areas receive the same attention as urban centres. Similarly, digital literacy campaigns should not be reduced to technical training but cultivate critical engagement, empowering learners to navigate, question, and responsibly use digital platforms. This also applies to teachers who frequently lack institutional support and training to create and implement collaborative online pedagogy successfully. In this sense, technology proficiency and the pedagogical transition that VCL necessitates, from top-down instruction to student-centred, participatory learning, should be emphasised in teacher preparation programs.

A transformative VCL policy should democratise the governance and design of digital learning environments and grant access. Students becoming passive users of systems created without input is one

of the main risks associated with platform-driven education (Schoop & Köhler 2022). Platforms solely created by administrative or software engineering teams often replicate hierarchical, one-size-fits-all solutions that do not consider the needs and goals of diverse student populations. On the other hand, meaningful ownership and feedback are made possible when students co-design, plan, and evaluate VCL tools. In addition to promoting inclusivity, openness, and flexibility, participatory design processes serve as an example of the kind of civic engagement and critical thinking education should promote. Additionally, collaborative design can lessen the linguistic and cultural gaps in imported digital learning platforms. Numerous platforms utilised in developing nations were created with Western markets in mind. Without contextual adaptation, they risk alienating students whose values, languages, and learning styles diverge from those incorporated into the platform. Policy must therefore guarantee that VCL design is democratised and responsive to students as partners, not just consumers, rather than merely localised.

Ensuring accessibility is a third pillar of a successful policy. This extends beyond just offering laptops and internet. It also entails recognising and adjusting to the nuanced realities of students' lives. Flexible learning schedules are crucial for students who work, care for family members, or reside in unstable environments. Screen readers, text-to-speech programs, and interfaces that can be customised are examples of assistive technologies that ought to be integrated into the main infrastructure rather than being optional extras. Additionally, the content needs to be multilingual, culturally appropriate, and flexible enough to accommodate a range of educational backgrounds. Accessibility is a political commitment rather than a technical one; it necessitates recognising diversity and incorporating it into the design of curricula and educational platforms.

Finding a balance between critical introspection and skill development is equally important. Framing VCL primarily as a means of acquiring marketable skills carries a risk. While collaborative and digital skills are important, education must also prepare students to question the systems they are being prepared to use. VCL should be a place where students learn how to collaborate and consider the reasons behind, the beneficiaries of, and the repercussions of their actions. This entails incorporating questions of ethical responsibility, equity, and systemic injustice into the curriculum. For instance, students could in-

vestigate the connections between digital collaboration and platform capitalism, surveillance, and global labour inequality. Without this reflective component, education becomes a reproduction tool rather than a transformation process. Poor nations, many of which suffer from global inequality, cannot afford an education system that ignores their circumstances. An educational framework that links professional competencies with critical consciousness must therefore be supported by policy.

Lastly, states need to fight against education becoming a commodity. Market logics are influencing VCL more and more; performance metrics, private platforms, subscription models, and data monetisation rule the industry. Education must, however, continue to be a public good in developing nations, accessible, accountable, and focused on social rather than economic value. Funding public platforms, promoting open-source tools, and opposing the outsourcing of pedagogical authority to private providers are all necessary to decommodify VCL. Rejecting the notion that education should always be 'efficient,' 'scalable,' or 'competitive' is another aspect of it. Students are not consumers, and learning is not a business. The idea that education is a social right rather than a consumer good should be reaffirmed by policy. This affects institutional priorities, assessment techniques, and curriculum design. For instance, the degree of engagement, the development of a sense of community, and the development of civic and ethical sensibilities should all be considered when evaluating the success of VCL, rather than just completion rates or job placement statistics (OECD, 2023).

In conclusion, technology alone is insufficient for a successful VCL strategy in developing nations. It must be ingrained in a more comprehensive understanding of inclusion, justice, and civic duty. In addition to providing infrastructure, the state plays a crucial role in upholding democratic values in education. Policy can guarantee that VCL develops into a digital upgrade and a democratic opportunity by funding access, incorporating students in design, encouraging critical awareness, promoting inclusive pedagogy, and opposing commodification (Bates, 2019).

Summary of Policy Recommendations:

- To encourage improved Virtual Collaborative Learning (VCL) in developing nations, the state must modify its regulations

- To bridge the digital divide, invest in infrastructure, reasonably priced internet, and digital literacy
- Involve students in the planning, design, and assessment phases to democratize VCL design
- Encourage accessibility with multilingual content, flexible scheduling, and assistive technology
- Strike a balance between critical thinking about equity, inequality, ethics, and professional skills
- Reiterate that education is a public good and oppose its commercialisation

Conclusion

Virtual Collaborative Learning, a promising but problematic development in contemporary education, was critically examined in this article. It made the case, drawing on the theories of Marxism, Habermanism, and Ferrara, that although VCL has a great deal of promise to increase access, foster teamwork, and develop critical skills, when market forces are at play, it also runs the risk of escalating structural inequality.

From a Marxist standpoint, VCL's primary focus on education's economic usefulness can alienate students, widen the digital divide, and turn knowledge into a commodity. According to a Habermasian perspective, although VCL platforms foster interaction, they frequently fall short in fostering genuine communication, democratic engagement, and inclusivity. However, Ferrara's emphasis on authenticity challenges the utilitarian theory of education, highlighting the necessity of learning opportunities that promote ethical consciousness, critical thinking, and students' sense of belonging and autonomy.

VCL must be redesigned with equity, participation, and critical engagement in mind if its liberating potential is to be realised. This calls for investing in technology infrastructure, ensuring underserved groups have access, letting students help create digital learning environments, and incorporating instructional strategies that encourage inquiry, discussion, and social awareness. In addition to developing democratic skills and moral reasoning, VCL should mimic workplace dynamics. Moving away from the narrowly defined concepts of employability and market readiness, educational institutions can reframe VCL as a public good devoted to human growth. For virtual learning

to become a platform for inclusive, meaningful, and transformative education, the chapter ultimately advocates for a shift from commodification to liberation.

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Chapter Eight

From Lectures to Collaboration: Harnessing Virtual Learning for Differentiated Instruction and 21st Century Skills in Higher Education in Kosovo

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https://doi.org/10.53615/978-83-65020-54-3/123-136

Introduction

Background of Higher Education in Kosovo

Kosovo is a young and independent country which has made significant strides in rebuilding its education system after decades of challenges, including the time after the war. Following its declaration of independence in 2008, the higher education system has been gradually restricted and modernised to serve the growing needs of the dynamic population. The Government of Kosovo has identified education as a key priority to build a knowledge-based society, improve economic prospects, and enhance employment opportunities (Kosovo Government, 2008).

However, despite these positive developments, Kosovo's higher education system has faced many challenges, such as limited resources, infrastructural deficits, and the need for greater integration into European and global educational standards.

The students of the Republic of Kosovo, however, exhibit immense potential. By overcoming the adversities of the past, they are eager to learn and ready to contribute to the country's socio-economic growth. Based on this, it is crucial that Kosovo's educational system equips students with the best teaching methodologies to prepare them for

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national and international success. As educators in Kosovo, we are strongly committed to finding innovative solutions to meet the needs of this promising generation.

The Role of Technology in Modern Education

The global education landscape has shifted dramatically in recent years, due to the great advancements in technology. The rise of digital learning platforms, online resources and interactive technologies has transformed how students learn and engage with content. Students in Kosovo still face challenges in accessing physical educational resources, and technology can play a pivotal role in democratising education and providing equitable learning opportunities.

According to Graham (2013), blended learning aligns with the values of traditional higher education institutions and has shown significant potential to enhance both the effectiveness and efficiency of meaningful learning experiences. According to *Technology and Education* (n.d.), technology plays a pivotal role in education, going beyond simply providing digital tools. It represents a fundamental shift in the way students engage with content and learn. The Table 8.1 outlines the keyways in which technology enhances the educational experience.

This approach significantly improves the overall learning process by making education more interactive, personalised, and accessible.

TABLE 8.1 Keyways of Technology Enhancing Educational Experience

Aspect	Description
Engagement	Technology captivates students by presenting content in dynamic and interactive ways.
Personalisation	It tailors learning experiences to meet the individual needs and preferences of students.
Accessibility	Technology opens up a wealth of educational content and resources, ensuring equal opportunities.
Global learning	It connects students to a wide range of global perspectives, expanding their understanding.
21st-century skills	It helps develop essential skills like digital literacy, problem-solving, and communication.
Flexibility	Technology allows students to access learning materials at their own pace and from any location.
Efficiency	It streamlines administrative tasks for educators, freeing up more time for teaching.

Differentiated Instruction: Meeting the Needs of All Students

It is important to know that educators all over the world recognise that students do not learn in the same way (Andualem et al., 2014). Differentiated instruction is a pedagogical approach that tailors teaching strategies, content, and assessment to meet the diverse needs of students (Tomlinson, 1995). This approach has become even more critical in the context of the digital age. Rodgers and Rodgers (2007) explain that students have varied learning styles, cultural backgrounds, and prior knowledge when they enter the classroom. In line with this, Romsin (2011) points out that students have different learning capacities in their own learning history. In Kosovo, students come from diverse educational backgrounds, so it is particularly important to provide flexible and individualised learning experiences. In addition to this, Tomlinson (2014) emphasises that the ultimate aim of differentiated instruction is to scale up students' academic success by meeting all students where they are at the time and assisting or scaffolding them to reach the expected competence level in their learning process. For example, at the University of Pristina, educators have used Google Classroom to enable project-based learning in multicultural groups, where students co-designed presentations and exchanged feedback online.

Therefore, virtual learning environments with capacity for customisation, interactive activities and real-time feedback can provide an ideal platform for differentiated instruction. By using digital tools, the educators can create personalised learning pathways that support every student's learning needs. Palieraki & Koutrouba (2021) explain that differentiated instruction highlights the improvement of the quality of the students' assessment and the level of students' active participation in the classroom. Shepherd & Alpert (2015) explain that technological devices provide a new pathway to online learning and student retention. Smith (2006) discusses that diverse modalities used in acquiring information have the potential to expand visual creativity and visual intelligence.

21-st Century Skills: Preparing Students for a Globalized Future

In today's rapidly evolving world, 21st-century skills are fundamental to preparing students for success in a globalised society. These skills encompass critical thinking, creativity, collaboration, and digital literacy. Each plays a vital role in equipping learners to navigate complex challenges and seize emerging opportunities. Critical thinking enables

students to analyse information thoughtfully and make informed decisions, while creativity fosters innovation and problem-solving in diverse contexts. Collaboration emphasises the importance of teamwork and effective communication, skills necessary for working across cultures and disciplines. Digital literacy, meanwhile, empowers students to proficiently use technology, access information, and engage responsibly in online environments. Together, these interconnected skills cultivate well-rounded, adaptable learners who are not only prepared to thrive academically but also ready to contribute meaningfully to an increasingly interconnected and technology-driven global economy. According to Trilling and Fadel (2009), these competencies are essential for education systems seeking to equip students for the demands of the 21st century.

The Purpose of the Chapter

This chapter aims to explore the role of virtual learning in promoting differentiated instruction and 21st-century skills in Kosovo's higher education system. It examines how virtual learning tools can be harnessed to meet the diverse learning needs of students while simultaneously preparing them for the challenges of a digital future. Drawing on my years of experience as an educator in the Republic of Kosovo, it provides insights into the opportunities and challenges of integrating technology into teaching and learning practices in the country.

Theoretical Framework and Literature Review

Differentiated Instruction in Higher Education

Differentiated instruction has gained widespread recognition as an effective pedagogical strategy that caters to diverse student needs (Tomlinson, 1999). The concept of Differentiated instruction (DI) was first introduced by Carol Ann Tomlinson, who emphasises that teaching should be responsive to the varying abilities and learning styles of students. In higher education, DI is particularly valuable as it acknowledges the varied academic background, interests, and needs of students in a classroom. By offering different pathways to learning, instructors can support students' unique strengths and address areas of weakness (Tomlinson, 2001).

In the context of Kosovo, where students have diverse academic preparation levels, differentiated instruction is essential to ensuring equitable access to quality education. Virtual learning environments

with their capacity for flexibility and interactivity offer an ideal platform for implementing differentiated instruction (DI) strategies effectively.

Virtual Learning and Its Role in Differentiated Instruction

Virtual learning tools provide the infrastructure necessary for differentiated instruction to flourish. The digital age allows educators to create diverse learning experiences using multimedia resources, simulations, and interactive modules. These technologies cater to a variety of learning styles. From visual to auditory to kinaesthetic learners, they provide tailored experiences that traditional face-to-face teaching may struggle to offer. In Kosovo, where there is significant variation in student access to resources, virtual learning can bridge this gap. It can offer students with different abilities and resources an equal opportunity to succeed.

21st Century Skills and their Importance in Higher Education

Virtual Collaborative Learning (VCL) in the Kosovo Context

Virtual Collaborative Learning (VCL) is a pedagogical approach where students engage in joint problem-solving, co-creation of knowledge, and shared learning experiences using digital platforms. While this chapter focuses broadly on virtual learning, VCL adds a layer of intentional collaboration, often crossing institutional or national boundaries. In Kosovo, there is emerging interest in using tools like Zoom, Google Workspace, and LMS-based forums to support collaborative group projects, peer feedback, and intercultural exchanges. For example, some university programs have experimented with virtual student forums and co-developed assignments between local and international students. These practices foster not only academic content mastery but also intercultural communication and teamwork skills. Emphasising VCL within the broader scope of virtual learning could further empower Kosovo's higher education system to align with global pedagogical trends.

- *Ways of Thinking:* creativity and innovation, critical thinking, problem-solving, decision-making, and learning to learn (or metacognition)
- *Ways of Working:* communication and teamwork
- *Tools for Working:* general knowledge and information communication technology (ICT) literacy

Another definition is presented in Tony Wagner's (2008) book *The Global Achievement Gap,* where he, as co-director of the Harvard Change Leadership Group, draws on hundreds of interviews with leaders from business, nonprofit, and education sectors. Wagner suggests that to be prepared for life, work, and citizenship in the 21st century, students must develop seven essential survival skills:

1. Critical thinking and problem-solving
2. Collaboration and leadership
3. Agility and adaptability
4. Initiative and entrepreneurial spirit
5. Effective oral and written communication
6. Ability to access and analyse information
7. Curiosity and imagination

Both definitions emphasise the importance of equipping students with essential skills for success in the 21st century. The University of Living in the World framework and the AT21CS consortium identify a broad range of competencies, such as creativity, critical thinking, teamwork, and ICT literacy, which are necessary for navigating an interconnected and rapidly changing world. Similarly, Tony Wagner's (2008) *The Global Achievement Gap* outlines seven 'survival skills' that students need to thrive, including critical thinking, collaboration, adaptability, and effective communication. Despite different approaches, both frameworks highlight the need for students to develop a combination of cognitive, interpersonal, and practical skills – the skills that enable them to problem-solve, collaborate, adapt, and engage responsibly in both their professional and personal lives. Together, these models underline the shared recognition that preparing students for the future requires fostering a diverse set of competencies that will help them succeed in an ever-evolving global landscape.

When examining the future workforce, there are several key questions which must be addressed in order to better understand the evolving nature of learning. The OECD (2018) poses some of these critical questions, including: How can we prepare students for careers that have not yet been established, address societal challenges we have not yet anticipated, and use technologies that have yet to be developed? Additionally, how can we ensure that students are equipped to succeed in an interconnected world, where understanding and valuing diverse

perspectives, engaging respectfully with others, and taking responsible action toward sustainability and collective well-being are essential? These considerations are pivotal as we continue to shape the future of education.

Acknowledging the need for a global conversation on education, the OECD launched the Future of Education and Skills 2030/2024 initiative (OECD, n.d.). This project aims to assist countries in adapting their educational systems by focusing on the critical 21st-century competencies-knowledge, skills, attitudes, and values-that students and educators need for future success.

The 21st century demands new competencies beyond traditional academic knowledge. These competencies, often referred to as 21st century skills, include critical thinking, problem-solving, digital literacy and collaboration (Mangiduyos & Subia, 2021). These skills are essential for preparing students for the challenges of a globalised workforce and ensuring that they are equipped to navigate an increasingly digital and interconnected world. According to Saavedra & Opfer (2012), the focus on developing these skills is paramount in ensuring that students are prepared not just for employment but also for active citizenship in a digital society.

Virtual Learning as a Tool for Enhancing Differentiated Instruction in the Republic of Kosovo

The State of Virtual Learning in Kosovo's Higher Education

During the pandemic, the transition to online learning became a crucial lifeline for education systems around the world, including in Kosovo. As universities and students adapted to the new reality, lectures were delivered remotely through various online platforms, marking a significant shift in how education was experienced. This unprecedented situation forced many to quickly embrace digital tools, and it became clear that virtual learning was not just a temporary solution but an essential part of the future of education. The rapid adoption of online platforms such as Moodle, Google Classroom, and others played a vital role in maintaining continuity in education during these challenging times. These platforms provided the infrastructure necessary for delivering lectures, assignments, and feedback, allowing education to continue despite physical classroom restrictions. Furthermore, the shift to online learning introduced the concept of asynchronous learning, which proved to be highly beneficial, particularly for students with

other responsibilities or those living in remote areas. While Kosovo's higher education system is still in the early stages of fully integrating virtual learning, the progress made during the pandemic has been significant. This experience has opened our eyes to the potential and importance of virtual education, emphasising its role in enhancing access, flexibility, and opportunities for students, even beyond times of crisis.

During his participation in the discussion 'From Policy to Practice: Transforming Education through Digital Learning,' Prime Minister Kurti emphasised the transformative potential of digital education. He stated (Office of the Prime Minister, 2023):

> Digitisation has the potential to revolutionise the way in which learning is delivered. With the use of technology, teachers can create and deliver learning units, assign and grade assignments, and communicate with students more efficiently. This can free up more time for them to focus on more critical aspects of teaching, such as providing individual support and input to students. However, to be able to use technology in the teaching process, teachers and other educational staff need new competences and skills.

Despite advancements in the adoption of digital learning platforms, significant challenges remain in higher education, particularly the digital divide, which results in unequal access to technology and internet connectivity across different regions. However, virtual learning, especially through Learning Management Systems (LMS), offers an opportunity to bridge this gap, providing students with access to resources and educational materials that may have otherwise been unavailable to them. The integration of LMS in Higher Education Institutions (HEIS) plays a critical role in driving educational reform, enhancing quality, improving operational efficiency, and promoting cost-effectiveness. However, the implementation of LMS often encounters resistance within the academic community. Research has shown that early perceptions of organisational readiness for change can significantly shape subsequent attitudes and behaviours, leading to negative reactions such as disengagement, resistance, and the spread of rumours. Understanding these initial perceptions is vital, especially in the context of LMS projects.

Veseli et al. (2024) conducted a study titled 'Perceptions of Organi-

sational Readiness for Change in the Context of Learning Management System Projects,' which explores the key factors influencing academics' readiness to embrace change. Their research identifies several critical variables, including vision clarity, the appropriateness of the change, top-management support, the presence of an effective champion, and organisational flexibility. These factors together explained 75% of the variance in organisational readiness for change. As HEIS continue to invest in LMS to improve educational outcomes, understanding the factors that influence organisational readiness becomes essential. This insight highlights the importance of readiness in gaining academics' initial support for LMS initiatives, suggesting a promising direction for future research (Veseli et al., 2024).

Leveraging Virtual Learning to Support Differentiated Instruction

Differentiated instruction in virtual learning environments allows educators to tailor content to meet the diverse needs of students. This approach can include varying the pace, level, or type of content to suit individual learning styles and abilities. Ferlazzo (2020) highlights that online platforms offer tools such as personalised feedback, adaptive assessments, and flexible learning paths that enable instructors to better support students with different learning needs, fostering an inclusive and effective learning experience.

Virtual learning tools facilitate differentiated instruction in ways that traditional classrooms may struggle to achieve. In Kosovo's higher education system, virtual platforms offer individualised learning paths through adaptive assessments, personalised feedback, and a variety of multimedia resources. Adaptive learning refers to technologies that dynamically adjust course content based on an individual's abilities or skill level, enhancing performance through both automated systems and instructor interventions (Capuano & Caballé, 2020). These tools are closely tied to artificial intelligence (AI) and are considered part of AI in education, with origins dating back to the 1970s when personalised learning approaches were first applied (Capuano & Caballé, 2020). Such technologies allow instructors to cater to diverse learning needs, fostering an inclusive and responsive learning environment.

Differentiated instruction plays a significant role in AI-based education by providing personalised learning experiences that accommodate students' unique needs, learning speeds, and preferences. AI tools can assess a learner's progress and adjust the content in real-time, en-

suring that each student encounters appropriately challenging material, thereby enhancing engagement and mastery. Through AI, differentiated instruction can be more effectively implemented, offering educators the ability to cater to diverse learners and supporting a more individualised teaching approach.

Today, many tasks central to teaching in higher education may soon be automated by AI software. Therefore, it is essential to carefully evaluate the impact of these technologies. The complex algorithms behind AI systems may introduce biases or reflect the agendas of their creators. Continuous assessment of AI solutions is necessary to ensure that universities uphold their mission to promote knowledge and wisdom. This is an opportune moment for universities to rethink their roles, pedagogical models, and their relationship with AI technologies. While AI presents both challenges and opportunities in education, it has the potential to enhance lifelong learning while preserving the core values and integrity of higher education (Popenici & Kerr, 2017).

Overcoming Challenges and Maximising the Potential of Virtual Learning

In navigating the challenges of online learning, students may encounter various hurdles that impact their success. Although online learning offers flexibility and valuable learning opportunities, it also presents distinct challenges. By adopting effective strategies for time management, staying motivated, fostering a sense of community, and adjusting to new technologies, students can overcome these challenges and fully benefit from their online education (Stanley, 2024).

While virtual learning offers numerous benefits, its success in Kosovo's higher education system will depend on addressing several key challenges. These include the need for robust technological infrastructure, continuous professional development for educators and addressing issues related to student engagement and motivation in online environments. By focusing on these areas, Kosovo's higher education institutions can fully harness the potential of virtual learning to provide a high-quality, differentiated educational experience for all students. In addition, there are also other challenges in implementing virtual learning, along with practical solutions to address them.

Based on Johnson (2023), Table 8.2 outlines the key challenges organisations face in virtual learning and the strategies to overcome them.

In conclusion, successfully implementing virtual learning requires

TABLE 8.2 Key Challenges in Virtual Learning

Challenges	Solutions
Technological challenges	Invest in reliable infrastructure, provide training, and explore cloud-based solutions.
Resistance to elearning	Use clear communication, offer comprehensive training, and showcase success stories.
Low engagement and motivation	Design interactive content, foster a sense of community, and provide regular feedback.
Lack of proper evaluation & continuous improvement	Set clear objectives, use learning analytics, gather feedback, and make data-driven decisions to improve eLearning programs.

addressing these challenges and adopting effective solutions. By tackling technological readiness, managing resistance, boosting engagement, and ensuring proper evaluation, organisations can foster a culture of continuous learning that supports organisational growth and success (Johnson, 2023).

Conclusion

In conclusion, Kosovo's higher education system stands at a pivotal moment as it embraces the transformative potential of virtual learning. With nearly 20 years of experience as an educator and exposure to various modes of virtual collaborative learning, I have witnessed firsthand both the benefits and challenges this educational shift presents. Rapid technological advancements hold the capacity to bridge accessibility gaps; support differentiated instruction and cultivate essential 21st-century skills necessary for success in an interconnected digital world.

While the transition to virtual learning in Kosovo faces several obstacles – including technological limitations, resistance to change, and disparities in digital readiness – these can be addressed through strategic investments and continuous improvement. By integrating differentiated instruction into virtual environments, educators can meet diverse student needs through personalised learning paths and flexible content delivery. Platforms powered by AI enable adaptive learning and real-time feedback, further enriching the learning experience. Nevertheless, as AI becomes more central in education, ongoing critical evaluation is necessary to ensure that it enhances rather than un-

dermines the core values of higher education (Popenici & Kerr, 2017).

To fully realise the potential of virtual education, it is essential to address key implementation challenges. These include strengthening technological infrastructure, supporting professional development for educators, and promoting inclusive, engaging virtual classrooms. If addressed thoughtfully, these actions can lay the foundation for a more sustainable, innovative, and effective educational ecosystem.

Based on the findings discussed throughout this chapter, the following recommendations are proposed to enhance the implementation of virtual and collaborative learning practices in Kosovo's higher education system:

- Invest in robust digital infrastructure to support equitable access across all regions.
- Provide continuous professional development for educators focused on VCL and adaptive learning.
- Integrate real-time collaboration tools and international projects to build 21st-century skills.
- Encourage policy reforms that support innovative digital pedagogies in higher education.
- Use AI-driven platforms responsibly to personalise learning while maintaining academic integrity.

These targeted actions can help bridge existing gaps and establish a more inclusive, adaptive, and future-ready learning environment.

Ultimately, this research underscores the immense potential of virtual learning to transform education in Kosovo. Sustained innovation, strategic planning, and an unwavering commitment to equity will be critical to ensuring that all students are equipped with the skills, knowledge, and opportunities necessary to thrive in an increasingly interconnected global digital economy.

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Chapter Nine

International VCL: A Case Study from the Mediterranean

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https://doi.org/10.53615/978-83-65020-54-3/137-152

Introduction

As higher education increasingly embraces digitalisation and internationalisation, Virtual Collaborative Learning (VCL) has gained prominence as a transformative approach to education. VCL connects students from diverse backgrounds in structured online learning experiences, promoting collaboration, problem-solving, and intercultural dialogue.

Unlike traditional classroom-based learning, VCL emphasises experiential and interactive learning, allowing students to work across disciplines and geographic boundaries to develop skills essential for success in today's interconnected world (O'Dowd, 2021).

This study investigates the effectiveness of VCL as an educational framework by analysing a structured virtual exchange involving students from Spain, Tunisia, Ukraine, and Slovenia. The focus is on the learning process, the experiences of participants, and the outcomes achieved through collaboration. By engaging in interdisciplinary projects, students enhanced their digital skills, communication abilities, and capacity for critical thinking.

The study assesses how VCL facilitates active learning, fosters en-

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

gagement, and bridges theoretical knowledge with real-world applications.

Literature Review

Virtual Collaborative Learning as a Pedagogical Model

Virtual Collaborative Learning (VCL) is grounded in social constructivist principles, emphasising learning through interaction, collaboration, and reflection (Dillenbourg, 1999). Studies have demonstrated that VCL promotes learner autonomy, engagement, and knowledge construction through active participation in meaningful tasks (Helm, 2015). Additionally, VCL facilitates the development of 21st-century competencies, including digital literacy, cross-cultural communication, and teamwork (Guth & Helm, 2010). The integration of virtual collaboration in educational frameworks allows students to engage in problem-solving activities that simulate real-world professional challenges, fostering critical thinking and adaptability.

Benefits of VCL in Higher Education

Research highlights several advantages of VCL in higher education, including:

- *Enhanced Engagement:* By involving students in real-world challenges, VCL increases motivation and engagement (Deardorff, 2006). When students see the direct application of their learning to practical problems, they become more invested in the learning process.
- *Interdisciplinary Learning:* VCL encourages students to apply their knowledge in diverse fields, fostering creativity and innovation (Repko, 2012). Through collaboration with peers from different disciplines, students gain insights into multiple perspectives and problem-solving approaches.
- *Global Competence:* Students develop intercultural awareness and adaptability, preparing them for international careers (Fantini, 2020). Exposure to diverse viewpoints enhances their ability to navigate global professional environments effectively.
- *Technology Integration:* VCL improves digital communication and project management skills essential for modern workplaces (Vinagre, 2017). Students gain proficiency in using digital tools for

collaboration, which is increasingly necessary in today's workforce.

Challenges and Considerations in VCL Implementation

Despite its benefits, VCL poses challenges such as time zone differences, technological disparities, and communication barriers. Effective facilitation, clear guidelines, and structured activities are necessary to optimise learning outcomes and ensure productive collaboration (O'Dowd, 2021). Additionally, students may experience difficulties in establishing a group dynamic, which can impact teamwork effectiveness. The role of instructors in providing scaffolding and ensuring equitable participation is crucial to the success of VCL experiences. To address these challenges, institutions should invest in robust instructional design, provide training on collaborative technologies, and create flexible participation structures that accommodate diverse student needs.

Methodology

Research Design

This study adopts a mixed-methods approach, integrating both qualitative and quantitative data to provide a comprehensive analysis of the learning outcomes of Virtual Collaborative Learning (VCL) participants. By combining these two methodologies, the research aims to capture a broad spectrum of insights. The qualitative aspect involves in-depth interviews, open-ended surveys, and content analysis of student reflections, allowing for a deeper understanding of their experiences, challenges, and personal growth throughout the VCL process. On the other hand, the quantitative data is gathered through structured assessments, such as pre-and post-surveys and test scores, to measure measurable changes in knowledge and skills.

The integration of these approaches ensures that both subjective and objective factors are considered, offering a more holistic view of how VCL impacts learners. This mixed-methods design facilitates triangulation, where the strengths of one approach compensate for the weaknesses of the other, enhancing the validity and reliability of the findings. Furthermore, it enables the study to address both the processes involved in VCL and the outcomes it generates, providing valuable insights for future improvements in virtual education.

Participants

The study involved 61 students from four universities, each representing a unique field of expertise and contributing to an interdisciplinary approach. Tunisian engineering students were responsible for developing the technical solutions required for the project, applying their knowledge of engineering principles to design and implement practical, innovative systems. Ukrainian economics students focused on assessing the regulatory and financial feasibility of the proposed solutions, conducting thorough analyses to ensure that the plans were economically viable and compliant with national and international regulations. Spanish law students played a critical role in ensuring legal compliance by evaluating the legal frameworks surrounding the project and advising on any potential legal challenges or requirements. Meanwhile, Slovenian business students contributed by creating investment strategies, analysing market conditions, and proposing strategic business models to ensure the long-term sustainability and profitability of the solutions. These students worked collaboratively in interdisciplinary teams, bringing together their diverse knowledge and expertise to address complex problems. Digital tools were extensively used to facilitate communication, coordination, and the sharing of ideas, allowing the teams to efficiently manage tasks and collaborate across borders. Ultimately, the collaborative nature of the project allowed each team to contribute its strengths, fostering an environment of innovation and problem-solving that led to well-rounded, practical solutions.

Data Collection

Surveys

Surveys were employed to evaluate student perceptions of the Virtual Collaborative Learning (VCL) experience. These surveys collected data on how students felt about the overall learning process, their engagement levels, and the development of specific skills throughout the project. Questions were designed to capture students' subjective experiences, including their satisfaction with the VCL platform, the effectiveness of communication tools, and the impact of cross-cultural collaboration. Additionally, the surveys assessed the perceived relevance and applicability of the skills they developed, such as problem-solving, teamwork, and discipline-specific knowledge. The data collected through these surveys provided valuable insights into the stu-

dents' attitudes and highlighted areas for potential improvement in the VCL setup.

Project Evaluations

In addition to assessing student perceptions, the feasibility and quality of the solutions proposed by students were evaluated through detailed project assessments. These evaluations focused on determining how well the interdisciplinary teams were able to develop practical, innovative solutions to the problems posed in the study. Factors such as technical feasibility, alignment with financial and regulatory considerations, and the clarity and practicality of the proposed strategies were examined. The evaluation also looked at how well the students incorporated feedback from their peers and instructors to refine their solutions. This process helped gauge the effectiveness of the VCL model in fostering real-world problem-solving and critical thinking.

Reflective Reports

Reflective reports were another crucial component of the study. These reports provided students with an opportunity to reflect on their personal experiences and insights gained during the collaboration. Students were asked to articulate their understanding of the challenges they faced, such as overcoming cultural differences, managing virtual communication, and navigating interdisciplinary team dynamics. Additionally, the reports required students to identify the key learning gains they achieved, including both academic knowledge and soft skills like leadership, communication, and conflict resolution. Analysing these reflective reports offered a deep understanding of how students perceived their own growth, as well as the broader impact of VCL on their learning journey.

Instructor Observations

Instructor observations played a pivotal role in assessing student engagement, participation, and team dynamics throughout the VCL experience. Instructors closely monitored how students interacted in virtual environments, taking note of their level of involvement in discussions, their ability to collaborate with peers from diverse backgrounds, and their contributions to the overall team effort. These observations also helped to identify any challenges students faced, such as issues

with communication, technology, or time management. By documenting these interactions, instructors provided essential feedback on team dynamics, allowing for adjustments and interventions when necessary. These insights contributed to the overall evaluation of the VCL model, highlighting its strengths and areas for improvement in terms of fostering student collaboration and learning.

Results

Student Learning Outcomes

Survey responses and reflective reports indicated significant improvements across several key areas of student learning outcomes, highlighting the impact of the Virtual Collaborative Learning (VCL) experience.

Collaboration and Teamwork

One of the most notable improvements reported by students was in their collaboration and teamwork abilities. Participants from different cultural and academic backgrounds gained valuable insights into the dynamics of working within international teams. Students indicated a greater awareness of cultural differences and the need for cultural sensitivity in communication. They also reported developing strategies to navigate these differences effectively, improving their ability to collaborate with peers from diverse cultural contexts. Furthermore, students highlighted the enhanced communication skills they acquired, emphasising the importance of clarity, active listening, and mutual respect in fostering effective teamwork in a virtual environment. These improvements contributed to a deeper understanding of the significance of teamwork in real-world, cross-border projects and provided them with the tools to manage diverse team dynamics more confidently.

Critical Thinking and Problem-Solving

The interdisciplinary nature of the projects played a crucial role in fostering students' critical thinking and problem-solving abilities. By collaborating with peers from diverse academic fields, students were challenged to approach problems from multiple perspectives and develop more holistic, creative solutions. The collaboration required them to integrate knowledge from various disciplines, encouraging them to think analytically and critically about the issues at hand. Students reported that they were able to apply this interdisciplinary approach to identify potential solutions that they might not have considered

within the confines of their own field of study. The exposure to real-world challenges, combined with the opportunity to synthesise diverse viewpoints, helped students hone their problem-solving skills and develop innovative solutions to complex issues. This experience not only strengthened their academic abilities but also prepared them to tackle future challenges in both their careers and further studies.

Digital and Professional Communication Skills

The VCL experience also led to significant improvements in students' digital and professional communication skills. Working in virtual teams, students had to adapt to using digital tools for collaboration, such as video conferencing platforms, shared document editors, and project management software. This reliance on technology improved their technical proficiency and comfort with digital tools, which are essential in today's professional landscape. Students reported gaining greater confidence in articulating complex ideas clearly and professionally, both in written and verbal forms. Whether through presenting project updates, drafting reports, or engaging in discussions, they learned how to communicate their thoughts effectively in a professional setting. Additionally, they acquired skills in presenting and discussing ideas in a structured manner, which are invaluable for their future careers. The ability to communicate complex ideas and collaborate digitally is becoming increasingly important in the global job market, and the VCL experience significantly enhanced these competencies among the students.

Overall, VCL experience led to tangible improvements in these key areas, preparing students with the skills necessary to thrive in interdisciplinary, international, and digital professional environments.

Interdisciplinary Knowledge Integration

The interdisciplinary nature of the Virtual Collaborative Learning (VCL) experience allowed teams to successfully combine expertise from different academic disciplines, leading to the development of well-rounded and comprehensive solutions. This collaboration between students from diverse fields, including engineering, economics, law, business, and other disciplines, proved to be a powerful approach to tackling complex problems. Each team member brought a unique set of skills, knowledge, and methodologies, which were essential for addressing various facets of the problem at hand. The students learned how to

draw from the strengths of their respective fields, recognising the value of each discipline in contributing to a holistic solution.

One of the most significant outcomes of this interdisciplinary exchange was the students' increased appreciation for different academic perspectives. Engineering students, for example, gained insight into the financial and regulatory challenges that economics and law students faced when developing solutions. Similarly, students from the business and law fields better understood the technical aspects of engineering solutions and their implications in real-world applications. By working together, students were able to bridge the gap between theory and practice, integrating knowledge from their respective disciplines to produce solutions that were both practical and sustainable.

Moreover, the collaboration allowed students to develop a more nuanced understanding of how different professional fields contribute to problem-solving in real-world scenarios. They came to realise that successful solutions often require the integration of multiple perspectives, each of which plays a crucial role in ensuring the feasibility, legality, and effectiveness of the outcomes. For instance, a proposed technical solution developed by engineering students had to be evaluated for its financial feasibility by economics students and its legal compliance by law students, ensuring that all aspects of the solution were thoroughly considered before implementation. This interdisciplinary approach not only enhanced the quality of the proposed solutions but also fostered a deeper respect for the expertise of others, cultivating a more collaborative and open-minded mindset.

Furthermore, students developed key skills in negotiation, communication, and problem-solving as they navigated the complexities of collaborating with peers from different disciplines. They learned how to articulate their own ideas clearly while also listening to and incorporating feedback from others. This ability to synthesise diverse perspectives is a critical skill in both academic and professional environments, especially as many real-world challenges require multidisciplinary teams to address them effectively. The VCL experience, therefore, played a significant role in preparing students for the collaborative, interdisciplinary work environments they will encounter in their future careers.

Ultimately, the interdisciplinary exchange fostered by the VCL experience not only enhanced the students' problem-solving capabilities but also enriched their academic and professional development, making them more adaptable and better equipped to work in diverse teams.

Challenges Encountered

Common challenges faced during the Virtual Collaborative Learning (VCL) experience included issues related to time management, technological adaptation, and communication barriers, all of which required students to adapt and develop new skills to overcome them.

Time Management

Coordinating efforts across multiple time zones presented a significant challenge for the teams. Students had to be flexible and mindful of each other's schedules, often finding it difficult to synchronise meeting times that were convenient for everyone. This required effective scheduling and planning to ensure that all team members could participate in discussions and contribute to project milestones. The challenge of managing deadlines across different time zones also added pressure to the teams, as students had to balance their academic responsibilities with the demands of the VCL project. Students learned to be more organised and proactive in setting clear timelines, adjusting their working hours, and ensuring that communication was frequent and efficient, despite the geographical distances. This experience highlighted the importance of strong organisational and time-management skills in virtual collaboration.

Technological Adaptation

Another major challenge for some students was adapting to unfamiliar digital tools. Although many students were comfortable using basic communication platforms, the VCL experience required them to work with advanced collaborative tools such as video conferencing software, shared document editors, project management platforms, and online whiteboards. Some students initially struggled with navigating these tools, encountering technical difficulties, or feeling overwhelmed by the complexity of the platforms. This issue was particularly challenging for those who were not accustomed to using technology extensively in their academic work.

However, over time, students gained confidence as they became more familiar with these tools and learned to use them effectively for collaboration. The experience underscored the importance of digital literacy in modern education and the need for students to be adaptable and willing to learn new technologies to thrive in virtual learning environments.

Communication Barriers

Differences in communication styles across cultures sometimes lead to misunderstandings and misinterpretations. For example, students from some countries may have preferred more direct communication, while others favoured a more indirect approach. These cultural differences, coupled with the lack of face-to-face interaction in a virtual environment, sometimes created confusion or friction within the teams. Misunderstandings about tone, intent, or the clarity of instructions were common, highlighting the need for clear and explicit communication. In some cases, students felt that their ideas were not being fully understood or considered, leading to frustration. To overcome these barriers, teams had to establish clear communication guidelines from the outset, such as agreeing on the best tools for communication, setting expectations for response times, and ensuring that all members felt comfortable asking for clarification. Additionally, the need for facilitation became apparent, as instructors or team leaders played a vital role in guiding discussions, ensuring that all voices were heard, and mediating any conflicts that arose. This experience emphasised the importance of effective communication strategies in virtual teams, as well as the need for cultural sensitivity and active listening skills to ensure smooth collaboration.

Overall, while these challenges were significant, they also provided valuable learning opportunities. Students gained practical experience in managing time effectively, adapting to new technologies, and overcoming communication barriers, all of which are essential skills for success in today's globalised and digital workforce.

Discussion

The findings of the study confirm that Virtual Collaborative Learning (VCL) is a highly valuable learning approach, offering significant benefits in terms of student engagement, collaboration, and the application of real-world skills. VCL's capacity to bring together students from diverse academic backgrounds and cultural contexts created a dynamic and interactive learning environment, which actively engaged participants and fostered deeper learning. The ability to work on interdisciplinary projects allowed students to see the direct relevance of their academic knowledge in solving real-world problems, enhancing their motivation and commitment to the learning process. This hands-on approach provided students with the opportunity to apply theoretical

concepts to practical challenges, making their learning more meaningful and impactful.

The structured nature of the exchange was particularly beneficial in facilitating meaningful interactions among students. By providing a clear framework for collaboration, the VCL model enabled students to work together effectively while also allowing for independent exploration within their respective fields. The structured approach helped students stay on track with their tasks, ensuring that the projects progressed systematically and that all team members contributed in a balanced way. Furthermore, the exchange model supported the integration of diverse perspectives, allowing students to bridge the gap between theoretical knowledge and its practical application in a collaborative setting. This approach not only deepened students' understanding of their own discipline but also broadened their appreciation for the value of interdisciplinary collaboration in addressing complex, real-world issues.

However, the challenges encountered throughout the VCL experience highlighted several critical areas for improvement. These challenges emphasise the need for robust instructional design that takes into account the diverse needs of students participating in virtual, cross-cultural, and interdisciplinary projects. Effective instructional design should include clear guidance on how to use digital tools, strategies for fostering intercultural communication, and a framework for managing team dynamics. Additionally, the findings stress the importance of setting clear expectations for both students and instructors. Clear expectations help to prevent misunderstandings and ensure that students understand their roles and responsibilities within the team. This clarity is especially important in virtual learning environments, where students may struggle to navigate ambiguous or loosely defined guidelines. Finally, the study underscores the importance of proactive facilitation by instructors or team leaders. Facilitators play a crucial role in providing ongoing support, mediating conflicts, and ensuring that students remain engaged and on task throughout the collaborative process. Their guidance helps students overcome obstacles, stay motivated, and maximise the benefits of the VCL approach.

Implications for VCL Framework Development

To enhance the effectiveness of Virtual Collaborative Learning (VCL), educators should adopt several strategies aimed at optimising the

learning experience for students. By carefully considering and addressing key aspects such as collaboration models, facilitator involvement, technology training, and reflection, educators can help ensure that VCL programs are both engaging and effective.

Structured Collaboration Models

One of the most critical components of successful VCL is providing students with clear project guidelines and defined roles within the team. A well-structured collaboration model helps students understand their responsibilities, the expected outcomes, and the steps needed to complete their projects effectively. Clear project guidelines help minimise confusion, ensure that all team members are aligned in terms of goals, and foster a sense of shared accountability. In addition, assigning specific roles based on students' expertise or interests encourages active participation and ensures that each member brings their unique strengths to the team. By clearly defining roles, students can focus on their tasks while also appreciating the contributions of their peers, leading to a more harmonious and productive collaborative process.

Furthermore, structured collaboration provides a sense of direction and purpose, which can be especially beneficial in virtual environments where team members may be working asynchronously or from different time zones.

Facilitators' Involvement

Educators and facilitators play a vital role in ensuring that VCL runs smoothly. Regular check-ins and ongoing support from facilitators are essential for addressing any challenges students may encounter during their collaborative work. Facilitators can monitor the progress of each team, provide guidance on complex issues, and mediate any conflicts that arise within the group. By being actively involved, facilitators can ensure that students stay on track, clarify any misunderstandings, and offer assistance when needed. This proactive involvement can help prevent potential obstacles from hindering progress and foster a more supportive and engaging learning environment.

Additionally, facilitators can encourage reflective practices and facilitate discussions that promote deeper understanding of the learning process, helping students synthesise their experiences and extract valuable insights.

Technology Training

A major barrier to successful VCL is the technical challenges that students may face when using unfamiliar digital tools. To minimise these barriers, educators should offer pre-session tutorials or training on the digital tools and platforms that will be used during the VCL experience. Providing students with a basic understanding of how to use video conferencing software, document-sharing platforms, project management tools, and collaborative digital whiteboards can prevent technical difficulties from disrupting the learning process. These tutorials can also address common troubleshooting tips, ensuring that students feel more comfortable and confident when using the technology. Additionally, by incorporating technology training into the initial stages of the VCL program, educators can set students up for success, allowing them to focus on the content of the project rather than struggling with technical issues. This proactive approach helps foster a smoother, more efficient collaborative experience and empowers students to make the most of the digital tools at their disposal.

Reflection and Feedback Integration

Encouraging continuous reflection throughout the VCL process is essential for deepening students' learning. By regularly engaging in reflective activities, such as journaling or group discussions, students are able to assess their own progress, identify areas for improvement, and consolidate the knowledge gained from the experience. Reflection enables students to better understand how they collaborate, communicate, and solve problems in virtual, interdisciplinary teams. It also offers an opportunity for them to recognise the personal and professional skills they have developed, such as time management, critical thinking, and intercultural communication. Along with reflection, regular feedback from peers and facilitators is crucial in helping students fine-tune their approach, address any challenges, and ensure continuous improvement. Feedback should be constructive, timely, and focused on both the process and the final outcomes, helping students stay engaged and motivated throughout the project. By integrating both reflection and feedback into the VCL experience, educators create an environment where students are not only learning from the content but also from their own collaborative experiences, thereby maximising the potential for meaningful learning and personal growth.

In summary, to optimise the effectiveness of VCL, educators should

implement structured collaboration models, maintain facilitator involvement, offer technology training, and encourage continuous reflection and feedback. These strategies will help ensure that students are equipped with the skills and support needed to thrive in virtual, interdisciplinary teams, while also fostering an enriching and meaningful learning experience.

Future Directions

While this study provides valuable insights into the implementation and outcomes of Virtual Collaborative Learning (VCL), there is a need for further research to fully understand its long-term impacts on students' academic and career trajectories. The current study primarily focused on the immediate learning outcomes, engagement, and collaboration, but the lasting effects of VCL on students' skills development, employability, and professional growth remain an area for exploration. Future research could examine how the competencies gained through VCL-such as teamwork, problem-solving, and intercultural communication-translate into success in students' careers. Longitudinal studies that track students' career progress after participating in VCL projects could offer valuable insights into how these collaborative experiences shape their professional paths and contribute to their readiness for the workforce.

Additionally, scaling VCL initiatives across broader educational settings remains a challenge that warrants attention. As higher education institutions increasingly look to integrate digital and collaborative learning approaches, there is a growing need to investigate best practices for scaling VCL to accommodate larger student populations and diverse institutional contexts. Future research could explore strategies for the institutional adoption of VCL models, including the necessary infrastructure, faculty training, and support mechanisms that can facilitate large-scale implementation. By identifying scalable solutions and addressing potential barriers, such research can guide universities in effectively embedding VCL into their curricula, making it accessible to a wider range of students across various disciplines.

Furthermore, future studies could delve into the effectiveness of different instructional strategies within VCL environments. While this study focused on general collaboration models, there is room for exploring how specific pedagogical approaches could enhance engagement and learning outcomes in virtual settings. For instance,

gamification-incorporating game-like elements such as rewards, competition, and interactive challenges-has been shown to increase motivation and engagement in digital learning environments. Research could investigate how gamification techniques can be integrated into VCL projects to boost student participation and create more dynamic learning experiences. Additionally, adaptive learning technologies, which tailor educational content to the individual needs and progress of each student, could be explored as a way to further personalise the VCL experience. By incorporating these innovative strategies, future studies could provide valuable insights into how VCL can be enhanced to foster deeper learning, greater engagement, and improved academic outcomes.

Conclusion

This study highlights the significant value of Virtual Collaborative Learning (VCL) in promoting interdisciplinary learning, enhancing digital competencies, and fostering global collaboration. By enabling students to collaborate across different academic disciplines and cultural backgrounds, VCL helps them develop comprehensive solutions to real-world problems, broadening their perspectives and strengthening their problem-solving skills. Additionally, VCL plays a crucial role in enhancing students' digital skills, equipping them with the technical competencies needed to navigate the modern, technology-driven workforce. Through project-based learning, students gain hands-on experience that not only deepens their subject-specific knowledge but also fosters essential transferable skills such as teamwork, communication, and critical thinking, which are vital in today's dynamic professional landscape.

To further enhance the effectiveness of VCL, the study underscores the importance of structured guidance, technological training, and reflective practices. Structured collaboration models provide students with clear roles and expectations, promoting efficient teamwork. Technological training ensures that students are well-equipped to navigate digital tools and platforms, reducing technical barriers. Reflective practices allow students to critically assess their learning experiences and solidify the skills and knowledge gained. As higher education continues to globalise, VCL presents a promising approach for developing the skills necessary for success in the digital age, preparing students to thrive in a complex and interconnected professional world.

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Part Three

As higher education continues to evolve in response to digital transformation and global interconnectedness, new pedagogical challenges and opportunities emerge, particularly in the realm of Virtual Collaborative Learning (VCL). While the previous parts explored the theoretical and methodological foundations of collaborative online pedagogies, transversal competencies, AI integration, and philosophical critiques, Part 3 focuses on practice.

This part focuses on the assessment, implementation, and infrastructural support of VCL, with a particular emphasis on real-world experiences from the Western Balkans. Through empirical studies, comparative case analyses, and practical frameworks, the chapters in this part examine how institutions assess student performance, navigate technological and organisational barriers, and scale VCL initiatives across diverse academic and cultural contexts.

Assessment emerges as a central theme, which explores the complexities of evaluating student performance in collaborative, intercultural, and often asynchronous environments. The authors highlight alternative approaches-such as peer and self-assessment, reflective journals, and project-based rubrics-and critically assess their effectiveness in capturing both individual and group contributions.

Further, by highlighting case studies from Albania, Kosovo, Bosnia and Herzegovina, and Montenegro, this part captures the lived realities of VCL implementation within a region marked by both rapid digitalisation and systemic educational disparities. These experiences are valuable not only for understanding regional advancements but also for informing broader international efforts toward inclusive, scalable, and future-proof virtual learning models.

In addition, attention is given to technological infrastructure and support, which form the backbone of successful VCL deployment. From cloud platforms to interoperability, from e-tutor roles to policy alignment with EU frameworks, these elements are analysed as enabling factors for high-quality digital learning. In the meantime, the importance of faculty development, intercultural competence, and student-centred design in building resilient and inclusive VCL ecosystems is emphasised.

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Together, the chapters of this part offer a holistic view of VCL as both a pedagogical innovation and a systemic transformation. By integrating methodological insight, practical implementation, and infrastructural analysis, Part 3 completes the triadic structure of this volume. It equips educators, institutional leaders, and policymakers with both a critical lens and actionable knowledge to advance VCL as a robust, equitable, and enduring component of higher education in the digital age.

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https://doi.org/10.53615/978-83-65020-54-3/153-154

Chapter Ten

Assessing Student Performance in Virtual Collaborative Learning Settings: Methods, Challenges, and Good Practices

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https://doi.org/10.53615/978-83-65020-54-3/155-169

Introduction

Virtual Collaborative Learning (VCL) has emerged as a transformative pedagogical approach in higher education, particularly in the context of globalisation and digitalisation. VCL leverages digital technologies to facilitate collaborative learning among geographically dispersed students, enabling them to work together on shared tasks, projects, or case studies. This approach has gained significant traction, especially during the COVID-19 pandemic, which necessitated a rapid shift to online and hybrid learning environments (Schoop et al., 2021). VCL is rooted in the principles of collaborative learning, which emphasise active participation, peer interaction, and collective knowledge construction (Schoop & Lovasz-Bukvova, 2014). However, the virtual dimension introduces unique challenges and opportunities, such as the need for effective digital tools, intercultural communication skills, and strategies to foster engagement and motivation in a virtual setting (Clauss et al., 2021).

The effectiveness of VCL as a pedagogical tool has been widely studied, with research highlighting its potential to enhance critical thinking, problem-solving, and intercultural competencies (Altmann & Clauss, 2020; Demaj & Alushllari, 2023). However, assessing student

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performance in VCL environments remains a complex and underexplored area. Traditional assessment methods may not fully capture the nuances of collaborative learning in virtual settings, where factors such as digital literacy, time zone differences, and varying levels of participation can significantly impact outcomes (Tawileh et al., 2013). This chapter aims to systematically review the literature on assessing student performance in VCL, identifying key methodologies, challenges, and best practices. By doing so, it seeks to provide educators and researchers with a comprehensive understanding of how to effectively evaluate and enhance student learning in virtual collaborative environments.

The chapter is organised as follows. Initially, the upcoming section provides an overview of the evolution of Virtual Collaborative Learning (VCL) within the educational domain, laying the groundwork for a comprehensive comprehension of its current significance. Subsequently, an in-depth literature review is presented to substantiate our argument. The third section delves into the methodology and materials employed in the study. Sections four and five encompass an examination and discourse on the study's findings. Finally, the last section wraps up the chapter, offering conclusions and proposing recommendations for future directions.

Literature Review

The rise of Virtual Collaborative Learning (VCL) as a pedagogical tool has been driven by the increasing availability of digital technologies and the growing demand for flexible, inclusive, and internationalised education. VCL enables students from diverse geographical, cultural, and disciplinary backgrounds to collaborate on shared tasks, projects, or case studies, often in real-time or asynchronously (Schoop & Lovasz-Bukvova, 2014). This approach aligns with the broader shift toward student-centred learning, where active participation, peer interaction, and collective knowledge construction are emphasised (Clauss et al., 2021). However, the transition to virtual environments introduces unique challenges, particularly in assessing student performance, which requires a nuanced understanding of both individual and group dynamics.

The Evolution of VCL as a Pedagogical Tool

VCL has its roots in collaborative learning theories, which posit that learning is a social process enhanced through interaction and shared

problem-solving (Jödicke et al., 2014). Early implementations of VCL focused on using web-based platforms to facilitate group work among students in different locations, often as part of international or interdisciplinary projects (Bukvova et al., 2010). Over time, VCL has been integrated into various educational contexts, including blended learning arrangements, virtual mobility programs, and cross-institutional collaborations (Schoop & Lovasz-Bukvova, 2014; Clauss et al., 2019). These initiatives have demonstrated the potential of VCL to foster intercultural understanding, digital competence, and collaborative skills, which are increasingly valued in today's globalised workforce (European Commission/EACEA/Eurydice, 2018).

The COVID-19 pandemic accelerated the adoption of VCL, as educators and institutions sought to maintain continuity in teaching and learning despite physical distancing measures (Schoop et al., 2021). This period highlighted both the strengths and limitations of VCL, with many educators reporting positive outcomes in terms of student engagement and learning outcomes, but also challenges related to technology access, digital literacy, and the quality of virtual interactions (Altmann & Clauss, 2020). For instance, students with limited access to reliable internet or digital devices often struggled to fully participate in VCL activities, which negatively impacted their performance and assessment outcomes (Tawileh et al., 2013).

Assessing Student Performance in VCL

Assessing student performance in VCL environments is a complex and multifaceted task. Traditional assessment methods, such as exams and individual assignments, may not adequately capture the collaborative and process-oriented nature of VCL (Tawileh et al., 2013). Instead, educators are increasingly adopting alternative assessment strategies that emphasise formative feedback, self-regulation, and the development of metacognitive skills (Altmann et al., 2021). These strategies include peer assessment, reflective journals, and group project evaluations, which aim to measure both individual and collective learning outcomes.

Peer Assessment

Peer assessment is a widely used method in VCL, as it encourages students to critically evaluate their own and their peers' contributions to the collaborative process (Clauss et al., 2021). This approach not only provides valuable feedback but also promotes accountability and self-

reflection among students. However, peer assessment can be challenging to implement effectively, particularly in culturally diverse groups where differences in communication styles and expectations may lead to misunderstandings (Altmann & Clauss, 2020). For example, students from high-context cultures may prefer indirect communication, while those from low-context cultures may value directness, leading to potential conflicts in virtual teams (Tawileh et al., 2013).

Reflective Journals

Reflective journals are another common assessment tool in VCL, allowing students to document their learning experiences, challenges, and insights throughout the collaborative process (Jödicke et al., 2014). This method encourages metacognitive thinking and helps students develop a deeper understanding of their own learning processes. In addition to fostering deeper self-awareness, reflective journaling provides educators with insights that can guide improvements in instructional design. Studies have shown that students who regularly engage in reflective journaling demonstrate enhanced critical thinking and self-regulation skills (Altmann & Clauss, 2020; Altmann et al., 2021).

Group Project Evaluations

Group project evaluations are often used to assess the outcomes of collaborative tasks, such as case studies, presentations, or research projects (Clauss et al., 2019). These evaluations typically consider both the quality of the final product and the effectiveness of the collaborative process, including factors such as communication, teamwork, and problem-solving. However, assessing group projects can be challenging, particularly when individual contributions are difficult to disentangle from the collective effort (Tawileh et al., 2013). To address this, some educators have adopted rubrics that clearly define the criteria for evaluating both individual and group performance.

Challenges in Assessing Student Performance in VCL

Despite the potential benefits of VCL, assessing student performance in virtual collaborative environments presents several challenges. One of the primary challenges is ensuring fairness and accuracy in assessments, particularly when students have varying levels of digital literacy, access to technology, and participation in the collaborative

process (Schoop et al., 2021). Another challenge is the lack of face-to-face interaction, which can make it difficult to build trust and rapport among team members. This can lead to issues such as unequal participation, where some students dominate the discussion while others remain passive. To address this, educators may need to provide clear guidelines and support for effective virtual collaboration, such as structured communication protocols and regular check-ins (Jödicke et al., 2014).

Cultural differences can also pose challenges in VCL, particularly in international or interdisciplinary collaborations where students may have different communication styles, expectations, and approaches to problem-solving (Tawileh et al., 2013). These differences can lead to misunderstandings and conflicts, which can negatively impact the collaborative process and assessment outcomes. To mitigate these challenges, educators may need to provide training and support for intercultural communication and teamwork (Altmann et al., 2021).

Studies on Student Performance in VCL

Several studies have explored student performance in VCL environments, providing valuable insights into the factors that influence learning outcomes. Active participation in virtual collaborative activities has been shown to support the development of critical thinking, problem-solving, and intercultural competence, particularly when students receive formative feedback and are encouraged to practice self-regulation (Clauss et al., 2021). The structure of the tasks also plays an important role in promoting student engagement and improving the learning outcomes. Well-designed case studies that offer clear objectives, structured tasks and opportunities for reflection tend to be more effective in supporting student performance (Altmann & Clauss, 2020).

In addition to task design and participation, other studies have focused on the broader challenges that students face in VCL settings. Tawileh et al. (2013) examined the impact of digital literacy and access to technology, particularly in developing countries, and found that students with higher levels of digital competence and reliable technological access were more likely to succeed in VCL activities. On the other hand, students with limited access faced significant barriers to participation and learning.

Recent studies have further explored the dynamics of student performance in VCL. Appiah-Kubi and Annan (2020) conducted a review

of Collaborative Online International Learning (COIL) and found that students who engaged in virtual international collaborations reported significant gains in intercultural competence and digital skills. However, the study also noted that the success of such collaborations depended heavily on the design of the learning activities and the support provided by instructors. Similarly, Rubarth et al. (2023) investigated the implementation of virtual mobility and internationalisation at home in Albania's higher education system. The study identified key factors that influence student performance, including the quality of digital infrastructure, the availability of training for both students and instructors, and the alignment of VCL activities with learning objectives. The authors recommended a series of actions to enhance the effectiveness of VCL, such as developing clear guidelines for virtual collaboration and providing ongoing support for students and instructors. Another relevant study by Faron and Kabashi (2023) explored the use of virtual business simulations as a tool for fostering modern teaching methods in higher education. The findings indicated that students who participated in virtual simulations demonstrated improved problem-solving skills and a deeper understanding of complex concepts.

Demaj and Alushllari (2023) conducted a study to assess the implementation of Virtual Collaborative Learning (VCL) modules at university-level courses in Albania. Findings showed that the implementation of the VCL module alongside its challenges is generally well-acknowledged and considered a positive experience, while stressing communication barriers are viewed as the main challenges, particularly at first, when students are trying to get accustomed to this model.

Methodology

This study adopts the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure a structured and transparent approach in identifying, selecting, and analysing relevant literature. The review focuses on assessing student performance in Virtual Collaborative Learning (VCL) by systematically examining scholarly articles and reports retrieved exclusively from the Scopus database. Given its extensive repository of peer-reviewed academic literature, Scopus was selected as the primary source for data collection. The search and selection process was conducted between January and February 2025. A structured, multi-stage selection process was employed to ensure the inclusion of high-quality and relevant publica-

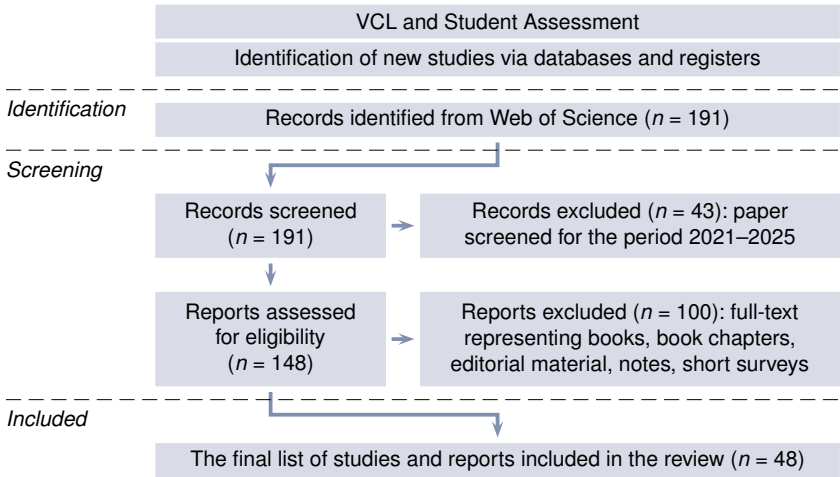

FIGURE 10.1 Data Collection Protocol

tions. Initially, a broad search was conducted using predefined keywords, categorised into a main thematic area: Assessment Methods: COIL-VCL, Peer Assessment, Instructor Evaluation, Formative Feedback, e-Tutor, Blended Learning, Electronic Learning (e-Learning), social media, Virtual Group Work, Virtual Teamwork, Formative Feedback.

The initial search identified 191 records. To refine the dataset, 43 publications outside the 2021–2025 timeframe and 100 non-peer-reviewed or non-research-based documents (e.g., book chapters, editorials, comments) were excluded. A subsequent review ensured alignment with the research objectives. The final selection emphasised empirical studies, systematic reviews, and theoretical works relevant to assessing student performance in VCL environments. This rigorous screening process resulted in a curated dataset of 48 publications, which served as the foundation for the meta-analysis.

By integrating key findings from the selected literature, this review aims to critically assess existing methodologies, highlight challenges, and propose best practices for evaluating student performance in virtual collaborative settings. The findings contribute to a deeper understanding of assessment strategies within digital learning environments, informing both educators and researchers on effective evaluation techniques in VCL. The data collection protocol is presented in Figure 10.1.

Data Analysis

The following section presents findings from a preliminary investigation into the evaluation of student performance in the context of Virtual Collaborative Learning (VCL). The analysis seeks to pinpoint significant research themes and primary issues highlighted in the chosen studies, while also evaluating the relevance and progression of research in this area from 2021 to 2025. This study emphasises the leading Web of Science (WOS) categories with the greatest number of publications, providing a critical examination of each selected study based on its theoretical frameworks and methodologies for assessing student performance in VCL environments.

An in-depth examination of the interdisciplinary aspects of VCL research indicates that most studies are concentrated within the field of education, particularly within the categories of Education, Educational Research and Education Scientific Disciplines, which collectively account for nearly 48% of the dataset. This underscores the strong pedagogical basis of the field and the academic focus on evaluating learning processes and student engagement in virtual settings. More specifically, as shown in Table 10.1, Education Educational Research represents 29.2% of the studies, while Education Scientific Disciplines constitute 18.8%, highlighting the pivotal role of educational research in advancing assessment techniques for VCL. In addition to traditional educational contexts, VCL research penetrates healthcare-related fields, such as Health Care Sciences Services (12.5%), Medical Informatics (10.4%), Nursing, and Clinical Neurology. This trend illustrates an increasing interest in employing VCL methodologies for medical and healthcare education, where digital learning resources are becoming increasingly essential for preparing professionals.

The dispersion of research across these various fields illustrates the extensive potential of VCL assessment approaches, reaching beyond traditional educational environments. The combination of pedagogical, technological, and healthcare perspectives demonstrates a multidisciplinary strategy for evaluating student performance in online and remote learning situations.

A crucial component of the initial investigation into Virtual Collaborative Learning (VCL) research involves recognising key contributors within the domain. The data reveals an equitable distribution of authors, implying that VCL research is significantly collaborative, involving scholars from education, technology, and related disciplines. The

TABLE 10.1 WOS Categories Where These Keywords Are Mostly Used

Field (Web of Science Categories)	Record count	%
Education Educational Research	14	29.167
Education Scientific Disciplines	9	18.750
Health Care Sciences Services	6	12.500
Medical Informatics	5	10.417
Public Environmental Occupational Health	4	8.333
Nursing	3	6.250
Clinical Neurology	2	4.167
Computer Science Interdisciplinary Applications	2	4.167
Computer Science Software Engineering	2	4.167
Computer Science Theory Methods	2	4.167
Engineering Multidisciplinary	2	4.167

relatively balanced representation among authors suggests a joint effort towards improving student performance assessment in virtual settings, rather than the influence of a single research team. Investigating author networks and institutional partnerships further could yield a more profound understanding of the progress and significance of VCL research.

In terms of co-authorship, the initial visualisation illustrates a network depicting institutional co-authorships, charting collaborative activities among various universities and research entities. The clusters in Figure 10.2 signify groups of institutions that frequently engage in joint publishing, indicating strong academic collaborations. Particularly, institutions located in London-including the University of London, King's College London, and University College London-form a closely-knit cluster. Their collaboration extends to medical institutions like the National Hospital for Neurology, emphasising interdisciplinary research. Conversely, institutions like Linköping University, Saint Vincent's University Hospital, and Federation University Australia create another distinct cluster, showcasing robust research connections within their respective domains. The University of London serves as a connector, linking these groups and highlighting its role in promoting international research collaboration. The Technical University of Dresden also stands out in the grid.

The network of Co-Authorship based on Individual Researchers also displays key authors who have extensively co-published, creat-

FIGURE 10.2 Co-Authorship Based on Organisations

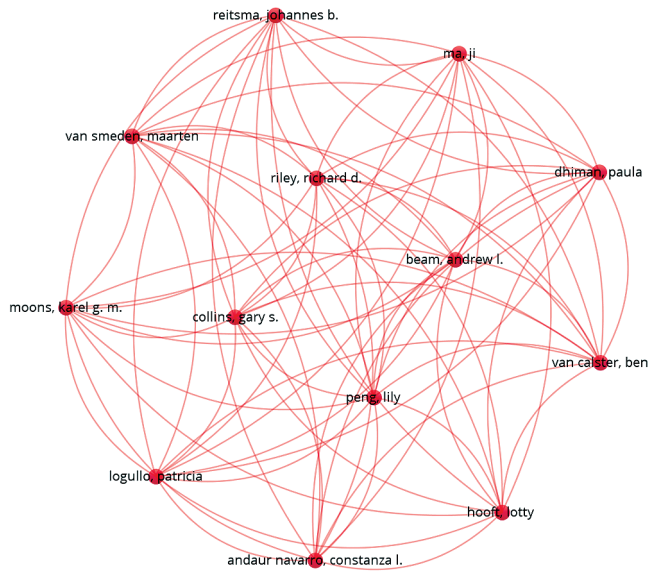

FIGURE 10.3 Co-Authorship Based on Individual Researchers

ing a dense web of collaborations. As shown in Figure 10.3, Certain researchers, including Johannes B. Reitsma, Ma Ji, and Maarten van Smeden, are located at the centre of numerous connections, signifying their crucial role in academic publishing. The network further exposes tightly knit subgroups, indicating the existence of research teams or recurring partnerships on particular sub-subjects. This analysis not only underscores the influential contributors in the domain but also sheds light on the structural organisation of research networks.

The examination of co-occurring keywords from the datasets provides essential insights into evaluating student performance in Virtual Collaborative Learning (VCL) settings. The significance of terms such as virtual reality, e-learning, and the internet underscores the profound impact of technology on contemporary assessment strategies. These technologies facilitate the development of immersive, interactive, and flexible evaluation methods, including virtual simulations, on-

FIGURE 10.4 Co-Occurring Keywords on Assessment of Students in Virtual Settings

line group projects, and remote testing, which expand beyond conventional exam-based assessments. Furthermore, keywords such as interconnectivity and social media emphasise the increasing focus on collaborative and team-oriented assessments, showcasing the necessity of assessing not only individual knowledge but also students' proficiency in communication, collaboration, and engagement within virtual teams (see the keywords in Figure 10.4). The mention of professionalism and internship further indicates the incorporation of real-world skill assessments in VCL, especially in industries like healthcare and engineering, where virtual internships and practical scenarios are employed to gauge professional preparedness. At the same time, instructional design and curriculum alignment underscore the importance of structured and relevant assessments that align closely with learning objectives, ensuring that evaluations are pertinent and support the desired educational outcomes. Lastly, the inclusion of science learning and social media demonstrates the variety of assessment techniques, ranging from virtual experiments and problem-solving activities to reflective exercises like blogs and discussion forums.

Discussion

This study focused on evaluating student performance in Virtual Collaborative Learning (VCL), offering a thorough insight into the methodologies, challenges, and opportunities related to assessing learning outcomes in digital settings. The results underscore the transformative potential of VCL as an educational tool, especially in promoting collaboration, critical thinking, and intercultural competencies. Nonetheless, evaluating student performance in VCL poses a complex and multifaceted challenge, necessitating innovative strategies that extend beyond conventional assessment methods.

Technological Integration in VCL Assessments

A central theme that emerges from the literature is the pivotal role of technology in shaping assessment techniques in VCL. Terms such as

virtual reality, e-learning, and the internet highlight the dependence on digital resources to craft immersive and interactive learning environments. These technologies empower educators to develop assessments that are more engaging and adaptable, including virtual simulations, online collaborative undertakings, and remote evaluations (Altmann & Clauss, 2020; Clauss et al., 2021). Virtual reality has proven especially effective in evaluating practical skills in areas such as healthcare and engineering, where hands-on experience is essential. This transition towards technology-based assessments mirrors the broader movement of integrating digital tools into educational systems, ensuring that evaluations align with the requirements of contemporary, technology-oriented professional settings.

Collaborative and Team-Based Assessments

Another important finding is the focus on collaborative and team-oriented assessments, as indicated by terms like interconnectivity and social media. These concepts underline the significance of assessing not just individual knowledge but also students' capacity to communicate, work together, and participate in virtual team environments. Peer assessment, in particular, has gained widespread use in VCL to promote accountability and self-reflection among learners (Clauss et al., 2021).

However, implementing peer assessment can be challenging, especially in culturally diverse groups where variations in communication styles may result in misunderstandings (Altmann & Clauss, 2020). To mitigate this, educators must offer clear guidelines and support for effective virtual collaboration, ensuring that assessments are equitable and inclusive.

Real-World Skill Evaluation and Professional Readiness

The incorporation of real-world skill evaluation in VCL assessments represents another significant trend, as underscored by terms like professionalism and internship. Virtual internships and practical scenarios are becoming more prevalent for assessing students' preparedness for professional settings, particularly in sectors like healthcare and business (Appiah-Kubi & Annan, 2020; Rubarth et al., 2023). These evaluations not only assess academic understanding but also practical skills such as problem-solving, decision-making, and teamwork. This strategy aligns with the increasing demand for graduates who are not

only academically adept but also possess the competencies necessary to succeed in the workforce.

Structured and Aligned Assessment Frameworks

Another prominent theme found in the literature is the necessity of organised and aligned assessment frameworks. Terms such as instructional design and curriculum alignment highlight the need for assessments to be closely connected to learning objectives, ensuring their significance and relevance. For instance, well-crafted case studies that feature clear objectives, organised tasks, and opportunities for reflection have demonstrated their ability to enhance student engagement and learning outcomes (Altmann & Clauss, 2020). This emphasises the importance of integrating assessments with the overall instructional design, ensuring that they facilitate the intended educational goals.

Nevertheless, even with the potential advantages of VCL, existing literature highlights several issues and challenges related to evaluating student performance in virtual settings. A major concern is maintaining fairness and precision in assessments, especially when students exhibit different levels of digital proficiency and unequal access to technology. Students who have limited access to dependable internet or digital devices may find it difficult to fully engage in VCL activities, which could adversely affect their performance and assessment results. To tackle this, educators need to implement targeted support, such as providing training and resources to enhance digital literacy, ensuring that all students have a fair chance to excel.

Cultural variances also represent significant obstacles in VCL, particularly in international or interdisciplinary teamwork. Differences in communication methods, expectations, and problem-solving approaches may result in misunderstandings and conflicts, potentially harming the collaborative process and assessment results. To alleviate these issues, educators should offer training and assistance in intercultural communication and teamwork, making sure that assessments are inclusive and culturally aware.

Conclusion

This chapter has examined the methods, challenges, and prospects in evaluating student performance within Virtual Collaborative Learning (VCL) environments. The results underscore the transformative potential of VCL in promoting collaboration, critical thinking, and intercul-

tural skills, while also highlighting the complexities involved in assessing student outcomes in virtual contexts. The incorporation of digital technologies, such as virtual reality and e-learning platforms, has facilitated more immersive and adaptable assessment approaches, especially in fields that require practical skills like healthcare and engineering. Collaborative and team-oriented assessments, along with evaluations of real-world skills, have surfaced as essential strategies to connect learning outcomes with professional preparedness.

Nonetheless, obstacles such as differences in digital literacy, access to technological resources, and cultural variations in international collaborations persist as significant challenges. To tackle these issues, educators must implement structured, inclusive, and culturally aware assessment frameworks. Looking ahead, additional research is necessary to refine assessment methodologies and ensure equitable access to VCL opportunities. By capitalising on the advantages of VCL and addressing its shortcomings, educators can improve student learning and better equip them for the demands of a technology-driven, interconnected world.

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Chapter Eleven

Implementing VCL in Western Balkans: Real-Case Initiatives Case Studies

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https://doi.org/10.53615/978-83-65020-54-3/171-187

Introduction

Implementing Virtual Compatible Learning (VCL) in the Western Balkans is a growing focus as digitalisation advances in the region. However, the pandemic exposed the existing structural problems of the education system in the Western Balkans, even though the countries of

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the Western Balkans are trying to develop education and training systems in accordance with the new demands and needs of the market (*Kapacitetet e e-mësimit në Ballkanin Perëndimor,* 2022).

Several real-case initiatives and projects have been undertaken by governments, NGOS, international organisations, and Higher Education Institutions to enhance digital education and virtual learning platforms. These initiatives aim to modernise education, promote digital literacy, and bridge the digital divide. Universities are fostering great changes and development when it comes to digitalisation, rising productivity and implementing contemporary methods in human development skills. Their commitment has been noticed with projects and initiatives that support such developments. We may name projects such as VALUE-X, VIRTUEU and now COWEB.

The Virtual Albanian European Universities Exchange VALEU-X (https://valeu-x.eu/) project aims to support the internationalisation of Albanian and Balkan universities by introducing Virtual Blended Mobility as an internationalisation at home instrument. VALEU-X is co-funded by the Erasmus+ programme of the European Union. The project ran from January 2020 to January 2022.

The VIRTUEU (https://virtueuproject.eu/) project is a Virtual Exchange programme designed to bring together young people from different countries, enabling their participation regardless of any obstacles. The project aims to enrol 2500 young people from Albania, Kosovo, Montenegro, and European countries in Virtual Exchanges, fostering a common approach to active citizenship within a united Europe.

In 2022, COWEB (https://cowebproject.eu/) became a new innovative project designed to facilitate local, regional, and international Virtual Collaborative Learning (VCL). With the increasing need for digital transformation in education, COWEB's VCL implementation aims to bridge the gap between traditional classroom settings and modern online learning environments. The COWEB project is developed by partners from the Western Balkans with other central European HEIS.

This consortium consists of: Epoka University, Technical University of Dresden, International School for Business and Social Studies, University of Salento, European University of Tirana, UBT College, Biznesi College, International Burch University, University of East Sarajevo, and University of Montenegro. This chapter provides a deeper analysis of the advantages, problems, and solutions to implement virtual collabo-

FIGURE 11.1 Epoka University and European University of Tirana Local VCL Report Wallpaper

ration successfully. Below we present some cases of successful implementation of this project from partners in the Balkan region.

COWEB's Local VCL in Albania

In Albania, Epoka University implemented the Local VCL (Virtual Collaborative Learning) Module within its institution. The VCL module, specifically Local VCL, focuses on the course Strategic Management – Master. It involves six teams comprising a total of 40 students. The course was instructed by a higher education teacher, with support from several e-tutors Klea Pashtranjaku. The duration of this module is eight weeks.

COWEB's Local VCL Implementation in Kosovo

The Local VCL Module at Biznesi College, titled Focus on Two Main Subjects: Programming and Introduction to Decision Making, is specifically for Bachelor courses. This module involves two teams comprising a total of 10 students. The course was taught by two higher education instructors, supported by several e-tutors. The duration of this module is five weeks, from April to May 2024.

The Biznesi College emphasises the institution's commitment to providing quality education and fostering collaborative learning through digitalisation.

At the same time, the Local VCL Module at UBT College were focused on Digital Marketing support for Start-up Master's Degree. This

FIGURE 11.2 Biznesi College and UBT College Local VCL Report Wallpaper

FIGURE 11.3 International Burch University and University of East Sarajevo Local VCL Report Wallpaper

module involves two teams comprising a total of 8 students. The course was taught by a higher education instructor, with support from two e-tutors. The duration of this module is five weeks, from April to May 2024.

COWEB's Local VCL Implementation in Bosnia and Hercegovina

International Burch University implemented Local VCL on the course of: Introduction to Mobile and Wireless Networking. This module involves three teams, each consisting of four students, making a total of 12 students. The course is taught by a higher education instructor, with

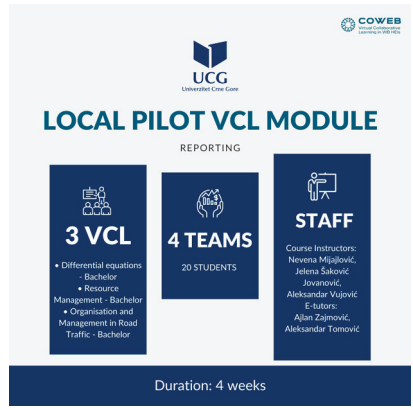

FIGURE 11.4

University of Montenegro Local VCL Report Wallpaper

support from one e-tutor. The duration of this module is between six and seven weeks. Meanwhile, at the University of East Sarajevo, local VCL was implemented on three main subjects: Forensic Accounting and Auditing, Financial Institutions Accounting and Application software. This module involves four teams comprising a total of 20 students. The course is taught by three higher education instructors, with support from three e-tutors. The duration of this module is six weeks, from April to June 2024.

COWEB's Local VCL Implementation in Montenegro

In Montenegro, the University of Montenegro successfully implemented the local VCL on three subjects: Differential Equations, Resource Management, and Organisation and Management in Road Traffic, all at the bachelor's level. This module involves four teams comprising a total of 20 students. The courses are taught by three instructors, with support from two e-tutors. The duration of this module is four weeks.

Western Balkan Needs and Promptness for Engaging in Virtual Compatible Learning Projects

The Western Balkans is at a pivotal moment in its digital transformation. While the region has made considerable progress, several key areas still need attention, such as improving digital infrastructure, fostering digital skills, expanding e-government services, and strengthening cybersecurity frameworks. Regional cooperation and alignment with EU digital policies will be crucial in accelerating this transformation

and ensuring that the Western Balkans can fully participate in the digital economy and global digital society. The Western Balkans should try harder and adapt digital skills policies in response to emerging technologies for the benefit of all (*Aftësitë & Mësimi Dixhital,* 2020).

Western Balkan countries have faced the challenges of digital transition, including institutional building, limited administrative skills and other challenges related to the e-learning process (*Kapacitetet e e-mësimit në Ballkanin Perëndimor,* 2022).

The Western Balkans, a region that includes countries such as Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia, faces unique challenges and opportunities when it comes to engaging in virtual-compatible learning projects. The needs and speed to engage in such projects are shaped by several socio-economic, educational, and technological factors, and they are:

1. Needs and demands for Virtual Collaborative Learning Capacities;
2. Promptness for developing of Virtual Learning Concept;
3. Key Considerations for Virtual-Compatible Learning Projects.

Based on the first factor, the socio-economic, educational, and technological factors that we mentioned above, there is also a need to engage in such projects.

Implementing virtual collaboration is a key factor for Western Balkan countries in adopting modern approaches to digitalization and sustainability, making it essential to address the following needs:

- Overcoming educational inequality;
- Removing obstacles to access to physical infrastructure;
- Developing the labour force and enhancing digital skills;
- Strengthening cooperation and promoting international mobility;
- Supporting adult education and fostering lifelong learning processes.

Below we will talk briefly about each.

Overcoming Educational Inequality

The need to prevail over educational inequality is crucial, especially between rural and urban areas, in the Western Balkans. Virtual (Collab-

orative) Learning methods may help fill this gap by providing students in remote or deprived areas access to quality education.

Students from rural areas will be able to feel promoted and treated equally as their peers from more developed parts of any country, by being aware of and using virtual learning platforms that, at the same time, can facilitate their digital skills.

Removing Obstacles to Access to Physical Infrastructure

Many Western Balkan lower, middle, and higher education institutions are facing challenges regarding their infrastructure, regarding the need to overcome these limitations to offer access to students who live in remote areas in quality education. Therefore, many institutions have a high demand for support in digital infrastructure to reach the goal of facilitating all students' needs.

Developing the Labour Force and Enhancing Digital Skills

The economy and digital development are moving forward with giant steps. People in general need to adopt their skills to be competitive. Naturally, the Western Balkans region does not make an exception; everyone needs to adopt it too. Starting from education institutions, where all who aim for more advantages for business and work competition, the most logical path to enhance this kind of skill development is. Western Balkan countries have a great need to access these modern digital skills. Virtual interaction and collaboration locally or internationally is one of the most important skills to make students and the future labour force competitive and on step with trends.

Strengthening Cooperation and Promoting International Mobility

Western Balkan institutions work accordingly with the Bologna Process, which gives them the opportunity to smoothly collaborate with other institutions in Europe and not only. Even though it is still the missing part of the Union of European countries, they are successfully collaborating internationally. Consequently, from these partnerships, higher education institutions also match with their problems, ideas, and common goals. To make superior education accessible for all. Virtual platforms and virtual collaboration initiatives are helping and will help students and institutions to break many barriers, as time, abilities, and accessibilities, to realise a successful mobility or training between respective partners.

Supporting Adult Education and Fostering Lifelong Learning Processes

Fast digital development has many benefits, but at the same time, it is creating new problems among people who are actually part of the labour force in the economy. A significant number of adults have a huge demand for upskilling to remain competitive in the labour market. Constant retraining to develop skills on modern technology and methods is more than important. The new approach of finishing duties and collaboration virtually is going to make them more flexible, sustainable, and efficient at the same time. Lifelong learning concepts and platforms supported with virtual collaboration programs will provide adults with easy and flexible access to the development of contemporary skills.

The promptness of Western Balkan higher education institutions to engage in virtual collaborative learning projects is faced with the following important elements:

- Expansion of digital infrastructure;
- Governmental and regulatory institution support;
- Fostering adoption of digital solutions;
- Arrangement with European institutions practices;
- Engagement of youth and human resources.

Expansion of Digital Infrastructure

During the last years, the development of digital infrastructure has taken a huge focus in the Western Balkan region. Nevertheless, the same development did not happen in all areas equally; there is a lot to work on, especially in rural areas. It is worth mentioning that the expansion of the infrastructure differs between Western Balkan countries, too, as you may see in the chart below. Otherwise, problems of a technical nature are evident, especially when it comes to speed and sustainability of internet connectivity. Putting fibre optic cables to use by institutions made a significant impact on the development of the digital infrastructure, which in turn will support further virtual collaboration capabilities.

Governmental and Regulatory Institution Support

Governments of the Western Balkan countries are prioritising digital transformation in general, also in education, but there is room for more

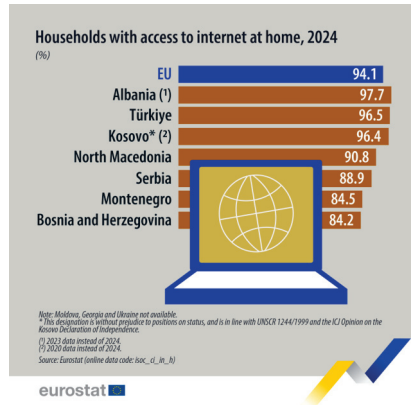

FIGURE 11.5

Households Level of Internet Access in Europe (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:CPC25_Households_internet_access_2024.png)

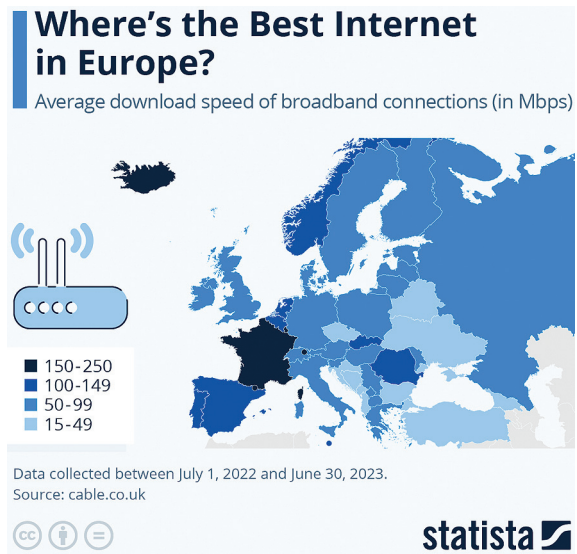

FIGURE 11.6

The Most Powerful Internet among European Countries (https://www.statista.com/chart/3348/europes-fastest-downloaders/)

when it comes to regulations that allow and legitimise many aspects of working and developing virtual work, especially in education. As we may refer to Higher Education Laws in different Western Balkan countries, many of them allow the process of distance learning to be held, but the same does not happen in the case of Albania. In Kosovo, Article 2, point 2.5 states that higher education can be pursued with a break from work, without a break from work, in distance, as well as in any other type of combination of these study methods, just like provided for in the statute of the holder that provides the qualification of higher education (Ligji nr. 04/L-037, 2011).

In the case of Montenegro, Article 85 states: Classes can be organised as distance learning, and exams are held on the premises of the institution. The conditions and manner of organising classes and taking exams, from paragraph 1 of this article, are prescribed by the Ministry, with the prior opinion of the Council (Zakon o visokom obrazovanju, 2021). Bosnia and Herzegovina has also allowed it as it cites in Article 2 point D: Distance learning is a formalised form of study for self-financed students, which ensures access to the teaching process through the use of computer technologies and interactive teaching materials, and which is more precisely regulated by the statute of the higher education institution (Zakon o visokom obrazovanju, 2025)

In the case of Albania, it is different, as it cites in Article 1, point 2: The Ministry of Education and Sports does not consider applications for the following cases: following the programs of online or distance learning (*Përmbledhje e legjislacionit për arsimin e lartë perditesuar deri me,* 2023).

Fostering Adoption of Digital Solutions

The unexpected wave of the COVID-19 pandemic had made a huge impact on education systems, an impact that would be a turning point for the entire system. Academics were looking for every possibility to keep the education process going, without losing the rhythm and time. Virtual collaborative learning tools revolutionised the whole process and gave a good solution for that emergency situation. During that time, Virtual learning became a normal part of academic life. Now we are in a post-pandemic time when society's approach to digitalisation has changed, and it is getting more importance than ever. All stakeholders adapted to their capabilities and skills during those hard times, but now we are developing them to offer more digitalised and sustainable solutions for students and all other stakeholders. Fostering initiatives such as EU co-founded projects is making a great impact on enhancing further capabilities and skills for academics and students to develop virtual work with each other. Knowing that EU co-founded projects include other international institutions, it helps all of Europe develop together without leaving aside other countries compared to others.

Arrangement with European Institutions Practices

The Western Balkans is a natural part of Europe; therefore, higher education institutions continuously collaborate with international and

especially European institutions. At the same time, the alignment of practices and procedures has similarities in many aspects. Added that, with the support of European funds and common goals, these collaborations are getting stronger, and the alignment of practices is too.

Engagement of Youth and Human Resources

Youngs in Western Balkan countries constitute around 20% of the population (Eurostat, 2025). Most of them belong to generations where the use of technological devices broadly started and it is continuing its development. This creates a good basis for adopting newer technologies more easily today and in the future. Virtual Collaborative Learning projects and platforms are the best way to keep young people engaged and committed to learn contemporary methods of collaboration, nationally and internationally. All these factors together make them gain skills that keep them competitive in the market.

Experience of WB Countries with VCL Implementation

Western Balkan countries have gained significant focus from the European Commission to support and develop capacities. These capacities are building and enhancing WB's social capabilities and skills to become more productive and competitive in the market. In addition, there have been many cases where HEIS in the Balkans have conducted virtual learning in one way or another, especially during the pandemic. In such emergency situations, the lecturing and learning process was implemented on different platforms such as Zoom, Google Meet, Microsoft Teams, etc. The whole process has faced many obstacles, especially when it comes to international collaboration, a lack of a professional approach to the platforms, etc. Meanwhile, virtual learning brought new ideas and concepts in the academic society by seeing its advantages on productivity, time consumption, and sustainability, too, they decided to dedicate a more professional approach to the way of collaboration in distance learning. Therefore, the urge to develop a common project that supports VCL became bigger.

For instance, there are some successful capacity-building projects co-founded by the European Union that supported VCL implementation in Balkan HEIS, which are already finalised, such as VALEU-X. The Virtual Albanian European Universities Exchange (VALEU-X) project aims to support the internationalisation of Albanian and Balkan universities by introducing Virtual Blended Mobility as an international-

isation at home instrument. VALEU-X is co-funded by the Erasmus+ programme of the European Union. VALEU-X focuses on several key objectives:

- Qualifying academic staff at Albanian Higher Education Institutions (HEIS) for innovative virtual teaching and learning settings.
- Supporting Albanian HEIS in adopting and implementing effective ICT-based internationalisation at home activities.
- Integrating Albanian HEIS into a global network for Virtual Mobility.
- Qualifying administrative staff at Albanian HEIS to adopt and recognise Virtual/Blended Mobility as part of their institutional internationalisation strategy.

The partner universities involved in the project:

- Technische Universität Dresden (Germany) – Coordinator
- International School for Social and Business Studies (Slovenia)
- Mediterranean Universities Union (Italy)
- European University of Tirana (Albania)
- Epoka University (Albania)
- University of Elbasan 'Aleksander Xhuvani' (Albania)
- University of Shkodra 'Luigj Gurakuqi' (Albania)
- University of Vlora 'Ismail Qemali' (Albania)
- University of Korça 'Fan S. Noli' (Albania)
- Aleksander Moisiu University of Durres (Albania)

Another successful example is the VIRTUEU project. The VIRTUEU project is an international Virtual Exchange program designed to involve more than 2,500 students from Higher Education Institutions (HEIS) in EU Member States and Western Balkan Countries, including Albania, Kosovo, Montenegro, Portugal, Germany, and Greece. The project is funded by the ERASMUS+ programme and has a duration of 36 months.

Objectives: The primary goal of the VIRTUEU project is to promote European and universal values of democracy, peace, freedom, solidarity, and collaboration among young people in Europe and the Western Balkans. It aims to strengthen their identity as active citizens and

residents of Europe and provide them with adequate skills to improve their chances of employment. The VIRTUEU project has successfully achieved its objectives:

- *Virtual Exchanges:* The project focuses on bringing together young people from different countries through virtual exchanges, allowing them to participate regardless of any obstacles that may prevent them from being part of such a program.
- *Non-Formal Educational Curriculum:* VIRTUEU creates activities in the form of a non-formal educational curriculum to empower youth towards their capacity to become more active and open to participation.
- *Civic Engagement:* The project aims to foster active citizenship and civic engagement among young people, highlighting core European values and providing real examples, tools, and methodologies to positively contribute to society.
- *Impact:* The VIRTUEU project aims to cultivate a common approach to active citizenship in the framework of a united Europe. By providing new teaching and learning approaches within the framework of virtual education and training, the project seeks to increase the engagement of youth at all levels of civic participation.

This project was finalised successfully with this group of partners:

- University of Aveiro (Portugal)
- IBCM (Kosovo)
- EVBB (Belgium)
- Professional College of Tirana (Albania)
- University Mediterranea (Montenegro)
- University Metropolitan Tirana (Albania)
- European University of Tirana (Albania)
- Universum International College (Kosovo)
- Metropolitan College (Albania)
- Albanian University (Albania)

Meanwhile, COWEB is developing VCL at the Regional level. The Regional Virtual Collaborative Learning (VCL) program of the COWEB

FIGURE 11.7 VirtuEu Descriptive Picture (https://www.facebook.com/photo.php?fbid=122111531588105983&set=pb.61553179490434.-2207520000&type=3)

project is an initiative aimed at enhancing collaborative learning experiences among students from various partner institutions in the Western Balkans. This program, launched for the Fall Semester 2024–2025, runs from October 2024 to February 2025 and involves academic teams working on different case studies. Each Team is supported by their e-tutors, who were trained accordingly for the duty.

The VCL courses are composed of transnational student groups who collaborate with peers from other participating countries in the Western Balkans. This setup generates an innovative model of cross-regional collaboration and transnational work that will be finalised with cooperation at the international European level.

The Regional Virtual Collaborative Learning (VCL) Program involves multiple universities working together in tandems:

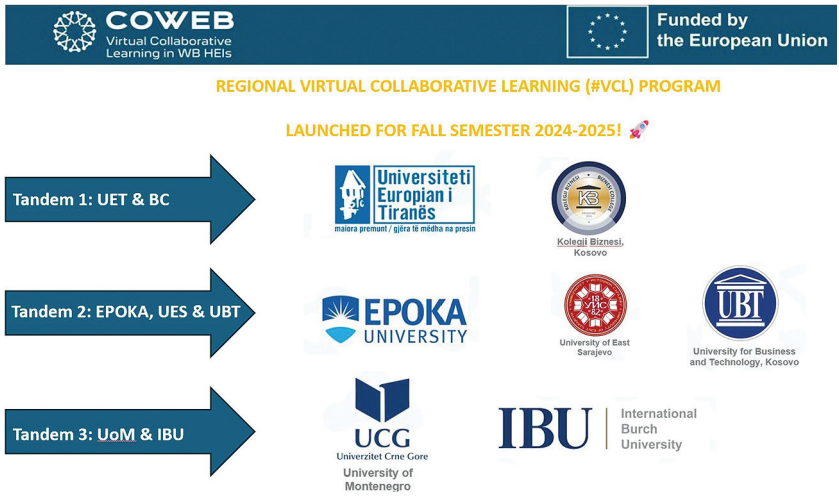

FIGURE 11.8 COWEB's Regional VCL Descriptive Wallpaper (https://www.facebook.com/photo/?fbid=489727417451823&set=pb.100092437068258.-2207520000)

- Tandem 1: European University of Tirana (UET) and Biznesi College (BC), Kosovo
- Tandem 2: EPOKA University, University of East Sarajevo (UES), and UBT College Kosovo
- Tandem 3: University of Montenegro (UOM) and International Burch University (IBU)

The program aims to foster international collaboration in higher education within Western Balkan Higher Education Institutions. All partners highlighted the diverse and cooperative nature of this initiative.

Challenges and Solutions in VCL Implementation among Western Balkan Institutions and International Institutions

- Lingual and digital skills problems
- Support from governmental institutions
- Academic staff training
- Costs and accessibility to VCL platforms

Lingual and Digital Skills Problems

One of the main obstacles that students and academic staff in the Western Balkans have is language. The Western Balkans is a small part of

Europe that consists of small countries, yet with language differences. English, as a common understanding language, is known mostly by the younger generation, who followed education after 1999. Otherwise, this region is adopting the newest technologies quite well. Based on our everyday academic life, we are witnessing obstacles in adaptation toward new technologies, mainly by older academic staff who have a huge experience and contribution, but face hardship in adopting quick digital changes.

Support from Governmental Institutions

Governments, private sector organisations and international development agencies must collaborate on projects to ensure that there is adequate funding, infrastructure, and technical support.

Academic Staff Training

Teachers need continuous professional development to effectively use virtual learning platforms. Ensuring that educators are well-prepared and confident in using digital tools is essential to the success of virtual learning projects.

Costs and Accessibility to VCL Platforms

Virtual collaborative platforms come in different ways and from different companies. Platforms that facilitate the implementation of virtual collaborations, such as Teams, Google Meet, Zoom, etc., are helping a lot with their free versions, but requirements are greater to use their full capacities. Therefore, those platforms come with additional costs for licenses. These costs in the case of Western Balkan institutions are covered with the financial support of the European Union funds.

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Chapter Twelve

Strategies for Overcoming Barriers to Effective Virtual Collaboration at the University Level

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https://doi.org/10.53615/978-83-65020-54-3/189-205

Introduction

Virtual collaboration is a cornerstone of modern learning, enabling students, educators, and researchers to interact across geographical and cultural boundaries in real-time. This innovative approach reaches out beyond the traditional classroom setting, fostering innovation, inclusiveness, and global mindedness. For universities, particularly in regions like the West Balkans, virtual collaboration has enormous potential to bridge infrastructural and educational gaps, update learning processes, and prepare students for the digital economy.

However, the road to effective virtual collaboration is not entirely smooth. Roadblocks in the form of outdated technological infrastructures, lack of faculty training, resistance to change, and socio-cultural barriers often act as hindrances to its successful implementation. Moreover, universities need to bridge disparities in digital access and variation in the readiness levels of students and faculty to be able to derive the complete benefits of virtual collaboration.

This chapter discusses these barriers in detail, providing a close examination of the issues that are hindering virtual collaboration in universities. It also provides real-world solutions to these issues, covering technological, pedagogical, cultural, and institutional dimensions. By overcoming these challenges, universities can lay strong groundwork for virtual collaboration, fostering more inclusive, dynamic, and effec-

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

tive learning environments that are attuned to the demands of a globalised world.

Barriers to Virtual Collaboration

Technological Barriers

The digital divide remains one of the most significant obstacles to virtual collaboration, deeply rooted in disparities in economic and technological development. In many universities, particularly in developing regions such as the West Balkans, outdated IT infrastructure and unreliable internet connectivity are major hindrances. For example, HEI institutions located in small cities often lack access to high-speed internet, forcing students to rely on personal mobile data plans, which are not only costly but also insufficient for sustained virtual collaboration. Faculty in these areas frequently report difficulties in accessing learning management systems (LMS) or conducting stable video conferencing sessions (QSNNN, 2025).

Additionally, the steep learning curve associated with new technologies further exacerbates this divide. The evolving landscape of digital education has highlighted the pressing need for accessible and high-quality digital content for both learners and educators. This shift has further emphasised the importance of engaging all stakeholders-individuals, institutions, and the broader education and training ecosystem – in a coordinated effort to ensure that digital technologies are implemented effectively. When used purposefully, technology should serve as a catalyst for delivering inclusive and high-quality education, rather than becoming an obstacle (European Commission, 2020b).

Many universities fail to provide adequate training for advanced tools such as virtual reality environments or cloud-based collaboration platforms. For instance, tools like Microsoft Teams or Google Workspace, while powerful, are underutilised due to a lack of user proficiency. Even in well-equipped institutions, this unfamiliarity often results in lower engagement rates and frustration among both faculty and students. Dascalu et al. (2015) emphasise that a tailored approach, integrating learning styles into training, could mitigate these challenges and unlock the full potential of these tools. Moreover, financial constraints play a pivotal role. Limited budgets restrict universities' ability to upgrade infrastructure or provide the necessary licenses for collaboration platforms. Without external funding or governmental support, these institutions struggle to bridge the technological gap.

Pedagogical Barriers

Shifting from traditional to virtual collaboration requires a significant transformation in teaching and learning methods, particularly in regions of the Western Balkans where the pedagogical workforce is characterised by an older demographic. According to a study conducted across two universities in Albania, prior to the COVID-19 pandemic, 62% of lecturers reported having never conducted online teaching, while only a small portion had occasional or rare experience with it. Additionally, nearly a quarter (24.5%) of lecturers reported having no knowledge of online learning before the pandemic, and only 8.5% reported having particularly good knowledge (Hoti et al., 2022). This generational gap contributes to hesitancy in adopting virtual collaboration, as older faculty members often lack the necessary training and confidence to implement these changes effectively. Furthermore, the Albanian legal framework for higher education, while supportive of digital initiatives on paper, lacks specific mandates for faculty development in virtual teaching methods. Unlike countries such as Serbia, where the National Education Development Strategy explicitly allocates funds for digital pedagogy training, Albanian policies remain vague, leading to inconsistent implementation across institutions.

The lack of interactive elements in virtual environments further exacerbates this issue. For example, many Albanian universities rely on basic platforms like Zoom or Google Meet, which lack advanced features for collaborative work, such as virtual whiteboards or real-time analytics. The integration of advanced digital tools, such as Microsoft Teams and Miro, has significantly enhanced the quality of virtual learning environments. These technologies support real-time collaboration, interactive content delivery, and seamless communication, making online classrooms more engaging and effective for both students and educators. By fostering active participation and facilitating teamwork, such tools contribute to improved learning outcomes and a more dynamic educational experience (Khrisat & Fakhouri, 2024)

Assessing collaborative efforts in virtual settings is another major challenge. Traditional assessment methods-such as individual tests and assignments-fail to capture the nuances of teamwork, innovation, and problem-solving. For instance, students working on virtual group projects often face unequal participation dynamics, which are difficult to evaluate using standard grading rubrics. Universities in the Western Balkans, such as Epoka University in Albania, are beginning to pilot

peer assessment tools and AI-driven analytics to address these challenges; however, widespread adoption is still lacking. To close this gap, systematic policy updates and targeted training programs are urgently needed.

Cultural and Social Barriers

In multicultural virtual classrooms, the interplay of diverse communication styles, time zones, and work ethics often leads to misunderstandings and conflicts. For example, students from collectivist cultures, such as those found in parts of the West Balkans, may prioritise group harmony and consensus. In contrast, students from individualist cultures, such as some Western European countries, might focus on personal achievement and assertiveness during group tasks. These differing approaches can result in misaligned expectations and friction within teams. Recent longitudinal research on cross-cultural virtual learning teams (VLTS) highlights the dynamic interplay between swift trust, team trust, and shared mental models (SMM), showing that swift trust fosters team trust during the initial structuring phase, while team trust consistently strengthens SMM across all stages, ultimately enhancing team performance most notably during the work phase (Yu et al., 2022).

Additionally, time zone disparities, particularly in cross-border collaborations within the West Balkans, complicate scheduling, and real-time interaction. For example, students from Albania collaborating with peers in Serbia or Montenegro often struggle to find mutually convenient times for virtual meetings due to different academic schedules and local work habits (Sitnikovski & Sekulovska, 2020).

Virtual environments compound these challenges by lacking the social cues present in face-to-face interactions, such as body language, tone, and immediate feedback. This absence makes it harder to build trust and support among team members, as the nuances of empathy and understanding are diluted. A survey conducted by the European University of Tirana (2023) revealed that over 60% of students found it challenging to gauge their peers' emotional responses during virtual collaboration, leading to feelings of isolation and miscommunication.7

To address these issues, initiatives in countries like North Macedonia include intercultural competence workshops, often organised as part of larger digital education programs. Such workshops aim to equip students with the skills needed to navigate cultural differences and foster

inclusiveness in virtual settings. By adopting similar strategies, Albanian universities can better prepare their students for successful collaboration in multicultural and virtual environments.8

Institutional Barriers

Institutional inertia-the resistance to change ingrained in organisational structures-remains a significant barrier across the Western Balkans, including Albania and Kosovo. Many universities lack clear policies and strategic frameworks to integrate virtual collaboration into their academic and administrative activities. For instance, while Kosovo has made strides in integrating digital technologies into secondary education, its higher education institutions lag in adopting comprehensive strategies for virtual collaboration. This gap is compounded by a lack of alignment between national education policies and institutional practices (Mutheu, 2024).

Leadership support is critical but often insufficient. University administrators in Albania and Kosovo tend to prioritise traditional teaching methods over virtual innovation due to perceived risks and resistance from faculty. Without dedicated task forces or committees to advocate for virtual collaboration, both students and faculty are left to navigate these challenges with minimal guidance or resources.

Funding is another pivotal issue, particularly in the context of constrained budgets typical of public universities in the region. Investments in technology, faculty training, and infrastructure often take a back seat to more immediate operational needs. For example, while Serbia has implemented national grants to support digital transformation in universities, similar initiatives are largely absent in Albania and Kosovo. This disparity delays progress and leaves institutions dependent on external funding sources, such as EU-sponsored programs, to pilot digital initiatives. These challenges underscore the need for coordinated efforts to secure sustainable funding and leadership commitment across the region.

Strategic Solutions for Enhancing Virtual Collaboration

Key Technological Interventions

- *Invest in Robust IT Infrastructure.* Universities must prioritise upgrading their technological infrastructure to ensure reliable access to high-speed internet, cloud-based platforms, and modern

collaboration tools. For instance, universities in Kosovo have reported significant connectivity issues, particularly in rural areas, where internet speeds often fall below 10 Mbps (Rajasekaran et al., 2025). By partnering with telecommunications providers, these institutions can secure discounts for high-speed connections, as demonstrated by Serbia's collaboration with Telekom Serbia to upgrade campus networks (European Investment Bank, 2021). Similar partnerships in Albania, like the recent agreement with Vodafone Albania, have begun addressing this gap, but progress remains uneven.

- *Adopt Scalable Digital Platforms.* Open-source platforms like Moodle or cloud-based solutions such as Microsoft Teams provide cost-effective, scalable options for virtual collaboration. These tools are particularly effective in regions with constrained budgets, as they enable seamless integration of course materials, real-time interaction, and project management. For example, the University of Pristina in Kosovo has successfully adopted Moodle, leveraging its flexibility to support multilingual course delivery. Meanwhile, Albania's European University of Tirana (EUT) has integrated Microsoft Teams, offering students an intuitive interface and robust tools for teamwork.
- *Provide Technical Support.* Establishing IT support teams ensures that faculty and students receive prompt assistance. For instance, Epoka University in Albania created a centralised helpdesk to troubleshoot issues and provide training, reducing downtime for virtual collaboration. In Kosovo, the 'Digital Skills for Education' initiative has trained over 200 technical staff members to support e-learning platforms, showcasing how regional collaboration can enhance technical support capacities. Universities can further complement these efforts by developing user-friendly guides and video tutorials to help users navigate digital platforms independently (EPOKA University, 2022).

While upgrading infrastructure and adopting platforms like Moodle or Microsoft Teams is a practical step, these interventions often overlook the issue of long-term sustainability and user motivation. Universities may implement tools, but without a culture that encourages digital adoption, even the most advanced systems risk being underutilised.

Summary of Key Strategies

- Partner with telecom providers to improve campus internet access.
- Use scalable platforms like Moodle and Microsoft Teams.
- Set up help desks and technical support teams.
- Provide tutorials and guides for digital tools.
- Apply for national or EU funding to support upgrades.

Faculty Capacity Building for Virtual Collaboration

- *Invest in Comprehensive Faculty Development Programs.* To support effective virtual collaboration, universities should implement structured training initiatives that combine technical proficiency with pedagogical innovation. These programs may include workshops, certification tracks, and peer-led sessions focused on tools like Moodle, Microsoft Teams, and emerging technologies such as AI. In Kosovo, the 'Teach for Digital Education' initiative offers monthly sessions that blend digital literacy with instructional design. Similarly, Epoka University in Albania has launched certification modules covering AI-based engagement and collaborative teaching strategies, equipping faculty to integrate virtual tools meaningfully into course delivery.
- *Redesign Curriculum to Encourage Virtual Collaboration.* Curricula must embed collaborative assignments that mirror real-world scenarios and encourage cross-disciplinary teamwork. At the University of Pristina, for instance, engineering and business students co-develop virtual case studies on sustainable energy solutions. The European University of Tirana (EUT) similarly requires group projects in its 'Digital Transformation' course, where students partner with international peers to address global technological challenges.
- *Incorporate Engaging and Interactive Tools.* Integrating gamification, virtual labs, and AI-driven personalisation enhances the learning experience in digital settings. Platforms such as Kahoot, Jamboard, and Miro foster active participation and collaborative brainstorming. At the University of Mitrovica, students use VR-based simulations to explore engineering prototypes, benefiting from immersive experiences that improve comprehension and reduce reliance on physical lab infrastructure. Studies confirm that

such technologies not only boost cognitive engagement but also reduce operational costs (Soliman et al., 2021).

Although faculty development programs are increasing in number, their impact remains uneven. Many initiatives focus on technical tools yet fail to address the deeper pedagogical shift required for virtual collaboration. Long-term success depends on cultivating intrinsic faculty motivation, rather than relying solely on training, attendance, or certification. These interventions are not just capacity-building efforts-they are foundational for enabling sustainable and inclusive virtual collaboration practices across higher education institutions in the Western Balkans.

Summary of Key Strategies

- Offer regular training and certification programs for faculty.
- Embed virtual collaboration projects into course curricula.
- Use tools like Kahoot, Miro, and VR labs to enhance interactivity.
- Encourage interdisciplinary and international teaching practices.

Student Engagement and Peer Mentoring Strategies

- *Foster Intercultural Competence through Exchange and Dialogue.* To prepare students for global virtual collaboration, universities should promote intercultural understanding via workshops, simulations, and exchange programs. The University of Pristina organises annual 'Cultural Bridges in Education' workshops, while the European University of Tirana (EUT) hosts 'Virtual Diversity Days' to build cross-cultural communication skills. In a proposed initiative between Kosovo and Serbia, joint virtual projects addressing regional challenges foster both intercultural awareness and geopolitical cooperation.
- *Promote Structured Peer-to-Peer Mentoring.* Peer mentorship enhances digital fluency, fosters collaboration, and strengthens student communities. At Epoka University, the 'Digital Mentorship Network' pairs advanced students with newcomers for platform guidance. Similarly, the University of Mitrovica formalised its 'Peer Mentorship for Digital Competence' program by awarding academic credit, while EUT offers co-designed workshops where mentors and mentees solve real-world problems. These initiatives

not only build capacity but also cultivate leadership and teamwork in virtual environments.

- *Empower Students as E-Tutors and Project Leaders.* EUT's flagship model involves training outstanding students as e-tutors abroad (e.g., University of Dresden), who then guide peers in using tools like Microsoft Teams. These students coordinate virtual sessions and foster productive group work. By involving students in the design and facilitation of virtual collaboration, EUT has created a scalable, student-led support system that adapts to evolving needs and strengthens institutional resilience.
- *Recognise Innovation and Collaborative Excellence.* Acknowledging student and faculty contributions boosts motivation and reinforces a culture of excellence. The University of Mitrovica's 'Excellence in Virtual Innovation' and EUT's 'Digital Leaders Program' highlight success in integrating digital tools and teamwork. Furthermore, a proposed 'Regional Collaboration Excellence Award' between Western Balkan universities could promote transnational efforts targeting shared goals like digital literacy and sustainable development.
- *Empowering Students through Virtual Collaboration.* Student involvement is a cornerstone of the virtual collaboration initiatives implemented at the European University of Tirana (EUT). At the outset of this project, three exceptional students were selected to receive specialised training in Germany at the University of Dresden. This training equipped them with the skills to serve as e-tutors, enabling them to guide the implementation of virtual collaboration tools and frameworks upon their return to EUT. These students now play a pivotal role in the project, training other students to become e-tutors and facilitating the seamless integration of virtual collaboration in classrooms. The e-tutors have been instrumental in organising and managing working groups within each class. They oversee virtual meetings conducted via Microsoft Teams, ensuring that all students are engaged and that group discussions remain productive. By actively participating in the organisation of virtual sessions, these students have become leaders in their academic community, fostering a culture of collaboration and peer mentorship. This initiative not only provides practical training opportunities for students but also empowers

them to co-design and refine virtual collaboration methodologies based on their direct experiences. The ongoing contributions of the e-tutors and their ability to mentor their peers ensure that the project remains dynamic and responsive to the needs of the student body. By enabling students to take leadership roles, EUT and partners have successfully created a model for sustainable and student-centric virtual collaboration.

Student engagement strategies are promising, yet scalability remains a challenge. Relying on highly motivated individuals (like e-tutors) may not be sufficient across diverse student populations. Universities should consider systemic mechanisms that embed peer collaboration into the curriculum, ensuring broader participation.

Summary of Key Strategies

- Organise intercultural workshops and virtual exchange programs.
- Promote peer mentoring through structured student networks.
- Recognise outstanding student-led virtual projects and teams.
- Involve students as e-tutors and co-designers of virtual collaboration.
- Encourage regional collaboration through shared virtual initiatives.

Institutional Policy Recommendations

Develop Comprehensive Policies

Universities must establish clear and detailed guidelines for virtual collaboration. These policies should clearly define roles, responsibilities, and expectations for all stakeholders, ensuring alignment with institutional goals. For instance, the Kosovo Education Strategic Plan 2022–2026 explicitly outlines objectives for integrating digital tools into higher education, aiming to enhance collaboration and efficiency. In Albania, the 'Digital Transformation in Higher Education' policy emphasises the incorporation of virtual collaboration frameworks in university accreditation standards, ensuring accountability and systematic implementation. These policies act as a blueprint for universities to align their strategies with national educational goals while fostering innovation and inclusivity in academic settings. For example, institutions in Kosovo, such as the University of Pristina, have introduced

standardised protocols for integrating collaborative tools like Moodle into all course curricula. Similarly, Albania's National Agency for Quality Assurance in Higher Education has suggested including virtual collaboration metrics in accreditation frameworks, ensuring consistency across institutions (Babameto & Pano, 2024).

Greater Integration of Policies

The Kosovo Education Strategic Plan 2022–2026 and Albania's 'Digital Transformation in Higher Education' highlight significant strides toward integrating virtual collaboration into higher education. The Kosovo plan emphasises credit recognition for virtual projects, aiming to formalise these activities within academic programs and encourage widespread adoption among students and faculty. Additionally, it mandates digital literacy programs at the university level, ensuring that both educators and students possess the skills necessary for effective participation in virtual environments. Albania's policy, meanwhile, focuses on embedding virtual collaboration frameworks into university accreditation standards, with clear objectives to ensure accountability and systematic implementation.

Furthermore, the EU is developing a standardised approach to micro-credentials in higher education. This approach seeks to provide flexible and modular learning opportunities, enabling individuals to acquire specific skills and competencies relevant to the evolving digital landscape (European Commission, 2020b). These concerted efforts underscore the EU's dedication to fostering a digitally competent society and enhancing the quality and accessibility of education through the integration of virtual collaboration tools and metrics (European Commission, 2020a).

To enhance regional effectiveness, consistent policy frameworks across the Western Balkans could be adopted, promoting resource sharing, regional benchmarks, and collaborative projects. By learning from each other's successes and challenges, these countries can collectively accelerate their transition to digitally enriched higher education systems.

- *Allocate Resources Strategically.* Funding should be directed towards key areas such as infrastructure, training, and research on virtual collaboration. Grants and incentives can encourage faculty to experiment with new methods and tools. For example, the

Serbian government's 'Digital Learning Advancement Grant' provides targeted funding for universities to invest in virtual labs and collaborative platforms. Meanwhile, in Albania, EUT has reallocated a portion of its annual budget specifically for faculty training in advanced digital tools, resulting in a significant increase in virtual project completion rates.

- *Engage Leadership.* Strong leadership support is essential for driving change. University leaders should actively champion virtual collaboration initiatives, communicate their value, and align them with broader institutional strategies.
- *Strengthening Inter-Institutional Collaboration.* Universities can significantly enhance virtual collaboration by forming partnerships with other institutions, both regionally and globally. For example, a joint initiative between the University of Pristina and the University of Tirana involves sharing resources such as virtual lab access, training programs, and research platforms. These partnerships not only reduce costs but also promote a collaborative culture, as seen in the 'Balkans Virtual Alliance,' a regional network aimed at fostering digital education innovations.
- *Implement Robust Monitoring and Evaluation Mechanisms.* Establishing systems to monitor and evaluate the effectiveness of virtual collaboration initiatives is crucial for continuous improvement. Universities should track key performance indicators (KPIS) such as student engagement rates, project completion statistics, and faculty participation in training programs. For example, the University of Pristina employs analytics tools within its LMS to measure virtual project outcomes and identify areas for improvement. In Albania, EUT has implemented periodic reviews of its 'Virtual Synergies Program,' using feedback from faculty and students to refine methodologies and enhance platform usability. These evaluation systems ensure that virtual collaboration initiatives remain aligned with institutional goals and respond effectively to emerging challenges.

While policy frameworks provide structure, effective implementation often lags behind. There is a risk that institutional policies remain aspirational if not accompanied by enforcement mechanisms, incentives, and evaluation. Further research is needed to explore how universities translate digital strategies into everyday academic practices.

Summary of Key Strategies

- Develop institutional policies that align with national digital strategies.
- Integrate virtual collaboration into accreditation and curriculum standards.
- Allocate funding for infrastructure, training, and research initiatives.
- Promote leadership involvement and inter-university partnerships.
- Monitor virtual collaboration through defined performance indicators (KPIS).

Future Directions

Leverage Emerging Technologies

Artificial intelligence, virtual reality, and blockchain can revolutionise virtual collaboration by addressing key challenges such as engagement, personalisation, and security. For example, AI-powered systems can analyse student behaviour during collaborative sessions and offer real-time feedback to improve performance. Virtual reality can create immersive environments where students across different locations can interact as if they were in the same physical space, enhancing the sense of community and collaboration. Blockchain, on the other hand, ensures secure credentialing and verification of student work in virtual spaces, reducing issues related to plagiarism or data breaches.

Foster Regional and Global Partnerships

Collaborations with other universities, industry partners, and international organisations can bring fresh perspectives, resources, and opportunities for innovation. For instance, joint programs between the Western Balkan universities may be the power of regional partnerships in developing e-tutorials and cross-border projects. Likewise, international collaborations with EU higher education institutions can enable effective knowledge transfer and access to cutting-edge digital tools. These alliances support the exchange of resources and offer students valuable experiences with diverse cultural and professional environments, equipping them with the skills needed to thrive in a global job market.

Adopt a Student-Centric Approach

Engaging students in the design and evaluation of virtual collaboration activities is essential to ensuring their relevance and effectiveness. Establishing feedback loops allows for the continuous improvement of these initiatives, ultimately enhancing learning outcomes. For instance, systematically gathering student input helps tailor virtual tools and methods to better meet their needs. Platforms such as Moodle and Microsoft Teams support this process by enabling peer assessment, which encourages students to reflect on and evaluate each other's contributions in a collaborative setting. Moreover, students now serve as active contributors in co-developing virtual collaboration frameworks; they may facilitate peer training, organise group work, and manage online meetings using tools like Microsoft Teams. This student-centred approach not only promotes leadership and ownership but also ensures that virtual collaboration strategies evolve through ongoing, experience-driven feedback.

Enhance Staff Training and Development

Higher Education Institutions play a pivotal role in the success of virtual collaboration initiatives. To maximise impact, universities should prioritise continuous professional development specifically geared toward virtual and blended learning environments. For instance, the Universities may introduce structured training programs that support faculty in incorporating emerging technologies like virtual reality (VR) and artificial intelligence (AI) into their course design, fostering more interactive and immersive learning experiences. Additionally, faculty exchange initiatives with EU institutions offer valuable opportunities for academic staff to learn from best practices abroad and gain proficiency in advanced tools and innovative pedagogical methods.

HEIS should establish comprehensive, technology-focused professional development programs and promote international academic exchanges to build faculty capacity for designing and delivering high-quality virtual learning experiences.

Developing Sustainable Funding Models

Ensuring the long-term success of virtual collaboration initiatives requires sustainable funding. Universities can explore partnerships with private companies, apply for international grants, or reallocate existing resources. For example, Kosovo's Ministry of Education recently

launched a 'Digital Excellence Fund' to support universities in adopting innovative technologies. Similarly, Erasmus+ grants have been instrumental in funding collaborative projects between Western Balkan institutions, ensuring that these initiatives have the financial backing necessary to thrive.

Conclusion

The chapter underscores the transformative potential of virtual collaboration in reshaping higher education across the Western Balkans and beyond. By addressing technological, pedagogical, cultural, and institutional barriers, universities can unlock new opportunities for innovation, inclusivity, and academic excellence.

Through initiatives such as enhanced IT infrastructure, tailored faculty training, and the integration of emerging technologies like AI and VR, institutions can create dynamic and engaging learning environments. Regional collaborations across the Western Balkans and the European Union highlight the transformative potential of inter-institutional partnerships in advancing digital education. By sharing resources, expertise, and pedagogical best practices, universities in the region strengthen their capacity to deliver innovative and inclusive virtual learning experiences. These collaborations foster a culture of mutual support and continuous improvement, helping institutions overcome common challenges in digital transformation.

Furthermore, the sustainability and scalability of such initiatives are reinforced through the adoption of strategic funding models. Mechanisms such as national digital innovation funds and EU-supported programs like Erasmus+ provide essential financial backing for training, infrastructure, and cross-border projects. These funding structures ensure that collaborative efforts are not only launched effectively but also maintained and expanded over time, ultimately supporting long-term educational reform in the region.

A key takeaway from this exploration is the importance of aligning institutional strategies with both local and global educational goals. Programs that highlight the role of student-centric approaches in fostering digital literacy and collaboration skills essential for a globalised workforce.

As universities in the region continue to refine their policies and practices, the integration of robust monitoring and evaluation mechanisms will be critical for sustaining progress. Tracking key performance

indicators and leveraging feedback will ensure that virtual collaboration initiatives remain adaptable and effective.

In conclusion, the path forward demands a collaborative effort amid universities, policymakers, and industry stakeholders. By embracing a forward-thinking approach and prioritising innovation, higher education institutions in the Western Balkans can set a benchmark for virtual collaboration, ultimately preparing their students for the challenges and opportunities of the digital age. However, while universities can address these challenges through faculty training, infrastructure investments, and strategic collaborations, long-term sustainability requires institutional policies.

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Chapter Thirteen

Technological Infrastructure and Support in VCL Implementation

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https://doi.org/10.53615/978-83-65020-54-3/207-225

Introduction

The successful implementation of the Virtual Collaborative Learning (VCL) framework hinges not only on pedagogical strategies and stakeholder collaboration but also on the strength and reliability of the underlying technological infrastructure. A well-developed infrastructure enables seamless communication, effective project management, and uninterrupted access to learning resources. As VCL relies heavily on synchronous and asynchronous digital interactions, the availability of user-friendly, robust, and secure platforms is crucial. Institutions must therefore prioritise investment in high-quality Learning Management Systems (LMS), collaborative tools, cloud-based environments, and cybersecurity measures. The integration of these technologies facilitates real-time communication, collaborative document editing, task tracking, and peer review-core activities that define the VCL experience.

Equally important is the support system that surrounds the technological infrastructure. Faculty, students, and external stakeholders all require varying levels of technical support and training to engage effectively with VCL tools. Institutions should establish dedicated IT support teams, provide onboarding sessions, and offer continuous training to ensure that all participants are confident in using the required

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technologies. This is particularly significant for adult learners and international participants, who may encounter unfamiliar platforms or struggle with access due to local infrastructure limitations. Adaptive support services, such as multilingual tutorials, help desks, and mobile-friendly interfaces, can significantly enhance inclusivity and accessibility (Salmon, 2002).

Moreover, the selection and integration of digital tools must align with the pedagogical goals of VCL. Not all platforms offer the same functionality, and choices should be informed by the specific needs of learners and instructors. For instance, platforms like Microsoft Teams, Slack, Zoom, and Miro offer distinct features that support collaboration, brainstorming, and meeting management. The interoperability of these tools with existing institutional systems also plays a critical role in ensuring a smooth user experience. Data security, privacy compliance, and digital equity should remain central concerns in tool selection and deployment (Garrison & Vaughan, 2008).

Scalability is another key consideration when developing technological infrastructure for VCL. As institutions expand their use of collaborative online learning, systems must be able to accommodate growing numbers of users and increasingly complex learning scenarios. Cloud computing solutions provide the flexibility and scalability needed to support large, distributed learning communities without compromising performance. Additionally, built-in analytics and monitoring tools can help administrators assess user engagement, detect technical issues, and evaluate learning outcomes in real-time.

Ultimately, a strong technological infrastructure, supported by responsive and inclusive support services, underpins the entire VCL ecosystem. By investing strategically in both technology and human support systems, institutions can create a resilient digital learning environment that empowers all participants and sustains high-quality collaborative learning across diverse contexts. Using the COWEB ERASMUS+ funded project as a central case study, this chapter provides a practical framework for designing, implementing, and managing the technological and support dimensions of a VCL environment.

Theoretical Foundations: The VCL Framework and Its Technological Underpinnings

The VCL methodology is built upon a robust theoretical foundation that integrates pedagogical principles with technological affordances.

This section outlines the core VCL framework and situates it within the broader academic context of online and international education.

The Four Pillars of VCL

The VCL framework is a complex system comprising four interlocking components that must work in harmony.

Professionalised Pedagogical Support Concepts

VCL projects are not self-running. They are supported by specially trained learning process facilitators, known as e-tutors. These tutors provide orientation, give feedback on team performance, and help mediate the collaborative process, bridging the gap between students and the online environment (Schoop et al., 2021).

Realistic Cases and Working Tasks

Learning is centred on authentic, complex, and often weakly structured case scenarios. This problem-based approach allows for different strategies and results, promoting critical thinking and strengthening project management skills (Rubin, 2017). Tasks are designed to link the case scenario with subject-specific learning objectives and the use of digital tools (Schoop et al., 2021).

Technical Platform

A powerful and flexible collaboration platform is required to support interactive, case-based learning across different locations. The platform must enable communication, coordination, and the collaborative execution of work assignments. According to Laurillard (2012), digital learning environments can be designed to support collaborative, interactive learning. Such environment should provide integrated tools for synchronous and asynchronous interactions, such as video conferencing, shared digital whiteboards, document co-editing, chat functions, and project management dashboards. The system should be user-friendly and accessible across devices and operating systems, ensuring that all participants-regardless of technical proficiency or geographic location-can engage effectively. Additionally, the platform must ensure data security and privacy compliance, offer multilingual support if needed, and allow for customization to align with specific pedagogical approaches. Robust analytics and tracking features should also be integrated to monitor engagement, assess performance, and

support evidence-based improvements in learning design and delivery.

Learning Analytics & Information Visualisation

Data on group interaction and project progress is used to provide feedback to both students and e-tutors. This data-driven approach helps identify issues like social loafing or interaction deficits and can trigger targeted didactic interventions (Schoop et al., 2021).

Situating VCL in the Broader Context

Virtual Collaborative Learning (VCL) is positioned at the intersection of innovative, student-centred international education methods. To contextualise its value, it is useful to situate VCL alongside Collaborative Online International Learning (COIL) and analyse it using the Community of Inquiry (COI) model.

Connecting VCL and COIL

COIL is a pedagogical approach connecting students and educators across countries via online collaborative projects, with a primary emphasis on developing *intercultural competence* and shared learning outcomes. Projects are typically rooted in authentic assignments, co-developed by instructors from partner institutions, supporting both discipline-specific knowledge and cross-cultural understanding (Altmann & Clauss, 2020; Bishop & Verleger, 2013; Schoop et al., 2021).

VCL reflects essential COIL characteristics:

- *International & Interdisciplinary Collaboration:* VCL groups students from various institutions and (often) different countries and disciplines into virtual teams, with a strong focus on intercultural awareness, communication, teamwork, and digital literacy (Altmann et al., 2023).
- *Authentic, Project-Based Learning:* VCL emphasises real-world problems, paralleling COIL's drive to embed coursework in globally meaningful, authentic contexts (Schoop et al., 2021).
- *Shared Digital Workspaces:* Both approaches leverage robust digital platforms (such as Microsoft Teams) for synchronous and asynchronous interactions that are crucial for effective collaboration and project management in distributed teams.

Through alignment with COIL, VCL not only supports knowledge acquisition but also develops students' intercultural competence, digital skills, and collaborative abilities-core elements for thriving in the 21st-century global context.

Integration of Instructional Design for Virtual Collaborative Learning

Embracing Constructivist Learning Theories

VCL is deeply rooted in constructivist theories, which posit that learners construct knowledge through experiences and reflections. In a virtual collaborative setting, this translates to learners engaging in activities that require them to explore, discuss, and solve problems collectively. Such an approach not only fosters deeper understanding but also promotes critical thinking and interpersonal skills.

Implementing Collaborative Learning Techniques

Effective VCL environments leverage various collaborative learning techniques:

- *Problem-Based Learning (PBL):* Students work in groups to solve real-world problems, enhancing their analytical and cooperative skills. It is a student-centred approach where learners are presented with a complex, open-ended, real-world problem and work collaboratively to find solutions (Savery, 2015). This process enhances critical thinking, problem-solving abilities, and knowledge retention (Wijnia et al., 2024).
- *Project-Based Learning:* Learners undertake projects that span weeks or months, requiring sustained collaboration and application of knowledge. Project-Based Learning is typically focused on the creation of a product or artefact over an extended period. It is an inquiry-based method that requires students to apply knowledge and skills in developing a tangible output, fostering sustained collaboration and project management skills (Chen et al., 2019).
- *Peer Teaching (or Peer Learning)* is a method where students instruct one another. The act of teaching reinforces the student-teacher's own understanding of the material, while the student-learner benefits from receiving instruction from a peer who is

closer to their own level of understanding and can often explain concepts in more relatable terms (Gamlath & Gamlath, 2024).

These techniques encourage active participation and accountability among learners.

Designing Engaging and Interactive Content

Instructional design in VCL should prioritise engagement:

- *Multimedia Integration:* Incorporate videos, podcasts, and interactive simulations to cater to diverse learning styles.
- *Gamification:* Use game elements like points, badges, and leaderboards to motivate learners.
- *Scenario-Based Learning:* Present learners with scenarios that mimic real-life challenges, prompting them to apply their knowledge practically.

Such strategies make learning more relatable and stimulating.

The Human Support Infrastructure

Technology alone is insufficient. The COWEB project's success relied on a comprehensive human support system designed to guide participants at every stage.

Onboarding and Training

A synchronous online kick-off conference was a critical first step. This session, guided by materials like the 'International VCL, KickOff' presentation, introduced students to the VCL framework, defined the learning objectives, outlined the different project roles (Project Manager, Reporter, etc.), and explained the assessment criteria. This initial onboarding ensures all participants, regardless of their background, start with a common understanding of expectations and tools.

The Role of the E-Tutor

Throughout the project, students were supported by experienced e-tutors who acted as virtual learning facilitators. The e-tutors' role was not to provide answers but to offer pedagogical support, monitor group dynamics, provide feedback on collaborative processes, and serve as the first point of contact for organisational or technical questions. This

close supervision is a key element of the VCL model, ensuring that teams remain on track and that interpersonal issues are addressed constructively.

Addressing the Digital Divide and Accessibility

In any international project, varying levels of access to technology present a significant challenge. The project addressed this through a dual approach. First, it adopted a 'bring your own device' (BYOD) policy to allow for maximum flexibility. Second, and more importantly, the infrastructure was supported by the project in financing the licences of MS TEAMS and PCS at partner institutions. This is a critical lesson in ensuring digital equity: successful virtual collaboration may require investment in physical infrastructure to guarantee that all participants have a reliable point of access.

Facilitating Effective Communication and Feedback

Open and consistent communication is vital:

- *Regular Check-ins:* Schedule periodic virtual meetings to discuss progress and address concerns.
- *Feedback Mechanisms:* Provide timely and constructive feedback through various channels, ensuring learners can reflect and improve.
- *Discussion Forums:* Encourage asynchronous discussions where learners can share insights and resources.

These practices build a sense of community and support continuous learning (Ojie Ahamiojie, 2024).

Assessment and Evaluation in Virtual Collaborative Learning (VCL) Environments

Assessment in Virtual Collaborative Learning (VCL) environments involves evaluating both the learning process and the final product, recognising that interactions, decision-making, and problem-solving throughout collaboration are as important as the completed work. Effective assessment integrates formative methods, such as ongoing feedback through reflective journals and participation, with summative evaluations like final projects or presentations, ensuring continuous improvement and comprehensive judgment of learning outcomes.

Self and peer assessments play a vital role by encouraging students to reflect on their contributions and those of their teammates, fostering accountability and enhancing engagement through multiple perspectives on performance. The use of clear, detailed rubrics in VCL supports transparency and consistency by defining criteria across collaboration quality, content mastery, and critical thinking, which helps students understand expectations and focus their efforts accordingly.

Technology significantly enhances assessment practices in VCL by providing platforms like Learning Management Systems for streamlined submission and feedback, collaborative tools that track individual contributions, and analytics tools that identify participation trends and areas needing attention. Despite these advantages, challenges such as ensuring fair contribution among group members, addressing cultural communication differences, and managing technical access and support remain critical considerations to uphold the integrity and inclusiveness of assessment processes in virtual settings.

Quality Assurance and Monitoring

System Performance Metrics

The VCL implementation leveraged Microsoft Teams as the principal platform, with additional use of analytics and reporting tools such as Microsoft Copilot Pro and, in some teams, Power BI. These tools allowed for systematic tracking of *system uptime, response times, and user satisfaction.* Teams consistently reported high platform reliability, with no major technical outages documented. The regular submission of assignments and high attendance in meetings indicate that the VCL system maintained adequate accessibility and responsiveness across the 16 participating teams.

Usage Analytics

Teams used both built-in Teams analytics and Copilot-generated summary reports to monitor *user engagement, collaboration patterns, and learning outcomes.* Metrics included:

- Number of chat messages and emails exchanged (ranging from 18 to 512 chat messages per team, dozens of emails, and structured meeting records).
- Attendance in synchronous meetings (typically 6–50 meetings per team, with formal protocols maintained).

- File sharing activity (multiple document submissions, including task uploads and presentations).

These analytics revealed generally *high engagement rates, prompt task submissions, and structured collaboration across most teams.* Some teams, such as Group 6 and Group 8, demonstrated especially robust activity and creative use of digital tools, while others faced early engagement or coordination challenges but often recovered through adaptive strategies.

Continuous Improvement

Feedback cycles were incorporated both informally and through structured reporting (final presentations, team feedback, and individual reflections). Data collected from weekly activity tables, e-tutor feedback, and analytic dashboards were used to:

- Identify and remediate group restructuring challenges (early confusion resolved via more regular meetings and clear role assignments).
- Address and resolve internal conflicts through e-tutor intervention and transparent communication practices.
- Encourage integration of more effective digital tools based on comparative analysis (e.g., recommendations to adopt Planner or Trello for visual task tracking)

Regular analysis and comparison among teams helped inform *adjustments to coordination practices and tool usage,* fostering a culture of incremental optimisation.

Scalability and Sustainability

Growth Management

The VCL model is designed for *asynchronous and synchronous collaboration,* supporting both enlarged team sizes and increased task complexity. As evidenced by the 16 VCL teams, multi-university collaboration spanning hundreds of students, the infrastructure-centred on Microsoft Teams and universally accessible tools-successfully absorbed high message, file, and meeting loads without service degradation. Teams consistently reported successful execution of all major assignments and presentations, even as participant numbers grew.

Planning for functional expansion is executed through:

- Routine assessment of digital tool adoption and team workflow patterns.
- Recommendations for integrating visual workflow and analytic tools as needs evolve.
- Flexible assignment structures and role definitions that scale with group size and complexity.

Long-term Sustainability

Technical sustainability is anchored by the robust Microsoft 365 cloud ecosystem, ensuring document permanence, access control, and cross-border collaboration13. The documentation of workflows, task protocols, and analytic outputs in shared repositories (OneDrive, SharePoint, Power BI) provides a durable knowledge base. The integration of Copilot Pro for automated analytics further underpins both ongoing monitoring and retrospective review.

Pedagogical sustainability is reinforced by:

- Clearly defined team roles (Project Manager, Reporter, Public Relations Manager, Researcher), which support both instructional resilience and adaptive collaboration.
- Formative assessment practices that encourage iterative reflection and documentation.
- Continuous e-tutor support, facilitating conflict resolution and peer learning, even as new cohorts are added.

The combination of technical and pedagogical measures ensures that the VCL approach remains *scalable for future cohorts and sustainable for long-term institutional adoption,* even as digital learning demands evolve.

Best Practices and Recommendations

Implementation Best Practices

Phased Deployment

Implementing VCL systems gradually allows teams and stakeholders to adapt progressively. Initiating the Virtual Collaborative Learning semester with clear role definitions (Project Manager, Reporter, PR Manager, Researcher), structured assignment cycles (A1–C2), and scaffolded online interactions (weekly plans, synchronous meetings, asynchronous chats) proved effective. This approach enabled problem

identification and resolution (e.g., managing group restructuring and participation issues) in early phases before full-scale rollout across all VCL teams.

Pilot Testing

Conducting small-scale trials with select groups before wider adoption is crucial to uncover technical and pedagogical challenges. As seen in the VCL semester, pilot phases helped identify issues such as login difficulties, tool unfamiliarity, and collaboration bottlenecks. Feedback from e-tutors and iterative reporting informed refinements in task allocation, meeting protocols, and tool usage guidelines prior to broad implementation.

Stakeholder Engagement

Involving all stakeholders-including students, e-tutors, and faculty-in planning and execution ensured shared ownership and adaptive support mechanisms. Regular communication channels, transparent documentation of roles and tasks, and faculty oversight fostered accountability and enabled timely conflict resolution. The presence of e-tutors as active facilitators was key to maintaining engagement and guiding teams through challenges.

Technology Selection Criteria

There are many e-learning platforms with great learning and collaboration capabilities, and we will focus on them, along with other digital tools applicable to educational contexts. To help their analysis, we can identify several categories of such tools, highlighting their main characteristics based on the authors' experience and a review of relevant literature (Bogoslov & Georgescu, 2020).

Evaluation Framework

Selecting appropriate VCL platforms and tools requires assessing criteria such as usability, integration capabilities, scalability, and support for synchronous/asynchronous modes. The adoption of Microsoft Teams as the central platform met core requirements by supporting diverse communication modes, file sharing, meeting scheduling, and compatibility with analytic tools like Microsoft Copilot Pro and Power BI.

TABLE 13.1 Categories of Distance Learning Solutions with Online Functionalities

Category	General characteristics
Digital Learning Management Systems (LMS)	Ensures the administration of learning, training, personal development, or other types of educational courses. Among the general facilities offered by such systems, we can mention ensuring the communication between students and instructors, monitoring, reporting and delivery of educational courses, class, and user management (Coates et al., 2005).
Massive Open Online Course (MOOC)	Provides unlimited participation (massive) and open access (without specific restrictions on participation) to educational resources through the Web. Offers interactive elements in order to encourage interactions among learners and between learners and instructors, although the second one does not represent a defining requirement (Kaplan & Haenlein, 2016)
Collaboration platforms that support live-video communication	Provides real-time video conferencing via the Web. Facilitates task management, scheduling, and attendance tracking. Provides instant messaging features.
Systems built for use on basic mobile phones	They are intended for conducting educational courses predominantly through basic mobile phones. The provided interface implies a high degree of adaptability depending on the mobile device used.
Self-directed learning content	Provide users with educational content tailored to different levels of learning, so that they can learn individually. Support personalized learning.
Mobile reading applications	Provide educational content for reading. The educational resources are often available in several languages.

NOTES Adapted from Bogoslov & Georgescu (2020).

Cost-Benefit Analysis

Evaluating the total cost of ownership-including licensing, training, maintenance, and user support-is essential. Leveraging widely available platforms within university ecosystems (Microsoft 365 suite) minimised additional expenses. Using existing infrastructure ensured cost-efficiency while enabling automated reporting and collaborative features without heavy investments in third-party software.

Futureproofing

Choosing technologies capable of adapting to evolving educational needs enhances long-term viability. The selected tools demonstrated compatibility with emerging features such as AI-powered analytics

(Copilot Pro) and integrations for interactive presentations or data visualisation (Canva, Power BI). Their cloud-based nature supports scalability and quick updates, aligning with the need to accommodate growing cohorts and increasing collaboration complexity.

The most Appropriate for the VCL methodology, after a careful analysis, the MS TEAMS platform was decided to be the VCL Platform. It provides key values for the VCL implementations:

- Provides real-time video conferencing via the Web;
- Facilitates task management, scheduling, and attendance tracking;
- Provides instant messaging features;
- Modern, full-featured, wide integration with hundreds of other third-party applications;
- Most of the universities had previous experience with MS TEAMS.

Future Directions and Emerging Technologies

Artificial Intelligence and Machine Learning

AI-Enhanced Learning

The integration of AI holds promise for personalising learning experiences and providing intelligent tutoring within VCL contexts. In the recent semester, Microsoft Copilot Pro facilitated automated activity reporting and performance summaries, demonstrating how AI can support both learners and instructors by reducing administrative burdens and delivering tailored insights.

Predictive Analytics

Utilising data analytics enables early identification of students at risk and prediction of learning outcomes. The systematic collection of engagement metrics (messages, meetings, task completions) combined with AI-driven analysis presents opportunities for proactive interventions, enhancing student success in international virtual collaborations.

Virtual and Augmented Reality

Immersive Learning Environments

VR and AR technologies offer potential to deepen collaborative learning by creating immersive, interactive spaces that simulate real-world

contexts. Although not yet implemented in the current VCL semester, their future incorporation could foster more natural and engaging intercultural exchanges.

3D Virtual Spaces

Developing 3D environments for group work can enhance student presence and interaction beyond traditional video and chat tools. Such spaces would facilitate dynamic teamwork, presentations, and joint problem-solving, augmenting the effectiveness of virtual collaboration.

Collaboration and Performance Indicators for the Implementation of VCL

Table 13.2 provides a summary of key collaboration and performance indicators extracted from the detailed MS Teams reports for 13 VCL teams. The table aggregates data points such as chat messages, emails, meetings, task completion, engagement levels, collaboration quality, and key tool usage.

Key Indicator Notes:

- *Chat Messages:* Varies significantly (18 in Group 11 to 512 in Group 6), reflecting differences in communication styles and team size/activity.
- *Emails:* Relatively steady (3 to 30), mostly for external or cross–team communication.
- *Meetings:* Standardised to approximately 42 meetings for most teams, with some variation.
- *Task Completion:* All teams completed major assignments (A1–C2).
- *Engagement and Collaboration:* Generally high, but some teams experienced early low engagement or internal conflicts (Groups 3, 5, 6).
- *Efficiency:* Most teams delivered work on time; late adaptation and recovery were common themes.
- *Technology Use:* Microsoft Teams was universal; Copilot Pro was widely used for activity analytics; Canva and PowerPoint supported visual presentations; a few teams used additional tools like OneNote or Power BI.

TABLE 13.2 Summary of Key Collaboration and Performance Indicators

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	30	8	6	Completed	High (core members)	Strong	On time	MS Teams, Copilot Pro, OneDrive	Some confusion post-restructuring
2	90	23	42	Completed	Increasing engagement	Improved after restructuring	Met deadlines	MS Teams, Copilot Pro, OneDrive	Moderate start, fast recovery
3	82	23	42	Completed	Strong initially, dip late	Initially strong, tension late	Met deadlines	MS Teams, Copilot Pro, OneDrive	Internal conflicts during the final presentation
4	372	23	42	Completed	Steady engagement	Strong	Met deadlines	MS Teams, Copilot Pro, OneDrive	Proactive leadership, consistent structure
5	191+	3+	6+	Completed	Low early, improving	Improved over time	On time	MS Teams, Copilot Pro, OneDrive	Early inactivity, role confusion
6	512	30	42	Completed	High	Moderate to high	Strong	MS Teams, Canva, Copilot Pro	Conflicts occurred, and a strong final output
7	170	30	50+	Completed	High	Strong	Excellent	MS Teams, Copilot Pro, PowerPoint	More structured and creative than some others
8	253	29	42	Completed	High	Strong	Excellent	MS Teams, Canva, Copilot Pro	Highest message volume, creative presentations

Continued on the next page

This table synthesises performance and collaboration metrics capturing diverse team dynamics within the Virtual Collaborative Learning semester. It reflects how digital communication volume, structured meetings, tool adoption, and engagement interplay to support effective virtual teamwork.

Conclusion

The successful implementation of Virtual Collaborative Learning (VCL) is grounded in the symbiotic relationship between robust technological infrastructure and comprehensive pedagogical support. The experience of running an international VCL semester with 16 Microsoft

TABLE 13.2 *Continued from the previous page*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
9	76	30	42	Completed	Moderate	Moderate to high	Good	MS Teams, Canva, Copilot Pro	The workload centred on a few members
10	133	29	42	Completed	Moderate (3 active members)	Strong among the core	Good	MS Teams, Canva, Copilot Pro	The workload centred on a few members
11	18	30	42	Completed	High	Strong	Excellent	MS Teams, Copilot Pro, Whiteboard	Lower chat volume, strong onboarding
12	23	29	42	Completed	Moderate to high	Strong late phase	Good	MS Teams, Copilot Pro	Slow start, good recovery
13	104	29	42	Completed	High	Strong	Excellent	MS Teams, Copilot Pro, Power BI, OneNote	Effective content creation and analytics

NOTES Column headings are a sfollows: (1) team, (2) chat messages, (3) emails, (4) meetings attended, (5) task completion (A1–C2), (6) engagement level, (7) collaboration quality, (8) efficiency/timeliness, (9) key tools used, (10) notes/highlights.

Teams-based teams vividly illustrates that the foundation of effective virtual collaboration rests on several pillars:

- *Reliable Technological Infrastructure:* This backbone supports perfect communication, real-time collaboration, and unfettered access to learning resources. Without stable and scalable technology, the potential of VCL to deliver engaging, interactive, and accessible learning experiences is severely limited. Platforms like Microsoft Teams, combined with integrated tools-analytics dashboards, collaborative editors, and virtual presentation spaces-enabled participants to communicate, co-create, and track progress continuously.
- *Structured Roles and Active Facilitation:* Defining clear team roles (e.g., project manager, reporter, public relations manager, researcher) and ensuring active e-tutor involvement were essential to maintaining engagement, accountability, and clarity. These roles fostered organisation, timely task execution, and effective conflict resolution in a distributed, multicultural environment.
- *Systematic Monitoring and Continuous Improvement:* Performance tracking, both through automated analytics and human-led reflection, enabled prompt identification of challenges, such as

group restructuring and coordination gaps. Employing phased deployment, pilot testing, and regular stakeholder engagement contributed to incremental optimisation of both process and outcomes.

- *Advanced Tools and Ongoing Training:* Investing in advanced learning technologies-including AI-powered analytics and, prospectively, immersive tools like VR-greatly enhances the learning environment. However, success depends just as much on equipping educators and learners with the skills to use these tools effectively, ensuring that technology is a true enabler rather than a barrier.
- *Institutional Commitment to Sustainability:* Creating a future-ready virtual learning ecosystem is not a one-off acquisition but an ongoing process. Institutions should prioritise adaptable digital platforms, comprehensive support and training, and mechanisms for continual feedback and improvement. This approach ensures that VCL can scale, evolve, and remain resilient in the face of changing educational demands.

In summary, technological infrastructure is not simply a support function but the very foundation upon which effective, inclusive, and innovative VCL programs are built. Ensuring robust systems, structured support, and a culture of continual learning is essential for institutions seeking to deliver impactful and sustainable virtual collaborative learning experiences today and into the future.

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Chapter Fourteen

Lessons Learned from the Implementation of Virtual Collaborative Learning Courses

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https://doi.org/10.53615/978-83-65020-54-3/227-243

Introduction

The COVID-19 pandemic of 2020 put a spotlight on the importance of virtual collaborative learning (VCL) theory and practice. Up until that point, technology had advanced to include a number of collaborative tools that made virtual learning accessible to numerous university students. Modern collaboration software such as Skype, Teams, MS OneDrive, Google Docs, quizzes, and other interactive exercises was used by educators when teaching and collaborating in groups and distance learning environments. With the restrictions on movement dictated by the pandemic, distance learning in the form of VCL became an essential tool in continuing the education of students and accomplishing teaching and learning objectives. Thankfully, many pilot courses using Collaborative Online International Learning (COIL) and VCL frameworks had taken place prior to the COVID-19 pandemic, thus allowing receptive educators the tools to smoothly transition and implement distance classes in the spring of 2020.

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

Virtual collaborative learning (VCL) represents a transformative pedagogical approach that leverages technology to facilitate shared learning experiences among individuals irrespective of geographical boundaries. This method encompasses a spectrum of activities, from simple online discussions to complex, project-based collaborations involving participants from diverse backgrounds and locations (Kabanda, 2008). The implementation of virtual collaborative learning can be observed at various levels, including local, regional, and international, each presenting unique opportunities and challenges. Effective integration of technology into educational practices necessitates educators with interdisciplinary training, innovative methodological approaches, and proficiency in utilising information and communication technologies (Bernaola et al., 2020).

According to European Commission (2001), the European education and training system has to encourage the personal growth of European citizens in three aspects:

1. *Skills* – currently needed technical, social, and personal competencies, giving an individual a secure foundation for life and enabling him to work together in groups with specialists from other disciplines, intelligently using existing Information and Communication Technologies (ICT),
2. *Adaptability* – the ability to learn about and adjust to new situations, while staying independent and respecting others, and
3. *Mobility* – the skills required in today's international and multicultural society, especially the ability to work and communicate with others across national boundaries and by this to adapt to the challenges of a global economy.

The purpose of the chapter is to analyse lessons learned from implementing VCL courses in local and regional contexts. The chapter will cover two virtual collaborative learning case studies from modules implemented at International Burch University (IBU) in 2023 and with our partner, the University of Montenegro (UOM) in 2024. The VCL modules were in a local and regional structure and context. Included will be the scope of the courses, the local and regional case studies, key lessons learned, challenges and recommendations. In addition, a comparative analysis of local and regional contexts will be presented along with future directions of virtual collaborative learning.

Definitions of Key Terms in Virtual Collaborative Learning Context

In this section, we will build up to the definition of Virtual Collaborative Learning by looking at important terms that shape this theory.

Virtual Mobility

'The use of information and communication technologies (ICT) to obtain the same benefits as one would have with physical mobility but without the need to travel' (van Schaik et al., 2019). Focus on cooperation between higher education institutions and the recognition of achievements.

Virtual Exchange

The term 'Virtual Mobility' describes cross-border educational exchange that is organised not through time spent physically abroad but through participation in networks and communities, underpinned by flexible technologies and involving students and institutions from various countries (Villar-Onrubia & Rajpal, 2016). Hence, Virtual Mobility provides opportunities for students who, for some reason, are not able to participate in the physical intercultural exchange or travel extensively to benefit from internationalisation (Otto, 2018). VCL's purpose is to facilitate and enable 'Virtual Mobilities,' which promote internationalisation and sustainability. Another simplified definition is the interaction and communication of geographically separated participants with a focus on exchange, competence building and teamwork in small groups.

Importance of Virtual Collaborative Learning

Ruberg et al. (1996) found that using computer-based communication fostered innovation, idea exchange, broader and more inclusive participation, and collective thinking. But as a counterweight to this positive aspect, we found in our VCL modules that professors and e-tutors need to encourage student peers and create a comfortable yet structured environment for social interaction, with interaction rules clearly spelt out so student participants feel empowered to share their views.

Virtual Collaborative Learning in a Local Context

A local VCL module is run in a single institution or across multiple courses. The module is usually a project segment of a course(s). Each

VCL module has a kickoff, orientation, and registration on the technology platform. The course then takes the form of a blended learning teaching environment, incorporating both in-person meetings and technology-mediated class sessions using the technology platform.

The students of the local VCL were from the engineering faculty, specifically the Department of Information Technologies. This could account for their fast adaptation to and ease of use of the technology platform MS Teams. They designed logos for each group and were active on the platform during the local VCL.

In the planning phases of the local VCL, various proposals were made for a cover story or theme to increase student engagement. Eventually, the theme of Green Efficient Networks was chosen due to its applicability for the course topic, Wireless and Mobile Networking. The major work of the module was a research paper or a practical product design.

In addition, during planning, a ten-part structure was agreed upon for the structure of the local VCL module. Part 1 – Group formation (Team rules, meeting schedule, Team roles); Part 2 – Introduction to VCL methodology; Part 3 – Module deliverables and requirements; Part 4 – Project outline; Part 5 – Work in process presentation or demo; Part 6 – Final report submission; Part 7 – Peer feedback; Part 8 – Revised report submission; Part 9 – Final presentation of report; and Part 10 – VCL reflections.

Case Study: IBU Local VCL Implementation – Wireless and Mobile Networking

Course Description

The course explores mobile and wireless networks and how their characteristics impact the development of software and supporting protocols. We aim to understand how networking mobile and wireless devices at the link layer and the network layer work, and how that is different from traditional wired computer networks. By also looking at the relationship of wireless links and networks to the larger (wired) networks they connect to, we explore the challenges of wireless transmission and the challenges of mobility. Topics include wireless coding and modulation, signal propagation, IEEE 802.11 wireless local area networks, vehicular wireless networks, and Internet of Things (IOT). We also discuss cellular networks: 4G LTE-Advanced, 5G and the emerging 6G cellular technologies. The problems we will address include lo-

cating a mobile user, coverage planning, resource allocation, routing to the mobile user, handover, etc. Project work includes research and writing a survey paper on a selected networking topic and/or hands-on implementation (or measurement) on a selected IOT topic using Raspberry Pi. During the course, students will participate in a local VCL (Virtual Collaborative Learning) project, as part of the COWEB (www.cowebproject.eu) project. Students will implement in hardware and software the IOT environmental monitoring project, and conduct research on IOT protocols, techniques, and methods for green, energy-efficient IOT networks. Student teams will collaborate for 6–8 weeks using MS Teams as their main technical platform. It is expected that the VCL framework will provide a richer, hands-on learning experience, enhancing student engagement through interdisciplinary collaboration and real-time problem solving. The integration of digital tools for brainstorming, document collaboration, and peer review should further enhance the VCL environment. The approach is expected to support course objectives but also prepare students for real-world IOT challenges.

Two ECTS or 33% of the grade was allocated towards VCL activities from the overall 6 ECTS course.

The evaluation and assessment were mostly qualitative, with a major project or research paper delivered. Additionally, there were weekly course meetings and assignments to check students' progress. Group and peer evaluation were also important aspects of the final grade.

Implementation Details

As seen from Figure 14.1, local VCL implementation is centred around *didactic, social* and *technical* dimensions and their subcategories as established by Altmann and Clauss (2020), adapted to our local use case, ensuring it aligns with the conceptual model that emphasises learning, teaching, assessment and collaboration. Here is how we mapped the key categories and subcategories for effective VCL environments to the local VCL implementation, bridging theoretical research with practical application:

- *Learning, Education and Competencies:* The VCL module fostered technical (e.g., protocol implementation, hardware programming), social (e.g., teamwork, communication), and didactical (e.g., peer feedback, reflections) competencies. The focus on green networks

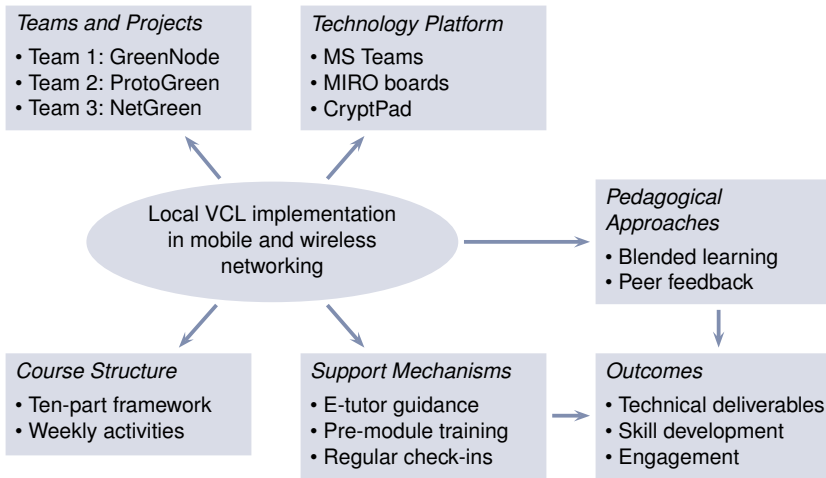

FIGURE 14.1 Local VCL Implementation in Introduction to Mobile and Wireless Networking Course

is aligned with the EU's emphasis on skills, adaptability, and mobility, preparing students for interdisciplinary and global challenges.

- *Collaboration and Teamwork:* The VCL module tasked students with collaborative projects themed around 'Green, Energy-Efficient IOT Networks.' Students were divided into three teams: Team 1 (GreenNode) developed a hardware-based IOT environmental monitoring system using Raspberry Pi; Team 2 (ProtoGreen) surveyed energy-efficient IOT protocols, which informed the final deployments of Team 1 project; Team 3 (NetGreen) explored green IOT network technologies through a survey, informing the communication and networking module of Team 1 as well. The distinct visual identities (e.g., team logos) fostered a sense of belonging, enhancing groupwork and motivation, as noted by van Schaik et al. (2019) in virtual mobility contexts.
- *Teaching and Instruction:* Spanning 6 weeks, the module followed a ten-phase structure: group formation, VCL methodology introduction, deliverable specification, project outline, work-in-progress presentation, final report submission, peer feedback, revised report submission, final presentation, and VCL reflections. The module progressed systematically: Week 1 introduced

project objectives via a webinar, with Team 1 sourcing hardware and Teams 2 and 3 compiling annotated bibliographies. In Week 2, teams finalised project outlines during virtual check-ins, with Team 1 beginning prototype development and Teams 2 and 3 refining research questions. Week 3 included a mid-project review, where Team 1 tested sensors and Teams 2 and 3 deepened their literature reviews. In Week 4, teams integrated findings – Team 1 analysed prototype data, while Teams 2 and 3 drafted survey papers. Week 5 featured final submissions and live presentations, with Team 1 showcasing an energy-efficient prototype and Teams 2 and 3 presenting actionable survey insights. The module concluded in Week 6 with peer reviews and reflective discussions, all supported by MS Teams and supplementary tools. The e-tutor's role was critical in facilitating user-friendly, interactive sessions.

- *Training and Support:* Pre-module training on MS Teams and supplementary tools (MIRO, CryptPad, etc.) ensured usability and accessibility. However, challenges with CryptPad highlight the need for robust, user-friendly tools to enhance engagement, as suggested by Bernaola et al. (2020).
- The *technology platform* over which the course was delivered consisted of MS Teams for communication and file sharing, augmented by tools like MIRO boards for brainstorming and CryptPad for collaborative writing and real-time editing.
- In terms of *pedagogical approaches,* for this blended learning environment, we decided to incorporate peer reviews and progress checks, curious about how authentic assessment will be and whether it will lead to better deliverables as teams engaged in peer review sessions, encouraged to critically analyse and fully trust the VCL concept. *Engagement and Motivation:* The theme of green networks and interactive tools like MIRO boards encouraged active participation, as well as the task breakdown structure.

Key Lessons Learned

The local VCL implementation led to several insights into effective pedagogical practices and technical integration:

- *Benefits of localised content and relevance for student engagement.* The theme of 'Green, Energy-Efficient Networks' resonated with students, given its relevance to sustainability and IOT applica-

tions. The structured weekly tasks and clear project goals maintained focus and motivation, particularly for engineering students familiar with technical platforms like MS Teams. Team 1's success in reducing power consumption by 20% compared to traditional monitoring systems was attributed to peer feedback and iterative improvements facilitated by the VCL structure.

- *Collaboration on the technical platform was a positive result.* The ability for teams to communicate and observe each other's presentations and demos led to additional feedback opportunities that improved final project outcomes. Team 1's hardware prototype benefited from insights shared by Teams 2 and 3 during online discussions, particularly on protocol selection (e.g., MQTT's low-power benefits). In the online course discussions, presentations and feedback sessions, some teams took cues from others' mistakes and suggestions to improve their deliverables. This facilitation of peer interaction by the professor and in other settings by the e-tutor was important to achieve breakthrough results. On the negative side team outcomes differed based on team cohesiveness and 'buy-in' to the VCL concept.
- *Tool efficacy.* MS Teams proved robust for communication, file sharing and meeting coordination. Challenges with CryptPad's high-security features caused frequent crashes, disrupting collaborative writing. MIRO boards were highly effective for brainstorming, enabling visual mapping of ideas.
- *Importance of structure and training.* The ten-part structure provided clarity and direction. This structure of topics from week to week was crucial for successful local VCL implementation (i.e., engagement, realistic cases, and work tasks, easier to report, with interconnected projects for greater collaboration). Pre-module training was important.
- *Diverse skill integration.* The projects required a blend of skills, including database systems, web programming, network protocols, hardware programming, data analysis, research, and writing.

Challenges

The implementation encountered obstacles, including unequal team contributions, mitigated partially by role definitions and check-ins. CryptPad's technical issues disrupted collaboration, suggesting a need

for alternatives like Overleaf. The six-week timeline proved intensive for hardware projects, requiring precise time management. Additionally, some students struggled with MS Teams, underscoring the importance of comprehensive training.

Recommendations

Based on the lessons learned, the following recommendations can enhance future local VCL implementations:

- *VCL project duration.* Limit VCL modules to 6–7 weeks to maintain focus while allowing sufficient time for complex tasks like hardware development.
- *Regular reporting & discussions are important for engagement and progress.* Weekly brainstorming sessions and presentations help a lot to get better results and achieve improved overall satisfaction of students. Incorporate incentives (e.g., bonus points for engagement).
- *Importance of training on the technological infrastructure* prior to the start of the VCL module.
- *Using the technical platform & tools.* Select tools fully compatible with MS Teams to ensure seamless collaboration. Provide training on all tools before the module begins. Minimise the number of tools used (decide in the initial planning stage while putting effort into planning the structure).
- *The E-tutor needs to be a student connected to the course/department;* the E-tutor should not be a part-time student or a full-time working student outside the University.
- *Come up with project topics that require a diverse set of skills* (e.g. GreenNode team students applied database systems, computer networks, web programming, programmable hardware knowledge & skills).

Conclusion

This VCL implementation underscores the potential of technology-driven pedagogy in engineering education. Team 1's energy-efficient prototype and Teams 2 and 3's insightful surveys demonstrate significant outcomes, despite challenges like tool instability and team dynamics. By aligning with a conceptual VCL framework, this case study

offers a replicable model for integrating collaborative learning into IT curricula, preparing students for sustainable technology challenges.

Virtual Collaborative Learning in a Regional Context

Definition and Scope

Explanation of regional collaboration (e.g., within a specific geographic or cultural region).

Case Study: Entrepreneurship and Innovation Regional VCL Module with University of Montenegro (UOM) and International Burch University (IBU) Students Participating

We created five diverse groups of students from our similar courses into teams of five students (three students from UOM and two students from IBU).

Course Description

This course will provide students with an understanding of issues facing entrepreneurs and an exposure to the skills involved in addressing them. We will explore how founders should approach making critical decisions during the different phases of an entrepreneurial company's life. Starting from the vantage point of the individual, we will put ourselves in the shoes of decision makers ranging from technology entrepreneurs to venture capitalists, from marketing, operations, developers, to inventors

Two ECTS or 40% of the grade was allocated towards VCL activities from the overall 5 ECTS course.

Three e-tutors joined students in their meetings. Two were from UOM and one was from IBU.

Module Schedule:

- Introduction to regional VCL module and Cover story;
- Overview of current issue with urban mobility;
- Business Model Canvas practical training and exercise;
- Market sizing and customer targeting workshop;
- Go to market marketing plan and financial plan;
- Practice pitch presentation;
- Final pitch presentation;
- VCL module reflection.

Key Lessons Learned

1. Positive and Negative Aspects of the VCL Experience
   - *Positive Aspects:* Diverse talents from different faculties (Economics and Social Sciences at IBU and Engineering at UOM), interactive learning, digital skill development, regional collaboration, improved teamwork and communication skills, and personal growth.
   - *Negative Aspects:* Limited face-to-face interaction, potential miscommunication, technical issues, uneven contribution leading to groups not living up to their full potential, and challenges in coordinating schedules.

   Suggestions for improvement:
   - *Interactive Elements:* Incorporating more live virtual discussions, group activities, and interactive sessions to foster a sense of community and reduce isolation.
   - *Feedback and Guidance:* More frequent feedback from instructors or peers, clearer instructions and guidelines, and better selection of team members to ensure active participation.
   - *Technical and Organisational Support:* Improved communication and organisation, better tools for teamwork, and more flexibility in deadlines to enhance participation.
2. Learning Outcomes and Recommendations for Course Enrichment
   - *Skills Developed:* Virtual collaboration, time management, cross-cultural communication, problem-solving, and project management.
   - *Recommendations:* More hands-on practice, better tech support, clearer instructions, more interactive sessions, and real-time activities to enhance engagement and practical learning.
   - *Desired Changes:* Clearer guidelines at the start, improved integration of communication tools, more structured tutor support, and better coordination across time zones.
3. Workflow and Workload in Group Tasks
   - *Workflow:* Tasks were divided based on roles, with clear communication about deadlines and expectations. Regular check-ins and collaboration were essential for progress.
   - *Workload:* The individual workload varied, with estimates ranging from 5 to 50 hours depending on the complexity of

tasks and roles. Effective time management and coordination were crucial for completing tasks.

4. Perception of Team Members' Roles
   - *Positive Perceptions:* Team members were generally seen as collaborative and supportive, contributing their expertise and maintaining clear communication. Roles such as project manager, researcher, and public relations manager were crucial for the organisation and its progress.
   - *Challenges:* Some members were less cooperative, leading to uneven workload distribution. Effective role assignment and active participation were key to successful collaboration.
5. Role of E-Tutor in the Activity
   - *Guidance and Support:* E-tutors provided valuable guidance, feedback, and motivation, helping teams stay on track and clarifying tasks. Their role was seen as crucial in education and professional settings for personalised learning and skill development.
   - *Suggestions for Improvement:* More frequent check-ins, clearer instructions, and proactive support in conflict resolution and tool usage could enhance the e-tutor's effectiveness.
6. Previous Experiences Using Social Media Tools for Virtual Collaboration
   - *Learning Outcomes:* Participants learned the importance of clear communication, self-management, and effective time coordination. Virtual collaboration provided flexibility and exposure to regional perspectives.
   - *Challenges:* Asynchronous communication and lack of face-to-face interaction were challenging. The most complex aspect was keeping everyone engaged, while the most beneficial was the ability to collaborate across different locations.
7. Feedback Received and Handling
   - *Sources of Feedback:* Feedback was received from e-tutors, professors, and team members. It was delivered through written comments, messages, and video chats.
   - *Implementation:* Feedback was generally accepted and implemented to improve work quality and team dynamics. More frequent and detailed feedback, especially during the early stages, was suggested to enhance progress.

8. Perception of Regional VCL Module and Virtual Mobility
   - *Positive Experience:* Virtual mobility was seen as enriching, offering flexibility, global networking, and exposure to different perspectives. It was recommended for gaining regional experience without the need for physical travel.
   - *Challenges:* Limited interaction and communication issues were noted. More diverse regional collaboration and structured support were suggested to improve the experience.
9. Suggestions for Improving Virtual Mobility Experience
   - *Interactive Sessions:* More live discussions, regular check-ins, and interactive activities with e-tutors and academic staff could enhance engagement.
   - *Clear Communication and Support:* Clearer guidelines, better tech support, and structured schedules were recommended to improve coordination and reduce confusion.
   - *Active Participation:* Encouraging active participation from all students and providing incentives for engagement were suggested to enhance the overall experience.
10. Learning Outcomes and Recommendations for Course Enrichment
    - *Skills Developed:* Participants gained skills in virtual collaboration, time management, cross-cultural communication, problem-solving, and project management.
    - *Recommendations:* The importance of cross-institutional alignment regarding course content and student evaluation criteria. Better tech support, clearer instructions, and more interactive sessions were recommended to enhance engagement and practical learning.
    - *Desired Changes:* Clearer guidelines at the start, improved integration of communication tools, more structured tutor support, and better coordination across time zones were suggested to improve the course for future participants.

Summary of Challenges and Recommendations

Technical Platform – Getting familiar with the technical platform prior to the VCL could help student engagement. Timely Registration of students by technical support would allow all team members to be engaged from the start of the module. This also pertained to e-tutor and

instructor accounts. We had a kick-off meeting separately at each campus to inform students about the module schedule and required tasks. In the future, it is recommended that multiple kickoff meetings (Orientations) be held, rather than just one, due to the number of new formats and technologies being implemented during the regional VCL module. Combining the kick-off was difficult due to regional logistical barriers such as course schedules.

It was the experience during our Entrepreneurship/Innovation regional VCL module that there were scheduling conflicts that affected full attendance of the regularly scheduled meetings. But the AI meeting notes taken by MS CoPilot saved us. Students had summaries of the meetings on the MS Teams platform for review after each meeting scheduled through the technology platform. This was another encouragement to use the platform for all scheduled meetings and toggle on the MS CoPilot for meeting summaries.

What are the best communication channels for students: Email? Technical platform? Or other (e.g. Instagram or WhatsApp)? Given the issues with student credentials and getting students to check their official university email accounts for information, there should be a plan B with regard to communication with students. One recommendation is to obtain multiple communication information details, such as IG handles, WhatsApp numbers, Signal or Telegram accounts, so that early MS Teams credentials can be broadcast to all messaging platforms, and students can use their preferred communication tool to sign up for MS Teams.

During the regional VCL, educators often found themselves asking How can we encourage more student meetings on a technical platform? In the future, demonstrating the full capabilities of MS Teams prior to the start of the regional VCL module can be a convincing argument to students for the time-saving features, not to mention the AI capabilities.

Comparative Analysis of Local and Regional Contexts

Similarities across contexts:

- Common technological and pedagogical challenges that students and instructors in the Western Balkans have a variety of experience using the MS Teams technical platform for online course implementation. Use of MS Teams is limited in the Balkans; thus, familiarity with the software is at a low level among current univer-

sity students. The future looks better as MS Teams is a standard due to projects like this one.
- There is a need for additional faculty training in VCL methodology and student support in all three VCL formats.

Differences across contexts:

- In a local VCL module is quite easy to control implementation given it is one course, and you set the structure and learning outcomes with students from the beginning. There is little coordination, given that everything is encapsulated within one course.
- This differs significantly from a regional VCL implementation, which needs coordination between partners on different campuses and or countries. The scale and complexity of collaboration between educators and students differ significantly. Diversity in participants and course evaluation methods, as well as learning outcomes, can conflict with implementation. Some of these issues can be worked out prior to the start of the VCL module, but some issues are unforeseen during implementation, such as scheduling, pedagogical style, skill level of participants, common language, and culture.

Conclusion

The potential of VCL to transform education globally is real. We need to encourage institutions to embrace VCL while addressing its challenges. Universities are often slow to invest in the latest collaboration technologies, instead relying on free versions that lack the ability to upgrade and stay current with new developments such as AI. This is even truer in the Western Balkans, where university investment budgets are even tighter. University leaders need to understand the enhanced productivity of workers and engagement of students as the reasons for their investment, which will lead to sustainability in their business module, increasing student retention in additional education cycles. This, coupled with improved instructor satisfaction, will create a virtuous cycle of student satisfaction.

We observed the expanded role of E-Tutors in the VCL context. Not only did they observe student teams, but they also provided personal and group-related support, as well as technical, organisational, and specialised support. E-Tutors also assisted in the evaluation of team collaboration using pre-formatted templates for consistent measure-

ment of important metrics. Student team roles and responsibilities were well defined and elaborated during the kick-off of the Regional VCL, which enhanced understanding and responsibilities for students during the module. This gave structure to the teams, which increased their engagement and long-term success.

Training on the technical platform, MS Teams, was performed, thus ensuring all participants were familiar with and knowledgeable about the features and functions available through MS Teams. This could be expanded in future VCL modules to ensure all stakeholders are adequately familiar with the technology platform.

The content of the modules was organised and posted on the technical platform weekly during the module. Scheduled meetings and announcements were created using the technical platform. These intentional efforts drove engagement on MS Teams, allowing for a robust collection of collaboration data, which could further allow e-tutors and educators to notice teams that were not engaged and assist them.

What was clear was the importance of proper planning and structuring for the VCL modules. It was one key to the success of the module due to the coordination needed between international partners. Knowing the backgrounds of the students, from which study area or major they are coming, is important for understanding the content requirements of the module. For example, with a majority of the partners, students are coming from business-oriented departments, but with noticeable gaps, so there is often a need to provide background information about the module topic.

Evaluation of the VCL teams was an important aspect of the success of the module. Establishing and communicating evaluation frameworks was highlighted as a critical step during the implementation of the VCL modules. Thus, it is important to discuss with international partners and agree on a common framework from the start.

Regarding the content of the module, it was stressed, and I agree that enthusiasm for the topic is needed from all participants. Choosing a popular and timely topic can make the difference in participation and engagement.

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Part Four

Part 4 explores the evolving landscape of Virtual Collaborative Learning (VCL) through the lens of pedagogical transformation, institutional policy, stakeholder collaboration, and regional governance. Building on the theoretical foundations and practical implementations discussed in earlier parts, this part deepens the conversation by examining how VCL reshapes teaching, learning, and assessment in higher education and lifelong learning contexts.

This part examines how VCL is shaping student engagement, intercultural competence, instructional design, and even institutional frameworks through both qualitative insights and quantitative data. It brings together research findings, conceptual analyses, and practical examples to assess whether, and how, VCL contributes to deeper learning, more inclusive participation, and sustainable educational change.

Specifically, the chapters in this section address student engagement and learning outcomes by presenting real-world virtual collaborative learning (VCL) initiatives and empirical studies that illustrate how students interact, collaborate, and grow in virtual environments. They also explore the cultural and intercultural dimensions of VCL, focusing on how learners from diverse national and cultural backgrounds negotiate meaning, build relationships, and develop global competencies. Furthermore, the chapters examine pedagogical and assessment impacts, highlighting how VCL challenges traditional teaching models and promotes more collaborative, formative, and process-oriented assessment practices.

Finally, they analyse institutional policies and systems, considering the role of universities and public authorities in supporting, scaling, and embedding VCL into both formal education structures and lifelong learning strategies.

Part 4 serves as a vital convergence point in this volume: where theory meets evidence, practice meets policy, and innovation meets sustainability. By bringing together pedagogical innovation, policy reform, stakeholder engagement, and cultural sensitivity, this part offers a comprehensive roadmap for advancing VCL as a transformative force in higher education. It equips educators, administrators, and policymak-

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ers with the insights and tools needed to foster inclusive, resilient, and future-ready learning ecosystems.

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Editors

https://doi.org/10.53615/978-83-65020-54-3/245-246

Chapter Fifteen

Impact of VCL on Student Engagement and Learning Outcome

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https://doi.org/10.53615/978-83-65020-54-3/247-254

Introduction

The Pandemic of COVID-19 changed the way teachers and students interact with each other in a virtual collaborative environment to engage with each other. Due to the lockdown, universities and schools were forced to move into the digital space (Vahle et al., 2023). This change was supported by several technologies like Microsoft Teams, Google Scholar, Zoom and many other systems, including a university-tailored Learning Management System (LMS). In most of the universities worldwide, the lectures were converted from their traditional form in the classroom to a virtual environment, pushing both lectures and students to adapt to the new way of interacting with each other. Student engagement in a virtual environment was a challenge at that time and is still a challenge now in virtual collaboration environments and in the classroom. This change was implemented in a truly short time, and all stockholders, including government agencies, had to adapt to the new way of conducting lectures, adapting the laws for education all over the world. Both lecturers and students had to use several technological tools without having a proper training, which affected the quality of the education system and caused confusion in choosing the appropriate software or group of software to perform the lectures, tests, and ongoing student control, including their engagement with the online lecturer and online collaboration methods. The implementation of collaborative learning formats resulting from this transition has been investigated less frequently to date (Kalmar et al., 2022). Nowadays, the situ-

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ation allows the normal learning and interaction between student and teacher in a traditional environment in the classroom, through face-to-face teaching to the students. Still, there is a need to continue evaluating student engagement, not only face-to-face but also in a digital environment where professors and students do not interact physically in a classroom. By promoting the group work that is the main methodology of creating good products, and using the group synergy, user engagement between each other needs to be assessed in detail by trying to address issues and possibilities that digital tools offer. The scope of this study is to identify if the traditional way of student engagement in a traditional teaching environment needs further improvement by implementing the advantages and the flexibility that the technology is offering for virtual collaboration and engagement through technological tools. The conclusions of this study are based on the data produced by two Virtual Collaborative Learning (VCL) projects that are funded by the EU and are implemented by universities located in Albania and outside Albania that continue the project by collaborating with each other.

Student Engagement in Real Projects

During the COVID-19 pandemic period, the methodology of teaching in universities changed dramatically by immediately passing from teaching face to face in the classroom to a virtual collaborative environment that was supported by several software. Chakraborty & Muyia Nafukho (2014) suggest that there are many benefits of online teaching. Each university tried to adapt as soon as possible to this change, putting academic staff and students under pressure. Government bodies tried to facilitate the process by publishing regulations on performing the lectures and exams online during this period. Each university within the country adopted a different type of technology to address the issue of online learning methodology. European University of Tirana, in collaboration with its partners, and with the support of the EU, implemented two virtual collaboration projects in master classes.

The first project involved a master class by dividing the class into two groups with the purpose of making a detailed analysis regarding the performance of each group in the same class and measuring the engagement of the students in a virtual digital environment in comparison with the engagement of their peers in the classroom. In the first group, there were 30 volunteering students who followed the classes and completed their assignments using VCL methodology and tools.

The professors who were involved in this project monitored their engagement using technological tools, mainly from the Microsoft Platform and a locally implemented LMS at the European University of Tirana. The second group of 113 students continue to follow the classes and complete their assignment using traditional methods in the class and by meeting with the teacher.

The second project engaged students from the European University of Tirana who are in master's programs and students from the Business College of Kosovo at the bachelor's level. The students were divided into four mixed groups, and they were given the same assignment. The groups were instructed to use the group synergy and engage with each other to exchange ideas on the project and come up with a digital product that will help the truism in the region. UET students will manage the technical part of the project by providing a digital solution to this assignment, and BC students will contribute by creating a detailed business plan for the project. In the background, the professors were monitoring student engagement in the project to analyse the effect of this way of collaboration in different geographical locations between students from two different countries.

Student Engagement Framework

The purpose of this study is to respond to some questions related to this topic, regarding the student engagement with each other, with the professors and with the project itself. Students' engagement in such an environment, including their performance based on some KPI based on project outcome and technological data logs. The students were instructed to actively engage with the group members by assigning to each member specific roles like project manager, business analyst, business developer, software developer, etc. The main variables analysed by the professors involved in these virtual collaboration projects, with a focus on student engagement, are as follows:

- Student engagement in a virtual learning environment
- Group work, transparency, and productivity are based on the engagement of each group member in their specific role
- Adoption of the new methodology with a focus on student engagement

The first question of this study is 'Did the students who were part of the Pilot VCL engage better in this environment in comparison to

their mates in the same course following the traditional way of engagement?' This question was addressed by assigning to both groups of students the same assignment to fulfil during the 6 weeks of the piloting period. The assignment was to identify at least 4 companies on the website of 'Central Business Centre' that hold publicly available financial data for each registered Albanian company. The students have to analyse this data containing companies' financial statements and prepare an assignment paper up to 1000 words to compare the companies they identified by identifying some economic variables like:

The students who were volunteering for the VCL methodology must collaborate with each other on the LMS platform of the UET University to complete their assignment. Furthermore, they had to perform scheduled and unscheduled meetings on the MS Teams platform to discuss the fulfilment of each task of their assignment by actively engaging with each other based on a schedule that was monitored by the lecturer. All meetings were recorded, and all chat communications in the MS Teams platform and in the LMS system were saved for further analysis. All students participating in this course had to upload their assignments to the LMS platform of the university before the deadline.

During the second project, students were divided into 4 mixed groups based on nationality and study profile. They should deliver a solution to increase tourism in the region by using advanced technology and bringing new ideas to increase the overall visibility of the region abroad. During this assignment, students were asked to form a business structure to create a full project and evaluate the profitability of the project if it were implemented. This helped the professors to evaluate student engagement to fulfil the task by delivering the requested product that was developed using a real project plan and schedule. All online meetings were registered in Teams, and each student's post in the group was evaluated and counted to assess the overall student engagement.

Engagement Measure Methodology

The projects that monitored and evaluated the student engagement involved several ICT Software to support data collection and data analysis for producing results to identify the real student engagement in collaborative systems. Accurate measurement of engagement and collaboration between students and lecturers during group work on a specific project was evaluated by professors and members of the project. Each

Albanian university provided its own data gathered by the system used by them, but we will focus only on UET and BC to evaluate students' engagement in a virtual collaboration environment. This data was analysed in this chapter to draw conclusions based on real data to analyse the student engagement in a virtual collaboration in this environment.

The methodology used in the evaluation of the data is both qualitative and quantitative because it analyses unstructured data like conversations, emails, calls, or other unstructured data, and also it analyses the volume of interaction, like the number of messages exchanged between students in a group, email exchange, LMS logs, etc.

There were several indicators that were analysed during the project's implementation, including academic staff, students, and e-tutors. The geographical location has given more strength for an accurate data analysis in a virtual learning collaboration environment that gathered students and academics from several locations into a single virtual working place.

During the implementation of these projects, there were some barriers taken into consideration for fully evaluating the outcome of student engagement participating in these projects. The government law does not allow the students to follow lectures online. By doing so, it was impossible to fully implement student engagement in a fully virtual collaboration environment. There was no possibility to incentivise the student with more than 2 credits for their completion of the project because of these constraints.

Student Engagement Data Analyses

Due to regulations imposed by the Ministry of Education (Ministria e Arsimit, Sportit dhe Rinise, 2020), the VCL projects were tailored in a specific format to respect the regulations for higher education institutions and to give the possibility to volunteer students to perform some of their activities in a virtual collaboration environment. Student engagement is a multidimensional concept, and it has a positive impact on performance (Afzal & Crawford, 2022). The volunteering group of students that engaged in the piloting of local VCL at the European University of Tirana had 50 members from a total of 127 students, and they were evaluated with 20% of the total evaluation for the fulfilment of the assignment in a virtual learning collaboration environment. Two professors were involved for the second half of the semester to monitor and evaluate student engagement in a virtual collaboration environment.

The evaluation of the outcome of the VCL course and student performance was made using mixed tools. The student activities and collaboration were made using technological tools as UET LMS System, Miro Board and MS Teams. The user expectations were analysed through surveys that were also produced using technological tools like Microsoft Forms.

Results of the Projects

Based on the student record 80% of the students were full-time employed and found the online engagement time-saving and easier to adapt to their schedule to fulfil the assignment.

None of them had prior experience with the VCL course (except for the online classes during the Pandemic) that were forced to be followed due to the lockdown situation. They were constantly supported and motivated to actively engage with each other in the group by the professors. Technical assistance was given to the students to maximise their engagement using the technology that was suggested.

Students perceived virtual engagement as a good methodology that was helpful for them and gave them additional help in increasing their performance during the project fulfilment by allowing them to engage with each other and professors in a suitable and easy way.

Half of the students think that this way of engagement strengthens the relationship between each other in a group team and also strengthens the engagement with the teacher during the project. This indicates that the students perceived the relationship between them and the teachers as a direct approach that can be strengthened through physical class participation.

Almost 80% of the students participating in the project found this

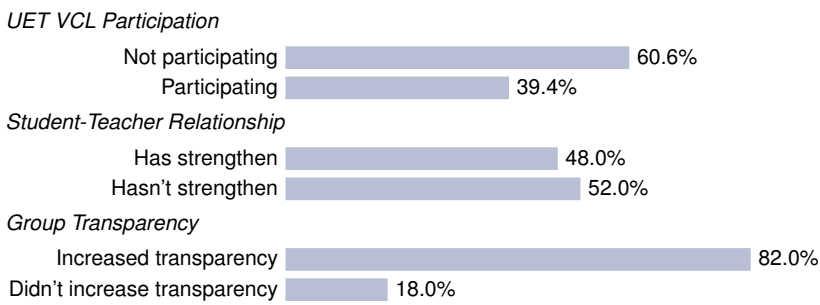

FIGURE 15.1 Assessment of Student Projects

method of engagement a valuable methodology that increases the group work, task management and increases the overall workgroup transparency. The professors had the possibility to really evaluate each member of the group engagement individually based on their real contribution to the project.

All projects were delivered successfully, and the students were more engaged in the group during the presentation by presenting part of the project in the group.

Conclusion and Discussion

During the analysis of KPIS for student engagement, we have noticed that most of the participating students were more motivated and perceived this methodology as an advantage to better engage in a virtual digital environment using advanced technological collaboration tools. Most of the participants already had a part-time or after-school job, so somehow this result was also affected by this important fact.

During the evaluation of both groups, it was noticed that the group of students that was part of the second project in an international environment were more motivated to engage with each other. We can attribute this to the internationalisation of putting more effort into fulfilling the project objectives. A more thorough study has to be performed to really evaluate this result because only half of the semester and 20% of the course evaluation cannot give the full picture of the results.

Albanian law did not give the full possibility to implement a full VCL course in a given subject during a full semester. This has decreased the possibility of incentivising the participating students to put all their efforts into engaging using the new methodology in a fully virtual collaborative environment.

To have a better understanding of how VCL engagement between students, teachers and other stakeholders is, more VCL piloting is needed in an international environment. To fully evaluate the impact of this methodology of virtual student engagement in universities, changes in education law are needed in Albania to support this kind of learning as an official methodology.

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Chapter Sixteen

Virtual Collaborative Learning: Culture and Interculturality

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https://doi.org/10.53615/978-83-65020-54-3/255-265

Introduction

Virtual Collaborative Learning (VCL) is a highly effective methodology that is widely used in the higher education sector in various countries around the world. This concept has created opportunities to enhance collaboration between professors and students from different universities and countries. Internet-based applications and techniques enable the implementation of projects and assignments, even complex ones, in a virtual environment with the simultaneous participation of professors and students. However, while this may sound simple, in reality, it is more complex than it appears, as cultural and intercultural factors influence the methodology. Certain cultural and intercultural conditions must be met to ensure that this methodology can be applied by everyone and is acceptable to all.

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Factors such as foreign languages, respect for hierarchical structures, communication styles, adherence to rules, adaptability to schedules, compatibility with different geographic zones, proficiency in using information technology, access to appropriate devices, and many other elements influence the readiness to accept such a learning methodology. Not everyone has equal access to the internet, equal knowledge and skills, equal availability for schedules and assignments, or the same communication style.

The factors mentioned above make virtual collaborative learning challenging, and this is precisely the focus of this chapter. A survey was conducted involving participants who are part of the COWEB project. The questionnaire was designed based on stable indicators identified and extracted from relevant literature. Comparative analyses reveal that cultural and intercultural factors influence the implementation of VCL; however, the overall readiness is high, with some limitations in certain cases.

Theoretical Framework

Virtual Collaborative Learning is revolutionising education and professional development, breaking geographical barriers and promoting an interactive, inclusive, and flexible learning environment (Herrera-Pavo, 2021; Schoop et al., 2021). The scope of VCL extends across various fields of education and training, including academic education, corporate training, and skills development. Universities and colleges implement VCL for online courses, discussion forums, and group projects. Schools use VCL for interactive learning, enabling students to collaborate on assignments and projects remotely. To offer professional courses, companies use VCL for student discussions, assignments, and teamwork. Experts and students exchange ideas through online forums and discussion groups.

Virtual group activities help improve communication, teamwork, and problem-solving skills (de Hei et al., 2020). Students and professionals engage with peers from different cultures, fostering a global perspective. VCL provides access for students with disabilities and those living in remote areas (Qureshi et al., 2021).

VCL is continuously gaining significant attention worldwide, enabling both internal and external stakeholders of educational institutions to work remotely in a virtual environment. The adoption and implementation of VCL as a working method have been made possi-

ble due to the widespread availability of the internet in all countries, households, institutions, and public spaces. This integration includes information technology devices and the development of effective applications that facilitate various virtual activities (Mena-Guacas et al., 2024). A crucial factor in the expansion of VCL is the willingness of teachers and students to accept virtual work as a useful and preferred method for remote collaboration and for enhancing their information technology skills (Schoop et al., 2021; Weinberger & Shonfeld, 2018). However, this willingness is only moderate, as a significant portion of people have yet to embrace or prefer it as a collaboration method in the learning process.

The reasons for this vary, is a lack of knowledge, skills, and readiness to adapt to change. This chapter addresses Culture and Interculturality as factors influencing the implementation of Virtual Collaborative Learning (VCL). Both dimensions, Culture, and Interculturality, play a significant role in shaping VCL experiences, impacting through communication styles, collaboration, learning approaches, and the use of technology. VCL usually involves teachers and students from diverse cultural backgrounds, differences in communication styles, approaches to virtual learning, physical distances, and values that can impact engagement, virtual collaboration, and learning outcomes (Morrison-Smith & Ruiz, 2020). To create an effective VCL environment, educators and learners must embrace cultural diversity, practice inclusivity, and adapt teaching strategies to accommodate different cultural perspectives.

Depending on communication styles, in some cultures, communication relies on implicit understanding, where messages are implied rather than explicitly stated. In contrast, other cultures require messages to be explicitly communicated (clearly outlined). During virtual collaboration, these differences can lead to misunderstandings and misinterpretations of messages.

Cultural preferences also influence communication hierarchies, where some individuals prefer a clear hierarchy in communication, while others favour informal interactions. In certain cultural settings, students expect the teacher to have authority, and they do not ask questions. In more liberal cultures, however, students are encouraged to debate and challenge their teachers.

Another key aspect is individual versus collective learning. In some cultures, teachers and students prefer working independently and

achieving personal success, while in others, group collaboration and harmony are prioritised. Similarly, some cultures emphasise practical learning and the development of critical thinking, whereas others focus more on lecture-based teaching and rote memorisation of theories.

Cultural attitudes toward feedback and criticism also vary and have a direct impact. In some cultures, direct criticism is seen as constructive, whereas in others, it may be perceived as disrespectful.

Another crucial cultural dimension is the availability of technological infrastructure. Not all teachers and students have equal access to high-speed internet, advanced devices, or digital tools. Some cultures place a strong emphasis on educational technology, while others may have less experience with digital learning tools.

Norms and values also play a vital role in the successful implementation of VCL. In some cultures, punctuality is highly valued, while in others, strict adherence to schedules is less common, and flexible timing is more acceptable.

Last but not least, equal inclusion and cultural sensitivity are essential for the effective implementation of VCL. This includes ensuring that learning materials avoid cultural biases or stereotypes. Examples and explanations should be diverse to resonate with global learners. VCL group projects should bring together students from different cultural backgrounds to foster global learning experiences. Educators should mediate discussions to prevent cultural misunderstandings and promote mutual respect.

Research Methodology

To analyse the cultural and intercultural factors that played a significant role in applying VCL techniques in Higher Education, this study is based on primary data analysis. For purposes related to the topic, a survey was conducted within the framework of the COWEB project, through a questionnaire distributed to three different groups that have applied VCL during the COWEB project (professors, students and e-tutors), and some useful findings have been achieved to the issues raised above.

The questionnaire consisted of two sections:

1. Questions regarding cultural factors and VCL in Education.
2. Questions focused on intercultural factors and VCL in Education.

The sample was drawn from participants in the Cobweb project, and the questionnaires were distributed to 10 partner universities. We received answers from 6 partner universities, such as the University for Business and Technology, Prishtina, Biznesi College, Prishtina, Epoka University, Tirana, European University of Tirana, Tirana, International Burch University, Sarajevo, and University of East Sarajevo, Sarajevo.

Data Analysis

Cultural Dimensions and VCL

In Table 16.1, the data reveal some key findings regarding culture and VCL, which help us understand the influence of the participants' culture within the framework of the COWEB project. The survey addressed indicators such as understanding proposals, hierarchy acceptance, team leader's approaches, digital skills equality, adherence to deadlines, understanding limitations in digital skills, strengthening personal relationships, maintaining academic ethics and quality, and confidence in virtual collaboration:

- *Understanding Proposals/The articulation of Proposals.* Most of the participants understood each other's proposals very well (33%) and well (29%), meanwhile 25% of them understood each other's proposals completely. With a low percentage, 4% not understanding each other's proposals at all and 8% to some extent, the data indicates a positive experience of all participants in articulating and comprehending proposals during group work.
- *Hierarchy Acceptance during Group Work.* Most of the participants (35%) stated that they have accepted very well the hierarchy of the group members and well (23%). Moreover, 25% of them agreed that the hierarchy of group members was completely accepted by them. With a low percentage of disagreement (2%), the data indicate that the hierarchical structure within the groups during VCL collaboration was not accepted but did not pose significant issues.
- *Team Leader's Approaches.* A significant portion of participants stated that the team leader's approaches were completely acceptable (35%) and very acceptable (33%). Meanwhile, 21% agreed that the team leader's approaches to the participants during virtual group work were well accepted 6% agreed to some extent with this aspect, and 4% did not agree at all. The overall result reflects positively on the leadership within the virtual groups.

TABLE 16.1 Cultural Dimensions and VCL

Statements/Indicators	(1)	(2)	(3)	(4)	(5)
How easily did the participants understand each other in terms of articulating proposals during group work?	4	8	29	33	25
To what extent was the hierarchy of group members accepted during group work?	2	15	23	35	25
How acceptable were the team leader's approaches to the participants during virtual group work?	4	6	21	33	35
Were the digital skills of the participants equal for working together virtually in the group?	2	8	33	35	21
To what extent have the participants adhered to the deadlines for completing the assigned tasks virtually?	4	6	27	38	25
To what extent was there understanding from the participants for members with limitations in digital skills?	6	4	23	38	29
To what extent have personal relationships between participants from different countries been strengthened as a result of virtual collaboration?	8	13	17	38	25
To what extent has academic ethics and quality been maintained by all participants during virtual group work?	2	4	19	33	42
Did the participants have confidence in collaborating virtually in the group?	2	9	19	38	32

NOTES Column headings are as follows: (1) not at all, (2) to some extent, (3) well, (4) very well, (5) completely.

- *Digital Skills Equality.* In this aspect, participants were somewhat divided, with 35% feeling that digital skills were very well-matched and 33% well-matched during VCL collaboration, and 21% feeling they were completely equal. However, up to 10% felt that there was only some extent of equality, indicating room for improvement in digital skills balance.
- *Adherence to Deadlines.* Most of the participants (38%) adhered very well to deadlines (27%) well and (25%) completely during VCL collaboration. Meanwhile, the results show up to 10% disagreement with this aspect. The overall results show that during VCL collaboration, all groups had a strong commitment to meeting deadlines, which is crucial for successful virtual collaboration.
- *Understanding Limitations in Digital Skills.* Most of the participants during the VCL collaboration showed a very good understanding of participants with limitations in digital skills (38%), 29% showed complete understanding, and 23% showed a good

understanding of Digital Skills. With a moderate to low percentage, the results show that (up to 10%) participants had no good understanding of another participant who had limitations on digital skills during VCL teamwork.

- *Strengthening Personal Relationships within Different Countries.* This part was especially important for the results of the project since the aim of this question was to identify if participants from different countries have managed to strengthen personal relationships with other participants from other countries in VCL collaboration. Our data shows that personal relationships were very well strengthened (38%) and completely strengthened (25%). However, a significant percentage of 13% responded by saying that VCL-based cooperation has enabled the growth of relations only to some extent, while 8% said not at all. This result shows that there is a need for improvement in this aspect, and work must be done to improve it.
- *Maintaining Academic Ethics and Quality.* The results show that academic ethics and quality during VCL collaboration were maintained completely (42%), very well (33%) and well (19%). With a level of disagreement with this statement up to 6% and the data suggests a high level of integrity and quality in virtual group work.
- *Confidence in Virtual Collaboration.* The results show that confidence in virtual collaboration was very high, with participants feeling very confident (38%) and completely confident (32%). Even though some of them (9%) declared that they felt confident to some extent, the overall result indicates a strong sense of confidence in the virtual collaboration process.

Interculturality and VCL

In Table 16.2, the data reveal some key findings regarding interculturality and VCL:

- *Clear Communication in Language.* On the question of whether clear communication has been achieved in terms of language so that everyone can understand each other during VCL collaboration, 29% of participants' state that they completely agreed with the fact that they had clear communication in terms of language, 48% agreed very well, and 19% responded well, indicating effective

TABLE 16.2 Interculturality and VCL

Statements/Indicators	(1)	(2)	(3)	(4)	(5)
To what extent was it ensured that group participants had clear communication in terms of language?	2	2	19	48	29
To what extent was it ensured that all participants understood and approved of the approaches for decision-making related to the project?	2	10	17	40	31
To what extent has the critical thinking of the participants been managed regarding the specifics of the project?	2	6	19	56	17
To what extent has feedback been gathered from all participants in the group?	6	4	19	40	31
To what extent has collaboration been strengthened among participants from different countries who were part of the working group?	8	8	6	50	27

NOTES Column headings are as follows: (1) not at all, (2) to some extent, (3) well, (4) very well, (5) completely.

communication within the groups. Up to 8% of the participants had language barriers during VCL collaboration.

- *Understanding Decision-Making Approaches.* Decision-making approaches within the participants in VCL projects were understood very well (40%) and completely (31%), even though 10% felt this was only to some extent, suggesting some challenges in decision-making clarity.
- *Managing Critical Thinking.* The results show that critical thinking was managed very well (56%), well (19%), and completely (17%). Even though up to 8% did not agree that the critical thinking of the participants while applying VCL techniques has been well managed regarding the specifics of the project. The overall results indicate a positive approach to fostering critical thinking within the groups.
- *Gathering Feedback.* To the question, to what extent has feedback been gathered from all participants in the group, respondents answered very well (40%) and completely (31%), even though 4% felt it was only to some extent, and 6% did not agree at all with the statement. The result suggests a generally effective feedback mechanism; however, there is still a need for improvement.
- *Strengthening Collaboration.* The results show that collaboration among participants from different countries that have applied

VCL techniques was very well strengthened (50%) and completely strengthened (27%). Even though up to 16% did not agree that collaboration within VCL has been strengthened fair enough among participants from different countries who were part of the working groups. The overall results indicate a strong sense of collaboration.

Comparative Approaches Across Different Groups

The results of the above survey were conducted by including three categories of respondents (professors, students, and e-tutors) who are part of the COWEB project. This survey aimed to understand the effectiveness of work based on VCL in cultural and intercultural aspects. The data from the Virtual Collaborative Learning (VCL) program indicates that professors, students, and e-tutors generally had positive experiences, with some variations in their responses. Professors consistently rated aspects such as understanding proposals (50% well, 37% very well), hierarchy acceptance (50% well, 37% very well), team leader's approaches (50% well, 37% very well), digital skills equality (50% well, 37% very well), adherence to deadlines (50% well, 37% very well), and understanding limitations in digital skills (50% well, 37% very well) higher than e-tutors and students. Students had a high level of confidence in virtual collaboration (33% very well, 36% completely) and felt clear communication in terms of language was ensured (33% very well, 36% completely). E-tutors showed strong support for participants with limitations in digital skills (71% very well, 29% completely) and felt personal relationships were well strengthened (71% very well, 14% completely).

Conclusions

Overall, the data suggests participants in VCL had a positive experience in terms of understanding proposals, accepting hierarchy, leadership approaches, digital skills equality, adherence to deadlines, understanding limitations, strengthening relationships, maintaining academic ethics, and confidence in virtual collaboration. Communication, decision-making, critical thinking, feedback, and collaboration were also generally well-managed, though there are areas for potential improvement.

The separated responses from (a) professors, (b) students, and (c) e-tutors reflect a thriving and supportive virtual collaborative environment, with positive experiences in communication, leadership, digital

skills, adherence to deadlines, relationship building, academic ethics, and confidence in collaboration. There are areas and needs for potential improvement, particularly in ensuring complete equality in digital skills and enhancing feedback mechanisms.

Some main recommendations for the educators, based on the findings, are:

- Encourage cultural understanding and teamwork by incorporating small activities or discussions that foster intercultural awareness and team spirit.
- Ensure clear structure and communication by setting clear roles, deadlines, and using simple, inclusive language to avoid confusion in multicultural teams.
- Support digital skills for everyone by providing short training or guidance to help all participants feel confident with the digital tools used during VCL activities.
- Strengthening collaboration with e-tutors by communicating and actively involving them-they are key to supporting learning and group connection.
- Gather regular feedback and improve by checking in with students and staff frequently to adjust the process and ensure a positive learning experience for all.

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Chapter Seventeen

Impact of Virtual Collaborative Learning on Pedagogy Approaches and Student Assessment

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https://doi.org/10.53615/978-83-65020-54-3/267-279

Introduction

In the last decade, the rapid development of technology and innovations has had a tremendous effect on teaching subjects, especially on the didactic approach in higher education in developed and developing countries. These technological innovations have created efficient conditions for improving the quality of pedagogical methods and increasing flexibility in teaching and learning. Virtual Collaborative Learning (VCL) is reformulating traditional pedagogies by promoting collaborative, technology-enhanced, and student-centred approaches. This innovative method fosters a globalised learning experience, making edu-

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

cation more attractive, flexible, and accessible to all. Electronic learning platforms have increased collaboration and interactivity between academic staff and students, creating an academic environment that enables enhanced learning through real-time discussions and the exchange of scientific ideas. The application of these virtual platforms has facilitated the development of new pedagogical methods, which combine traditional classroom learning with virtual learning. Integrating technology into education not only improves academic outcomes but also prepares students for a dynamic and digitalised job market. Referring to these parameters, the application of digital tools within the VCL environment as a learning strategy is particularly important for having an innovative and inclusive education system. Learning based exclusively on conventional formats often does not create sufficient space to foster critical engagement and student autonomy in the learning process, which affects their academic results. For this reason, the development of electronic platforms has enabled the creation of interactive virtual spaces where students can collaborate effectively with academic staff and their peers. The application of electronic platforms not only increases the quality of data distribution but also affects the increase in the flexibility of learning resources, allowing students to create skills and knowledge outside the learning environment oriented to traditional approaches.

On the other hand, student assessment has always been a key component in the academic process, supporting academic staff in the evaluation of students' knowledge, skills, and competencies. Traditionally, different approaches are applied to evaluate the students, such as written tests, time-limited exams, and physically submitted assignments. Nowadays, considering the continual development of new digital technologies, teaching and learning methods are shifting from the traditional way towards the integration of modern teaching methods. The application of these new teaching and learning methods requires new methods of student assessment based on these technologies. Shifting from the traditional way of teaching, learning and assessments towards new methods based on the latest digital trends applicable in the education sector facilitates and enables increased collaboration within the teaching and learning environment. The application of digital tools supports educators in increasing the students' engagement during academic activities and collaboration. Furthermore, they can apply real-time methods that can automate the assessment process, but at the

same time support the feedback given to the students in order to reflect on their challenges and improve their knowledge.

In order to investigate the impact of VCL on pedagogy approaches and student assessment, a questionnaire with seven questions was developed. The questions are generated based on the previous studies and are designed to achieve the aim of this study.

Aim of the Study

The aim of the study is to analyse the impact of the application of digital tools within a Virtual Collaborative Learning on pedagogy approach and students' assessment focused on motivation, engagement, critical thinking, and achievement of learning outcomes.

Objectives of the Study

1. To assess the level and form of application of digital tools in a VCL environment by the academic staff and students in the context of assessment methods;
2. To analyse the impact of VCL on students' motivation and engagement during the learning process;
3. To examine the role of VCL in influencing the encouragement of collaborative learning and developing critical thinking and evaluation skills;
4. To evaluate the contribution of electronic quizzes and other tools to the achievement of the expected course outcome.

Literature Review

Impact of Virtual Collaborative Learning (VCL) on Pedagogy Approaches

Collaborative learning in higher education, as a student-centred approach, is presented as a form of supporting individuals or a particular group that enables students and educators to collaborate and learn, with the aim of knowledge sharing through interactions (Belle, 2000; Lovasz-Bukvova et al., 2006a). Increased virtual collaboration through digital tools and easy access to learning materials increases student productivity and enables the creation of a more dynamic learning experience. Research conducted by Lovasz-Bukvova et al. (2006b) emphasises the importance of implementing e-learning in higher education institutions to develop international, interdisciplinary, and cross-

sectoral learning processes. In general, the research suggests that integrating these virtual methods in higher education can improve the quality of teaching and better prepare students for the challenges of a globalised market. According to Lovasz-Bukvova et al. (2006b), in a modern learning environment, interactive collaboration among team members plays a key role. Considering that their research focus was on the virtual collaboration with several international partners, transferring the collaborative work into the virtual classroom 'proved the solution as principal performant, being both effective (regarding the students' achievements) and highly acceptable (evaluated students' opinion).' Another study related to the VCL emphasises the importance of having clear Tasks, Roles, and Communication tools to improve the fulfilment of VCL aims (Lovasz-Bukvova et al., 2006a).

Also, the study conducted by (Meroño et al., 2021) provides evidence that pedagogical approaches that are oriented towards technological tools and virtual learning increase the quality of performance of academic staff, these findings emphasize that the application of these tools also affects the development of digital competencies that are necessary within the learning process. The study conducted by Herrera-Pavo (2021) emphasises the impact of collaborative learning in higher education, particularly in the context of digital platforms, which directly improve the quality of learning and pedagogical methods. Matee and Nkiwane (2022) analysed the new perspectives and challenges faced by academic staff and students in higher education. The results emphasised that virtual learning is highly efficient and useful in increasing academic quality and performance.

However, the lack of technological tools and investments in this area hinders the efficiency of virtual collaboration. The study by Matee and Nkiwane (2022) suggests that to improve this situation, it is necessary to invest in advanced technology, provide training for staff and students, and create policies that support the effective use of virtual learning environments.

Today, there are innovative tendencies to change the approach of models in higher education. The research results of the study by Pluta et al. (2013) underline the importance of transforming traditional lecture-based methods into various innovative approaches based on virtual collaborative learning. The use of these methods is seen as the entrance to a new era, driven by the need for team competencies and the availability of digital media. Pedagogical models based on a student-centred

approach and oriented toward students' needs have also been examined in the scientific study by Zhou et al. (2019), which emphasises the importance of collaborative learning through teaching. This pedagogical method places the student at the centre of the learning process, promoting active interaction and the development of critical thinking skills.

Jantos (2024b) has provided an innovative perspective on pedagogical approaches in higher education through his scientific research. He developed adapted pedagogical models for case studies in VCL environments, which help academic staff and higher education institutions integrate innovative pedagogical approaches into the learning process. Osuji et al. (2023) analysed the collaborative pedagogical approach through the application of digital virtual classrooms. Their results showed how this approach enabled academic staff to maintain active student participation in a virtual classroom. However, to make the collaborative pedagogical approach more effective, more training for academic staff and greater support for technological infrastructure are needed. These aspects are highlighted in the study by Acharya et al. (2024), which also emphasises that, if properly applied, the collaborative teaching methodology has a positive impact on increasing the quality of the learning process. Sobko et al. (2020) analysed networked collaborative learning in the context of an online course at the higher education level; their results showed that online engagement with advanced digital technologies positively impacts the construction of knowledge and the analysis of task content by students. The treatment of new pedagogical models based on technology has also been analysed by Ramos et al. (2021), who identified four pedagogical models: collaborative observation and analysis of professional practices recorded with video, collaborative creation of video-supported content, collaborative learning based on video content, and synchronous collaboration supported by video. The scientific findings of the study by Doumanis et al. (2019) show that collaborative virtual environments can significantly improve learning outcomes by stimulating multiple senses and promoting rich interactions.

Students Assessment

Regarding the assessment formats and their applicability to VCL, Jantos (2024a) analysed 24 relevant assessment methods divided into three forms of assessment: Self-Assessment (time and role planning),

Peer Assessment (formative online peer assessment and video documentation) and Automated Assessment (blended programmatic assessment). Based on her analysis and interpretation, of the three forms of assessment, some are fully applicable, limited, or not applicable to the VCL. The author emphasises the importance of having an iterative way of reflection and feedback for every task in order to support the students to improve their learning and grow their competencies continually. Another study (De Brun et al., 2022) that analysed the role of peer assessment using an online platform, identified that initially this form of assessment was not well accepted by the students; they expressed apprehension, perceiving the task as daunting, and a lack of confidence.

To eliminate these barriers and to increase the success rate of peer assessment in online collaboration, they provided detailed instructions on how to complete peer review, ongoing discussion, and feedback to address their concerns. This resulted in a higher level of satisfaction among students with the new assessment form. Another study presented by Nowell et al. (2025) presents that virtual collaboration enables the professor to apply a flexible approach regarding the evaluation of students that allows an adaptive learning experience in line with the students' needs, considering the application of online infrastructure. Another study (Abramovich, 2016) emphasises that traditional assessment methods fail to support students, particularly in the two-phase assessment approach, which includes mid-term and final examinations. In his chapter, he proposes a new way of virtual assessment based on digital badges that are applied in video gaming as a summative assessment. In this case, during the virtual learning environment, students' performance can be related to specific badges that represent, in a form of visualisation, the progress students have achieved during the virtual class. Badges can be related to the submission of evidence by students to achieve a learning objective and then reviewed by the instructor. Application of online formative assessment indicates a positive effect on learning by students as presented by Velan et al. (2008). This study shows that students achieved better grades in their examinations through the application of online assessment methods, specifically, the automated individualised feedback, such as multiple choice, which supported them to achieve mastery of materials in all the courses where it was applied.

According to Lin et al. (2024), the application of virtual assessment technologies, such as computer-based simulation, AR, and VR, along

with other modern assessment methods, supports educators in enhancing the evaluation of both theoretical knowledge and practical skills. The study shows that the application of virtual assessment enables educators to have improved accuracy and objectivity in evaluation. At the same time, the study shows that there are some challenges regarding the integration of these technologies, such as high costs, hardware/technical limitations, and training regarding the application of AR and VR tools. According to Gaad (2022), online collaborative learning has a positive impact on student achievement and engagement. The students confirmed that the application of online collaborative learning helped them to feel more comfortable about sharing their thoughts and comments. Based on these, it can be identified that the application of virtual collaboration supports students to have better results regarding the course materials during the virtual assessment.

Research Methodology

To analyse the impact of VCL on pedagogical approaches and student assessment, the quantitative methodology is applied based on the primary data, where the main instrument for data collection is a questionnaire. The questionnaire data were addressed by 6 partner universities: University for Business and Technology, Prishtina, Biznesi College, Prishtina, Epoka University, Tirana, European University of Tirana, Tirana, International Burch University, Sarajevo, and University of East Sarajevo, Sarajevo. The questionnaire was filled out by the parties involved in the COWEB project, such as academic staff, students, and e-tutors. To achieve the aim of this study, several statistical models based on econometric approaches, such as descriptive statistics, skewness, kurtosis, and non-parametric tests, are applied. The main limit of these statistical tests is the small number of observations, where only 48 observations are collected from higher education institutions as part of the COWEB project.

Results

The results of the questionnaire were analysed based on statistical description and non-parametric tests.

Descriptive Statistics

Table 17.1 presents the statistical description for the questions that analysed the impact of VCL on pedagogical approaches and student assessment. This statistical description also includes the Skewness and

TABLE 17.1 Statistical Description

Questions		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	How often has the academic staff used digital tools of Virtual Collaborative Learning in the context of assessment methods	48	1	5	4.125	0.89025	−1.009	1.514
2	How has the application of Virtual Collaborative Learning influenced the increase in motivation during the learning process	48	3	5	4.4167	0.64687	−0.661	−0.510
3	How has Virtual Collaborative Learning influenced the encouragement of collaborative learning among is through virtual engagement?	48	3	5	4.4167	0.6131	−0.535	−0.565
4	How do you evaluate the use of digital tools and platforms for Virtual Collaborative Learning in the learning process	48	3	5	4.4167	0.53924	−0.079	−1.131
5	How has the application of Virtual Collaborative Learning tools influenced the final progress in academic courses during the semester	48	3	5	4.2917	0.65097	−0.372	−0.660
6	How has the application of Virtual Collaborative Learning tools influenced the development of your critical thinking and evaluation skills	48	1	5	4.2500	0.81214	−1.492	4.033
7	Has the use of electronic quizzes through the 'Slido' and other tools positively influenced the achievement of the expected course outcome	48	3	5	4.1042	0.75059	−0.175	−1.171

NOTES Column headings are as follows: (1) observations, (2) minimum, (3) maximum, (4) mean, (5) standard deviation, (6) skewness, (7) kurtosis. Valid *N* (listwise) = 48.

Kurtosis data distribution tests. For almost all the questions, the minimum and maximum values range from 3 (neutral) to 5 (very positive), except for questions 1 and 6, which range from 1 to 5. Based on these statistical results, it is identified that on average, all higher education institutions that addressed this questionnaire expressed a very positive view regarding the impact of VCL on pedagogical approaches and

TABLE 17.2 Testing of Questions According to Non-Parametric Tests

Questions		Test	Sig.	Decision
1	How often has the academic staff used digital tools of Virtual Collaborative Learning in the context of assessment methods	One-Sample Chi-Square Test	0.001	Reject the null hypothesis.
2	How has the application of Virtual Collaborative Learning influenced the increase in motivation during the learning process	One-Sample Chi-Square Test	0.001	Reject the null hypothesis.
3	How has Virtual Collaborative Learning influenced the encouragement of collaborative learning among is through virtual engagement?	One-Sample Chi-Square Test	0.000	Reject the null hypothesis.
4	How do you evaluate the use of digital tools and platforms for Virtual Collaborative Learning in the learning process	One-Sample Chi-Square Test	0.002	Reject the null hypothesis.
5	How has the application of Virtual Collaborative Learning tools influenced the final progress in academic courses during the semester	One-Sample Chi-Square Test	0.000	Reject the null hypothesis.
6	How has the application of Virtual Collaborative Learning tools influenced the development of your critical thinking and evaluation skills	One-Sample Chi-Square Test	0.210	Retain the null hypothesis
7	Has the use of electronic quizzes through the 'Slido' and other tools positively influenced the achievement of the expected course outcome	One-Sample Chi-Square Test	0.200	Retain the null hypothesis

assessment. Specifically, all questions showed an average higher than 4 (very positively), which indicates a very high impact of VCL on the pedagogical process.

Also, the tests that analyse the distribution of data show optimal values within the allowed limits (skewness –1 to 1, and kurtosis –2 to 2), except question 6, where the skewness value is –1.42, and a kurtosis value of 4.03.

Table 17.2 presents the tests of the questions, which represent the main problem of this research, based on non-parametric tests developed through the SPSS statistical program. The results indicate significant statistical reliability, especially from question 1 to question 5. On

the contrary, the findings emphasise lower statistical reliability in questions 6 and 7. Furthermore, according to the results presented in Table 17.2, it is identified that the use of digital tools by academic staff in the context of assessment methods has a very positive impact and presents a significant statistical reliability according to non-parametric tests. Furthermore, the results show that virtual learning based on the VCL approach has had a positive impact on increasing student motivation throughout the learning process; this result also indicates a stable statistical reliability.

Based on the statistical analysis, it is identified a very high level of statistical reliability is identified in question 3, where the application of electronic tools and platforms promotes collaborative learning among students, thus creating a collaborative and interactive learning environment. Also, it is identified that the application of virtual collaborative learning tools has a significant positive impact on the final progress of students in their academic courses, contributing to better academic results. This result also provided significant statistical reliability. However, the development of critical thinking skills and the impact of electronic quizzes may require further investigation or alternative approaches.

Conclusion

The study analysed the importance of VCL in teaching, learning, and assessment of students as a new approach to developing students' knowledge, skills, and competencies, considering their work in a virtual environment. VCL supports academic institutions to be more attractive, flexible, and accessible to all worldwide by eliminating physical global barriers to collaboration. It supports the creation of an academic environment where collaboration and interactivity between academic staff and students are increased. Previous studies show that factors such as the determination of tasks, roles and communication tools improve the fulfilment of VCL aims (Lovasz-Bukvova et al., 2006a). Furthermore, investments in advanced technologies, staff training, policies for the usage of tools and collaboration have a positive effect on VCL (Matee et al., 2022; Osuji et al., 2023). Regarding students' assessment, studies show that online formative assessment has a positive effect on learning by students and their achievements (Velan et al., 2008; Gaad, 2022).

The results of this study show that this form of collaboration sup-

ports students to increase their engagement during teaching activities, at the same time, it supports staff in the students' assessment. The use of digital tools by academic staff in the context of assessment methods has a very positive impact and presents significant statistical reliability according to non-parametric tests. The results show that virtual learning based on the VCL approach has had a positive impact on increasing student motivation throughout the learning process. Also, the application of virtual collaborative learning tools has a significant positive impact on the final progress of students in their academic courses, contributing to better academic results. Results of the analysis show that the application of digital tools and platforms has a positive impact on increasing collaboration within virtual teams, motivation, and their ability to interact and achieve higher results.

The application of VCL in teaching, learning and assessment facilitates and enables increased collaboration within the teaching and learning environment. The application of digital tools supports educators in increasing the students' engagement during academic activities and supports in automation of the students' assessment process in a real-time environment. As presented by many studies, the application of virtual tools supports educators to shift from traditional exams towards more interactive assessment methods such as peer evaluations, group projects and real-time quizzes. Even though there are identified some challenges have been identified that need to be considered and addressed before starting a VCL environment in order to increase the success rate and to achieve the aim and objective of the activity, especially when the participants are from different locations. Therefore, in this context, the findings generally point to the development of a comprehensive model that is in harmony between modern pedagogical approaches and institutional infrastructure and policies for the efficient implementation of virtual collaborative learning.

Based on the findings of this study, the following recommendations must be followed as best practices for educators and institutions: (1) Invest in modernisation of technological infrastructure to support collaborative learning; (2) Train the academic staff on the application of the effective VCL; (3) Encourage the application of interactive evaluation forms through electronic quizzes, group work, peer-to-peer evaluation and virtual discussion; (4) Develop an instructional model that supports the harmonisation of modern pedagogic approaches through the application of technology aligned with the institutional regulations;

(5). Monitor and evaluate continually the effect of VCL in order to increase the quality of teaching and learning.

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Chapter Eighteen

University Policies to Support VCL Initiatives

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https://doi.org/10.53615/978-83-65020-54-3/281-297

Introduction

Virtual Collaborative Learning (VCL) refers to the integration of digital tools and virtual platforms to facilitate interactive, collaborative learning experiences for students and educators across geographical boundaries. By leveraging technology, VCL enables participants to engage in joint projects, discussions, and problem-solving activities in a virtual environment. This approach not only enhances students' technical and interpersonal skills but also prepares them for the demands of a globalised workforce.

Studies have highlighted the transformative potential of VCL in higher education. For instance, Dascalu et al. (2015) emphasised that integrating personalised learning agents based on student learning styles significantly enhances collaboration and engagement. Similarly, Mhouti et al. (2016) demonstrated the scalability and flexibility of cloud-based VCL platforms in supporting diverse institutional needs. These findings underscore the growing relevance of VCL as a tool for bridging gaps in access, fostering inclusivity, and enhancing learning outcomes across different contexts. Universities, particularly in the Western Balkan region, face unique challenges in adopting VCL due to infrastructural, cultural, and institutional constraints.

Globally, the COVID-19 pandemic acted as a catalyst for the widespread adoption of VCL models. Universities in countries like Australia, Canada, and South Korea implemented advanced virtual learning systems that emphasise hybrid collaboration, cross-institutional partnerships, and adaptive learning analytics. These international practices of-

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fer valuable contrasts to the experiences in the Western Balkans, where institutional capacity building is still underway.

Additionally, Blewett et al. (2011) and Gaebel and Morrisroe (2023) identified key challenges in implementing VCL across multiple countries, including technological limitations and intercultural dynamics. The implementation of Virtual Collaborative Learning is grounded in educational theories such as Constructivism and Connectivism. Constructivism emphasises active student engagement, while Connectivism, proposed by Siemens (2005), highlights the role of digital networks in knowledge acquisition. Additionally, the Technology Acceptance Model (TAM) (Davis, 1989) suggests that faculty and students are more likely to adopt VCL when they perceive it as both useful and easy to use. Understanding these frameworks can help universities develop policies that address potential adoption barriers.

On the other hand, delivering virtual instruction in international contexts demands a broad set of competencies, including digital, pedagogical, linguistic, and intercultural skills. Institutions should adopt formal policies to recognise and validate educators' digital competencies and integrate virtual international teaching experience into career development frameworks, such as tenure and promotion tracks. Embedding digital teaching skills into professional development programs and actively promoting and incentivising staff participation in such initiatives is very important. Also, it is needed to prioritise the development of students' digital and intercultural competencies by integrating these topics into academic curricula and degree programs (Gaebel & Morrisroe, 2023).

This chapter aims to examine the critical role universities play in the successful implementation of Virtual Collaborative Learning (VCL), with a focus on strategic planning, global practices, and the identification of key emerging trends. It provides actionable policy recommendations and a comparative analysis of institutional practices, offering a well-rounded framework to guide innovation and promote inclusive, future-ready learning environments.

Universities as Enablers of Virtual Collaborative Learning (VCL)

Universities are key agents in enabling effective Virtual Collaborative Learning (VCL) by embedding it into institutional strategies that prioritise innovation, inclusion, and internationalisation. Their commitment shapes how digital tools are integrated, how faculty and students

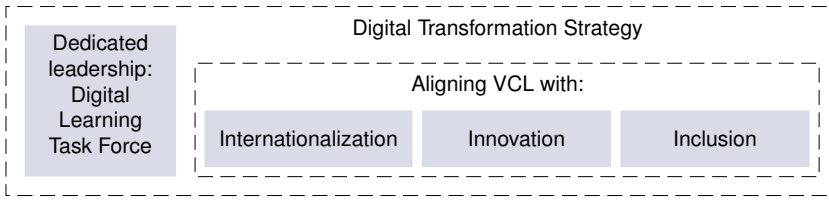

FIGURE 18.1 Digital Transformation Strategy Aligning with VCL

are supported, and how academic quality is sustained.

Proactive digital transformation strategies help universities adapt faster and create collaborative academic ecosystems. As noted by Bleiklie et al. (2022), entrepreneurial activities within support units and strong leadership are crucial in guiding successful digital change. Without institutional commitment, even the most promising initiatives face implementation gaps.

A structured and aligned digital transformation strategy ensures that VCL is not treated as an isolated initiative but is integrated with the university's broader vision. This alignment includes:

- *Internationalisation:* Encouraging cross-border learning and joint academic projects.
- *Innovation:* Fostering experimentation with emerging tools and teaching methods.
- *Inclusion:* Ensuring access for all students, regardless of background or location.

To operationalise this strategy, universities can establish dedicated leadership bodies, such as Digital Learning Task Forces, to oversee implementation and evaluation. These bodies ensure VCL efforts are aligned with accreditation standards, quality assurance mechanisms, and academic career pathways.

Universities act as the driving force behind the successful implementation of VCL. Their support and well-defined policies are pivotal in shaping effective digital collaboration within higher education. These frameworks not only provide the necessary infrastructure but also cultivate an environment conducive to innovation and inclusive learning.

Research indicates that universities with proactive digital strategies are better equipped to integrate collaborative technologies, enhancing both teaching and learning experiences. For instance, a study by Bleik-

lie et al. (2022) highlights how entrepreneurial activities within support units significantly contribute to digital transformation, emphasising the role of institutional leadership in facilitating such changes. The absence of supportive leadership can prevent the successful implementation of digital initiatives, emphasising the necessity for committed institutional support.

Moreover, the development of comprehensive policies that address digital infrastructure, faculty training, curriculum design, student engagement, and quality assurance is essential. Such policies ensure that digital collaboration tools are effectively integrated into the academic environment, promoting active participation and fostering a culture of continuous improvement. As noted by the BLOOM Hub (2022), institutions that prioritise digital education policies not only adapt more swiftly to technological advancements but also enhance the overall quality of education delivered.

Universities play a central role in the advancement of VCL, which requires a comprehensive and strategically aligned institutional effort. One of the foremost responsibilities is integrating VCL into the university's broader digital transformation strategy. This involves aligning VCL with goals related to internationalisation, innovation, and inclusion, while establishing dedicated leadership structures such as digital learning task forces to oversee and guide its implementation. For example, the University of Manchester and KU Leuven have established Digital Education Task Forces to lead institutional innovation, ensure quality benchmarks, and implement VCL tools in harmony with teaching excellence frameworks.

Figure 18.2 illustrates the pillars of a digital transformation strategy aligned with VCL. These include:

- *Strategic Vision:* A clear institutional roadmap that connects VCL with internationalisation, inclusion, and innovation goals.
- *Dedicated Leadership:* Establishment of digital learning units or task forces that coordinate VCL implementation and evaluation.
- *Technology Infrastructure:* Investment in robust platforms (LMS, videoconferencing tools, collaboration boards) supported by cybersecurity protocols.
- *Capacity Building:* Faculty development programs in digital pedagogy, incentives for innovation, and staff recognition pathways.

Institutional Policies	Digital Infrastructure	Training and Professional Development	Curriculum Design	Student Readiness and Inclusion (skills)	Monitor and Evaluation
Standards Platforms Assessment Quality assurance	LMS Microsoft Teams, Miro Continous IT support Security Equality access to devices and Internet	Digital pedagogy Peer mentoring Collaborative course design	Embed collaborative learning elements in course objective Encouraging interdisiplinary and cross based projects	Digital collaboration Intercultural commmunication Support structures	Define KPIs for engagment, satisfaction and learning outcomes Incorporate data-driven strategies to refine VCL Feedbacks (students & staff)

FIGURE 18.2 Main Pillars of Universities' Roles in Promoting VCL

- *Policy Integration:* Embedding VCL into accreditation, quality assurance, and curriculum design systems.
- *Monitoring & Feedback:* Use of analytics and stakeholder input to improve collaboration and learning outcomes.

In addition to infrastructure provision, university IT departments play a critical role in ensuring the operational security and efficiency of VCL systems. Their responsibilities include maintaining robust cybersecurity protocols, performing regular system updates, and ensuring data privacy compliance in accordance with standards like GDPR. IT teams also manage technical support services to address real-time issues faced by faculty and students, thereby reducing disruptions during collaborative sessions. Their proactive involvement in system monitoring, risk mitigation, and user support creates a stable and trustworthy digital learning environment that is essential for VCL's success.

Barriers Faced by Universities in VCL Implementation

Despite growing recognition of VCL's importance, universities encounter multiple barriers that hinder effective implementation. Funding limitations pose a significant obstacle, especially for institutions

in under-resourced regions. Investment in infrastructure, software licenses, and technical support is often constrained by limited budgets.

Faculty training and engagement present another challenge. Many instructors lack confidence or familiarity with collaborative digital tools and pedagogies, making professional development essential yet often under-prioritised.

Sustainability and continuity also emerge as concerns. Pilot projects or externally funded initiatives may not be integrated into long-term strategic planning, leading to fragmented or temporary VCL programs. Finally, aligning VCL practices with existing quality assurance mechanisms remains complex, particularly in systems where face-to-face learning is still the dominant model.

Addressing these challenges requires holistic and context-sensitive strategies, combining policy reforms, resource mobilisation, and community engagement to ensure VCL becomes a sustainable and impactful part of the higher education landscape.

- Key institutional recommendations for supporting VCL
- Develop formal institutional policies that define participation standards, platform use, and assessment methods, and embed them in quality assurance frameworks.
- Recognise VCL participation in faculty career advancement, including tenure and promotion criteria.
- Invest in robust digital infrastructure, ensuring equitable access to LMS platforms, collaborative tools (e.g., Microsoft Teams, Miro), and secure, high-speed internet.
- Provide structured faculty development in digital pedagogy, peer mentoring, and collaborative course design.
- Integrate VCL into curriculum design by embedding collaborative learning objectives and promoting interdisciplinary virtual projects.
- Support student readiness and inclusion, focusing on digital skills, intercultural communication, accessibility, and psychosocial support.
- Establish monitoring and evaluation systems with KPIS to assess student engagement, satisfaction, and learning outcomes.
- Foster external collaborations through Erasmus+ and other ini-

tiatives to enhance quality and broaden institutional networks in VCL.

An example worth highlighting is the University of Prishtina, which adopted a comprehensive institutional VCL policy, integrating student participation metrics into its quality assurance processes. Similarly, the University of Ljubljana has established a Digital Learning Task Force to support the institutionalisation of VCL and ensure its alignment with strategic goals.

Establishing Institutional Policy Frameworks for VCL

One of the core responsibilities of universities in promoting Virtual Collaborative Learning (VCL) lies in the development of robust and enforceable institutional policies. These policies should go beyond aspirational declarations and provide clear operational standards that enable consistent, inclusive, and effective implementation. Specifically, universities must address four critical areas:

- Participation and engagement expectations for students and faculty;
- Platform selection and integration standards to support synchronous and asynchronous collaboration;
- Assessment frameworks that ensure transparency and fairness in collaborative learning tasks;
- Data governance and privacy policies are aligned with regulations like the GDPR.

Integrating these standards into institutional quality assurance systems and faculty advancement criteria ensures that VCL is not treated as a peripheral initiative but becomes a central pillar of academic strategy and digital transformation.

Participation expectations for students and faculty: A foundational element of successful VCL lies in setting explicit participation expectations for both students and faculty. These guidelines should clarify the roles and responsibilities of each party. Students must actively contribute to group tasks, communicate respectfully, and meet agreed-upon deadlines, while faculty should facilitate interaction, monitor progress, and provide timely, formative feedback. Institutions are advised to support these expectations with structured orientation programs and training modules that introduce best practices in online

collaboration and group dynamics. Such initiatives have been shown to significantly improve student engagement and accountability in virtual environments (Gaad, 2022; Hanover Research, 2020). Additionally, digital dashboards can be used to monitor interaction metrics such as login frequency and participation in group activities, allowing for early interventions where engagement lags.

Platform use and integration standards: Effective VCL policies also require thoughtful selection and integration of collaborative platforms. Universities must ensure that digital tools are interoperable, user-friendly, and accessible. This means selecting platforms that support both synchronous (e.g., Microsoft Teams, Zoom) and asynchronous (e.g., Moodle, Google Docs) collaboration, and ensuring these systems are integrated through standards such as Learning Tools Interoperability (LTI). Clear usage protocols and technical documentation should accompany platform deployment to ensure consistent adoption and minimise confusion. Training programs for both faculty and students can further improve the uptake and effectiveness of these tools (Jantos, 2023; IMS Global Learning Consortium, n.d.). Continuous evaluation of platform performance, based on user feedback and usage analytics, is essential to adapt to evolving technological needs.

Assessment criteria for collaborative and group-based tasks: Assessment is a critical driver of student behaviour in any learning environment, and VCL is no exception. To promote fairness and transparency, universities should develop detailed rubrics that clearly distinguish between individual and group contributions. These rubrics must align with learning objectives that emphasise communication, teamwork, and collective problem-solving. The inclusion of peer and self-assessment tools can foster reflective learning and enhance students' sense of responsibility for group outcomes. Combining formative and summative assessments allows instructors to provide ongoing feedback while evaluating the final output. Studies indicate that varied assessment methods like project artefacts and peer evaluations are essential in capturing the complexity of collaborative learning outcomes (Macdonald, 2003; Jantos, 2023).

Data governance and privacy compliance: In the digital learning context, data protection is both a legal obligation and an ethical imperative. Institutions must conduct thorough data audits to identify what student and faculty information is being collected through VCL platforms, how it is stored, and who has access. These audits form the

basis for comprehensive privacy policies aligned with data protection regulations such as the General Data Protection Regulation (GDPR). Universities must establish clear policies that outline the collection, use, and sharing of data, along with role-based access controls that restrict sensitive information to authorised personnel only. Equally important is ensuring that both students and faculty are trained in data protection best practices, cultivating a culture of responsible digital engagement (UNESCO, 2021).

Policies should also be embedded within the institution's quality assurance mechanisms and formally recognised in accreditation processes. By aligning VCL with institutional performance indicators and national/international educational standards, universities create a structure that ensures consistency, legitimacy, and long-term viability (Bleiklie et al., 2022).

Importantly, such policies must also incentivise faculty involvement. Academic career advancement structures, including promotion and tenure, should explicitly value and reward contributions to virtual teaching, course design using collaborative platforms, and innovation in digital pedagogy. Without this formal recognition, VCL may remain peripheral, rather than becoming an integral part of institutional culture.

An emerging best practice is the inclusion of student representatives in the policy design and evaluation process through mechanisms such as Student Advisory Boards or digital learning councils. These platforms empower students to voice their experiences, concerns, and suggestions directly to institutional decision-makers. By integrating student feedback into the development of VCL guidelines, universities not only improve the relevance and usability of digital platforms but also promote a sense of ownership and engagement among learners. Such participatory governance ensures that VCL policies remain inclusive, adaptive, and responsive to the evolving needs of the student community.

Developing Robust VCL Policies in Higher Education: Standards

Participation and Engagement Standards

Define explicit expectations for student and faculty engagement in VCL activities, including attendance, contribution levels, and communication protocols.

Implementation steps:

- *Student guidelines:* Mandate active participation in a specified percentage of collaborative sessions and contributions to group tasks.
- *Faculty responsibilities:* Require timely feedback, facilitation of discussions, and monitoring of group dynamics.
- *Orientation programs:* Offer training sessions to familiarise participants with VCL tools and expectations.
- *Institutional Example:* The University of Edinburgh's 'Code of Student Conduct' outlines expectations for online engagement, emphasising the importance of active participation in virtual learning environments (University of Edinburgh, 2021).

Platform Use and Integration Standards

Ensure the selection and integration of interoperable, user-friendly, and accessible digital platforms that support both synchronous and asynchronous collaboration.

Implementation steps:

- *Platform selection:* Choose platforms that facilitate real-time and asynchronous collaboration (e.g., Microsoft Teams, Moodle).
- *Interoperability:* Adopt standards like Learning Tools Interoperability (LTI) to enable seamless integration between different educational technologies.
- *Training and support:* Provide comprehensive training and technical support for both students and faculty.
- *Institutional example:* The CHARM-EU alliance employs interconnected high-tech classrooms across five universities, facilitating synchronous hybrid learning experiences (CHARM-EU, 2022).

Assessment Criteria for Collaborative Work

Develop transparent assessment frameworks that evaluate both individual and group contributions, incorporating peer and self-assessment mechanisms.

Implementation steps:

- *Rubric development:* Create detailed rubrics outlining criteria for evaluating collaborative tasks.
- *Peer and self-assessment:* Integrate tools that allow students to assess their own and their peers' contributions.

TABLE 18.1 Institutional Models and Best Practices for VCL Implementation

Standard Area	Key Focus	Example Institution
Participation	Engagement expectations, training	University of Edinburgh
Platform Use	Synchronous + Asynchronous, LTI compliance	CHARM-EU Alliance
Assessment	Rubrics, peer/self-assessment	University of Pretoria
Privacy	GDPR audits, role-based access	European University Association

- *Formative and summative assessments:* Balance ongoing feedback with final evaluations to measure overall achievement.
- *Institutional example:* The University of Pretoria utilises a comprehensive framework for assessing cooperative and collaborative tasks, focusing on both product and process (University of Pretoria, n.d.).

Data Governance and Privacy Compliance

Implement robust data governance policies that comply with regulations like the General Data Protection Regulation (GDPR), ensuring the protection of personal and collaborative data.

Implementation steps:

- *Data audits:* Conduct thorough audits to identify data collection, storage, and access practices.
- *Privacy policies:* Develop clear policies outlining data usage, storage, and sharing practices.
- *Access controls:* Establish role-based access controls to limit data access to authorised individuals.
- *Training:* Educate faculty and students on data privacy principles and responsibilities.
- *Institutional example:* The European University Association emphasises the importance of data governance in digitally enhanced learning and teaching, advocating for clear policies and practices (Mezher, 2023).

Several European institutions provide strong models for implementing Virtual Collaborative Learning (VCL) through well-integrated policy frameworks and digital strategies:

- *Technische Universität Dresden* incorporates VCL into its curriculum by engaging students in international virtual teams that solve real-world case studies. These structured tasks are designed to foster professional and interpersonal skills, and successful completion is rewarded with ECTS credits in line with the European Credit Transfer and Accumulation System (Technische Universität Dresden, 2025). A key component of their approach is the Collaborative Online International Learning (COIL) module developed through the COWEB project. This module connects over 140 students and faculty members across nine countries, enabling interdisciplinary teams to work together on digital entrepreneurship and sustainability challenges. Through asynchronous tasks and synchronous video conferences, students gain practical experience in virtual teamwork, intercultural communication, and co-creation of digital solutions. The initiative is supported by structured feedback cycles, standardised evaluation criteria, and robust digital infrastructure. It exemplifies how transnational VCL projects can be institutionalised for long-term impact.
- *The University of Edinburgh* has developed a comprehensive policy framework to support virtual learning. Its Code of Student Conduct and Virtual Learning Environment Terms and Conditions set clear expectations for participation, digital behaviour, and data protection. Access to platforms like Learn and Moodle is governed by principles that ensure academic integrity, legal compliance, and inclusivity, backed by Scottish legal standards (University of Edinburgh, 2024). Their approach emphasises the institutionalisation of ethical digital behaviour, regular updates to platform policies, and a commitment to user rights and responsibilities.
- *The University of Novi Sad* in Serbia represents a strong regional example of innovation in VCL. Through its participation in Erasmus+ projects like 'Digi4VET' and collaboration with the Regional Innovation Smart Specialisation Strategy (RIS3), it integrates VCL principles into cross-disciplinary modules, combining ICT, environmental engineering, and business studies. These efforts are backed by university-wide policies promoting multilingual access, modular course design, and international certification standards. The institution also invests in hybrid learning labs and faculty development to scale up VCL.

TABLE 18.2 Global Best Practices in Virtual Collaborative Learning: A Comparative Overview

University/Region	Key Features	Strategic Focus
TU Dresden (Germany)	COIL module via COWEB project 140+ participants across 9 countries ECTS integration	Transnational teamwork, sustainability, and digital co-creation
University of Edinburgh (UK)	Code of Conduct for VLE Governance of Learn & Moodle Legal and ethical digital use	Policy institutionalisation, inclusivity, and data protection
University of Novi Sad (Serbia)	Erasmus+ & RIS3 integration Multilingual & modular courses Hybrid labs & faculty training	Regional innovation, VET integration, scalable VCL
Korea University (South Korea)	K-MOOC platform Global Virtual Exchange AI-driven feedback	Global collaboration, AI in education, and multilingual support
European University Association	Policy advocacy COIL promotion Pan-European collaboration	Strategic policy alignment, internationalisation

- From outside Europe, *Korea University* in South Korea showcases advanced VCL practices aligned with its digital-first education strategy. It supports collaborative learning through its K-MOOC platform and integrates artificial intelligence into student feedback mechanisms. The university runs the Global Virtual Exchange Program, where Korean students co-develop research and entrepreneurship projects with peers in the US, Japan, and Southeast Asia. Their success lies in policy coordination between academic units, investment in multilingual virtual classrooms, and high-bandwidth network infrastructure supported by national education funds.
- *The European University Association* (EUA) promotes Collaborative Online International Learning (COIL) and other cross-border initiatives through its 2023 report. The EUA highlights the importance of institutional policies that support digital transformation and advocate for cross-institutional innovation in teaching and learning (Mezher, 2023).

These diverse examples from Western Europe, Southeast Europe, and East Asia illustrate the adaptability of VCL across educational and cultural contexts. Institutions that implement clear policy structures,

develop technological ecosystems, and encourage global partnerships can maximise the impact and sustainability of VCL.

The adoption and implementation of Virtual Collaborative Learning (VCL) represents a transformative opportunity for universities to align themselves with the demands of a digital and globalised world. By investing in robust technological infrastructure, fostering a collaborative culture, and prioritising continuous faculty and staff development, institutions can address the challenges of traditional educational systems and unlock new potential for innovation and inclusivity.

The European University of Tirana (EUT) and Epoka University have demonstrated the potential of VCL through strategic integration and innovative practices, setting a benchmark for other institutions in the Western Balkans. Key takeaways from their experiences include the importance of targeted faculty training, interdisciplinary collaboration, and leveraging feedback to refine methodologies. Furthermore, partnerships with international organisations and the use of advanced digital platforms like Moodle and Microsoft Teams exemplify the global connectivity that VCL can achieve.

While Albania and Kosovo face similar challenges in integrating VCL, international projects and regional initiatives can serve as catalysts for a more structured and effective approach in both countries. The active involvement of public agencies such as national accreditation bodies, ministries of education, and ICT authorities is essential in providing the regulatory and financial support needed for sustainable implementation.

To sustain the momentum, universities must embrace adaptive strategies, including policy revisions to support virtual collaboration and align VCL activities with accreditation standards. Additionally, fostering a student-centric approach, where learners actively participate in designing and evaluating VCL projects, can further enhance engagement and outcomes.

Drawing lessons from models in Northern and Western Europe, it is evident that continuous innovation in digital pedagogy and governance reforms is vital. Countries like the Netherlands and Finland have mainstreamed VCL through national digital education strategies, offering blueprints that Albanian and Kosovar institutions can adapt based on contextual needs.

As the educational landscape continues to evolve, VCL offers a pathway to create inclusive, flexible, and future-ready learning environ-

ments. Through collective efforts and a commitment to excellence, universities can not only transform their academic practices but also contribute significantly to the personal and professional growth of their students in a rapidly changing world.

To ensure the long-term success of Virtual Collaborative Learning, universities must integrate it into their core academic strategies, providing ongoing faculty training and technological investments. Policymakers should revise accreditation standards to formally recognise VCL as an essential component of higher education curricula. Additionally, regional collaboration between Albania, Kosovo, and neighbouring countries can enhance knowledge-sharing and resource allocation. By fostering a culture of collaboration, investing in faculty development, and leveraging global best practices, VCL can serve as a transformative force shaping the future of higher education in Albania, Kosovo, and beyond.

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Chapter Nineteen

Implementation of the VCL Framework in Higher Education Courses and Lifelong Learning Programs in Collaboration with Key Stakeholders

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https://doi.org/10.53615/978-83-65020-54-3/299-310

Introduction

The evolving landscape of higher education and lifelong learning demands pedagogical approaches that transcend traditional boundaries, embracing collaboration, flexibility, and real-world relevance. Within this context, the Virtual Collaborative Learning (VCL) framework emerges as a transformative methodology that addresses the complex challenges facing contemporary educational institutions. As digital technologies continue to reshape learning environments, VCL offers an innovative response to the growing demand for accessible, engaging, and professionally oriented education that serves both traditional students and diverse adult learners (Chen et al., 2024).

The implementation of VCL represents more than a technological upgrade; it embodies a fundamental shift toward collaborative knowledge construction that mirrors the interconnected nature of modern professional environments. This chapter explores how institutions can systematically integrate VCL frameworks into their educational offerings through strategic stakeholder collaboration, ex-

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

amining both the theoretical foundations and practical implementation strategies that enable successful adoption. The discussion encompasses the unique considerations for higher education contexts as well as the specialised approaches required for lifelong learning programs, emphasising throughout how meaningful partnerships with industry, community organisations, and educational technology providers can enhance the effectiveness and sustainability of VCL initiatives (Williams & Martinez, 2024).

Understanding the VCL Framework

Virtual Collaborative Learning represents a pedagogical evolution that leverages digital platforms to create meaningful learning communities across geographical and temporal boundaries (Guth & Rubin, 2015). Rooted in constructivist learning theory, VCL emphasises the social construction of knowledge through collaborative engagement with authentic problems and scenarios (Vygotsky, 1978). This approach builds upon Vygotsky's concept of the Zone of Proximal Development, recognising that learners can achieve higher levels of understanding through collaborative interaction with peers and mentors than they might accomplish individually (Albulescu, 2021).

The framework distinguishes itself from traditional online learning through its emphasis on active collaboration rather than passive content consumption (Laurillard, 2012). Contemporary research demonstrates that VCL-enhanced courses show significant improvements in student engagement, with collaborative virtual environments fostering enhanced communication skills, creative problem-solving abilities, and teamwork competencies (Anderson & Thompson, 2024). These findings align with wider educational research indicating that collaborative learning activities can increase academic achievement by up to 41% compared to individual learning approaches (Kopp et al., 2014).

Recent implementations of VCL frameworks reveal their particular strength in developing what educators increasingly recognise as essential 21st-century skills (Haryaka et al., 2024). Students participating in VCL environments demonstrate improved digital literacy, intercultural competence, and adaptability-competencies that are increasingly vital in globalised professional contexts (Rodriguez & Chang, 2024). The framework's emphasis on authentic, problem-based learning scenarios ensures that these skills develop within meaningful contexts that mirror real-world challenges and opportunities (Kim et al., 2024).

The Contemporary Relevance of VCL in Higher Education

Higher education institutions face unprecedented pressure to prepare graduates for a rapidly evolving job market characterised by technological disruption, global interconnectedness, and the need for continuous learning and adaptation (OECD, 2024). Traditional lecture-based approaches, while still valuable, often fall short of providing the collaborative, problem-solving experiences that contemporary employers seek in new graduates (Liu & Thompson, 2024). VCL addresses this gap by creating learning environments that simulate professional team dynamics while maintaining the academic rigour and theoretical grounding that define quality higher education (Garrison & Vaughan, 2008).

The framework's scalability makes it particularly attractive for institutions seeking to expand their reach without compromising educational quality (Singh & Patel, 2024). Research from 2024 indicates that well-implemented VCL programs can accommodate diverse learning styles and schedules while maintaining high levels of student engagement and achievement (Taylor & Brown, 2024). This flexibility proves especially valuable for institutions serving non-traditional student populations, including working adults, parents, and geographically dispersed learners who might otherwise be unable to access higher education opportunities (Miller & Garcia, 2024).

Digital literacy development emerges as a crucial outcome of VCL implementation, addressing a fundamental need in contemporary higher education (Belshaw, 2017). Students in VCL environments naturally develop proficiency with collaborative technologies, project management tools, and digital communication platforms-skills that transfer directly to professional contexts (Cooper & Martinez, 2024). Moreover, the framework's emphasis on virtual collaboration helps students develop comfort with remote work arrangements that have become increasingly common across industries (UNESCO, 2024).

VCL Integration in Lifelong Learning Contexts

The application of VCL frameworks in lifelong learning presents unique opportunities and challenges that distinguish it from traditional higher education contexts. Adult learners bring diverse professional experiences, varied educational backgrounds, and complex life circumstances that require flexible, adaptable learning approaches (Knowles et al., 2015). VCL's virtual structure and collaborative emphasis prove particularly well-suited to these needs, providing accessible learning

environments that accommodate the competing demands of work, family, and education (Salmon, 2002).

Contemporary frameworks for lifelong learning emphasise personalised, competency-based education that responds to individual career goals and learning preferences (OECD, 2024). VCL enables the creation of adaptive learning pathways that maintain collaborative elements while allowing learners to progress at their own pace and focus on skills most relevant to their professional contexts. This approach proves especially effective for career changers, professionals seeking advancement, or individuals adapting to technological changes within their fields (Peterson & Wilson, 2024).

The collaborative nature of VCL creates valuable networking opportunities that extend beyond the formal learning experience (Williams & Martinez, 2024). Adult learners participating in VCL programs often develop professional relationships and mentoring connections that support their long-term career development (Lehmann-Willenbrock et al., 2021). Research indicates that adults who engage in collaborative learning initiatives demonstrate increased confidence in innovative approaches and greater satisfaction with their professional development outcomes (Johnson & Anderson, 2024).

Stakeholder Collaboration in VCL Implementation

Successful VCL implementation requires orchestrated collaboration among diverse stakeholders, each contributing unique expertise and perspectives that enhance the overall learning experience. This collaborative approach recognises that educational innovation cannot occur in isolation but must involve academic staff, industry partners, technology providers, and learners themselves in meaningful dialogue and shared decision-making (Glasgow et al., 2024).

Academic staff and curriculum developers serve as the pedagogical architects of VCL experiences, translating learning objectives into collaborative activities that engage students in authentic problem-solving. Their role extends beyond traditional content delivery to include facilitation of collaborative processes, design of meaningful assessment strategies, and ongoing support for student learning communities (Laurillard, 2012). Contemporary research emphasises that faculty development in collaborative learning design is essential for successful VCL implementation, requiring institutions to invest in comprehensive training programs and ongoing support systems (Peterson & Wilson, 2024).

Industry partners bring practical expertise and real-world perspectives that enhance the authenticity and relevance of VCL experiences. These partnerships extend beyond simple guest lectures to include co-creation of learning scenarios, mentorship of student teams, and validation of learning outcomes against professional standards. The most effective industry collaborations involve ongoing relationships that evolve with changing market needs and technological developments, ensuring that VCL experiences remain current and professionally relevant (Williams & Martinez, 2024).

Technology support teams provide the infrastructure and technical expertise necessary for effective VCL implementation. Their responsibilities encompass platform selection and maintenance, user support, security protocols, and continuous improvement of technological capabilities (Singh & Patel, 2024). Research indicates that robust technical support significantly impacts student satisfaction and engagement in VCL environments, making this often-overlooked stakeholder group crucial for program success (Taylor & Brown, 2024).

Adult education providers and community organisations contribute specialised knowledge about diverse learner populations and accessibility considerations that ensure VCL programs serve broad constituencies effectively. These stakeholders help adapt VCL approaches to meet specific community needs, address digital divide issues, and ensure that programs remain inclusive and accessible to learners with varying technological backgrounds and resources (Miller & Garcia, 2024).

Designing Effective VCL Courses Through Collaborative Approaches

The design of effective VCL courses requires systematic collaboration among stakeholders to ensure that learning experiences are pedagogically sound, technologically robust, and professionally relevant (Brown et al., 2024). This process begins with a comprehensive needs analysis that examines learner characteristics, learning objectives, industry requirements, and institutional capabilities (Glasgow et al., 2024). The collaborative nature of this analysis ensures that multiple perspectives inform course design decisions, leading to more comprehensive and effective learning experiences.

Pedagogical framework development integrates multiple educational approaches to maximise learning effectiveness within VCL environments (Albulescu, 2021). Contemporary research supports the in-

tegration of constructivist learning principles that emphasise active knowledge construction through collaborative activities (Vygotsky, 1978). This approach incorporates scaffolding strategies that support learner progression, peer learning opportunities that leverage diverse expertise, and reflection activities that promote metacognitive development (Garrison & Vaughan, 2008).

Problem-based learning serves as a natural complement to VCL frameworks, providing authentic challenges that require collaborative problem-solving and critical thinking (Kopp et al., 2014). The most effective VCL courses present learners with real-world challenges that require interdisciplinary knowledge application and collaborative innovation (Kim et al., 2024). These challenges often emerge from industry partnerships, ensuring that students engage with current professional issues while developing collaborative skills essential for their future careers (Williams & Martinez, 2024).

Assessment and evaluation frameworks in VCL courses must address both individual learning outcomes and collaborative processes. Contemporary approaches emphasise formative assessment strategies that provide ongoing feedback and support for both individual development and group dynamics (Lee & Kumar, 2024). This includes peer evaluation mechanisms that help students develop assessment skills while providing insights into collaborative processes, self-reflection tools that promote metacognitive awareness, and authentic assessment approaches that align with professional standards and expectations (Nguyen & Roberts, 2024).

Addressing Implementation Challenges Through Collaborative Solutions

The implementation of VCL frameworks presents various challenges that require proactive, collaborative approaches to resolution (Glasgow et al., 2024). Technological infrastructure limitations represent one of the most significant barriers, particularly for institutions serving diverse student populations with varying levels of digital access and literacy. Collaborative solutions involve partnerships with technology providers, community organisations, and government agencies to develop comprehensive support systems that address these disparities.

Digital literacy disparities among both students and faculty present ongoing challenges that require systematic attention and collaborative intervention (Cooper & Martinez, 2024). Institutions must develop

comprehensive training programs that address varying levels of technological competence while providing ongoing support for technology adoption and use. The most effective approaches involve peer mentoring programs that leverage existing expertise within learning communities while building capacity for continued technological adaptation (Belshaw, 2017).

Collaborative coordination challenges emerge particularly in international VCL implementations where time zone differences, cultural variations, and communication barriers can impact learning effectiveness (Rodriguez & Chang, 2024). Successful solutions involve flexible collaboration structures that accommodate diverse schedules, clear communication protocols that address cultural differences, and technology tools that facilitate effective asynchronous collaboration (Kim et al., 2024). These approaches recognise that effective collaboration requires intentional design and ongoing support rather than emerging naturally from technological capabilities alone (Kreijns et al., 2013).

Measuring Impact and Supporting Continuous Improvement

Comprehensive evaluation of VCL effectiveness requires systematic approaches that examine both quantitative outcomes and qualitative experiences (Nguyen & Roberts, 2024). This evaluation process involves multiple stakeholders in data collection and analysis, ensuring that assessment approaches capture the full range of VCL impacts on learners, institutions, and broader communities (Zhang & Kumar, 2024). Contemporary evaluation frameworks emphasise multi-dimensional approaches that examine learning outcomes, engagement patterns, skill development, and long-term career impacts (Taylor & Brown, 2024).

Quantitative measures provide important benchmarks for VCL effectiveness, including student performance improvements, engagement metrics, completion rates, and competency assessments (Anderson & Thompson, 2024). However, these measures must be complemented by qualitative approaches that capture the nuanced experiences of learners and stakeholders, including satisfaction surveys, focus group discussions, reflective assessments, and case study analyses. The combination of quantitative and qualitative data provides a comprehensive understanding of VCL impacts that supports evidence-based improvement efforts (Zhang & Kumar, 2024).

Continuous improvement processes ensure that VCL programs re-

main effective and responsive to changing needs and circumstances. The most successful approaches involve regular review cycles that incorporate stakeholder feedback, systematic analysis of evaluation data, and implementation of evidence-based improvements. These processes recognise that VCL implementation represents an ongoing journey of learning and adaptation rather than a one-time implementation effort (Liu & Thompson, 2024).

Policy and Institutional Support for VCL Integration

The sustainable integration of VCL frameworks requires comprehensive institutional support that extends beyond individual course implementations to encompass institutional policies, resource allocation, and strategic planning (White & Davis, 2024). This support must address both immediate implementation needs and long-term sustainability considerations, ensuring that VCL initiatives can adapt and evolve with changing educational and technological landscapes.

Strategic policy frameworks provide the foundation for successful VCL implementation by establishing clear institutional commitments, resource allocation priorities, and governance structures (White & Davis, 2024). These frameworks must address faculty development needs, student support requirements, and technology infrastructure investments while maintaining alignment with broader institutional goals and external accreditation requirements (Liu & Thompson, 2024). The most effective policies recognise VCL as an integral component of institutional mission rather than an optional technological addition (Glasgow et al., 2024).

Sustainability considerations require long-term planning that addresses financial resources, organisational capacity, and quality assurance mechanisms. Successful institutions develop diversified funding strategies that include institutional investment, external partnerships, and revenue generation opportunities (Singh & Patel, 2024). They also invest in organisational capacity building that ensures internal expertise development and knowledge management systems that support continuous improvement and adaptation (Peterson & Wilson, 2024).

Future Directions and Emerging Opportunities

The continued evolution of VCL frameworks reflects broader trends in educational technology, pedagogical innovation, and workforce development that will shape the future of higher education and lifelong

learning. Emerging technologies, including artificial intelligence, virtual and augmented reality, and blockchain credentialing systems, offer new possibilities for enhancing VCL experiences and outcomes. These technological developments promise to make VCL environments more personalised, immersive, and connected to broader professional and educational networks (UNESCO, 2024).

Pedagogical innovations continue to expand the possibilities for VCL implementation, including micro-learning approaches that provide bite-sized collaborative experiences, competency-based frameworks that focus on skill development rather than credit accumulation, and community-engaged learning that addresses local and global challenges through collaborative action. These innovations reflect growing recognition that learning must be flexible, relevant, and connected to real-world impact to remain effective in contemporary contexts (OECD, 2024).

The integration of VCL approaches with emerging educational models such as stackable credentials, experiential learning programs, and industry-education partnerships suggests that collaborative learning will become increasingly central to educational innovation. These developments point toward a future where VCL serves not as an alternative to traditional education but as an integral component of comprehensive educational experiences that prepare learners for lifelong learning and professional adaptation (Wang & Johnson, 2024).

Conclusion

The implementation of VCL frameworks represents a significant opportunity for educational institutions to enhance their relevance, effectiveness, and impact in serving diverse learner populations and addressing contemporary educational challenges (Brown et al., 2024). Through systematic stakeholder collaboration, evidence-based design, and continuous improvement processes, institutions can create VCL experiences that prepare learners for the collaborative, technological, and adaptive requirements of modern professional environments (Glasgow et al., 2024).

The success of VCL implementation depends fundamentally on the quality of collaborative relationships among stakeholders who bring diverse expertise, perspectives, and resources to the educational enterprise (Chen et al., 2024). When institutions invest in building and maintaining these collaborative partnerships, they create the founda-

tion for educational innovation that benefits not only individual learners but also broader communities and professional sectors (Williams & Martinez, 2024).

The evidence demonstrates that VCL frameworks can significantly enhance educational outcomes when implemented with careful attention to pedagogical principles, technological capabilities, and stakeholder engagement (Anderson & Thompson, 2024). As educational institutions continue to navigate the challenges of digital transformation, evolving learner needs, and changing professional requirements, VCL offers a proven approach for creating meaningful, impactful learning experiences that prepare graduates for success in an interconnected and rapidly changing world (UNESCO, 2024). The continued development and refinement of VCL approaches will undoubtedly play a crucial role in shaping the future of higher education and lifelong learning, contributing to more inclusive, effective, and relevant educational systems that serve the needs of individuals, communities, and societies in the 21st century (Wang & Johnson, 2024).

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Concluding Remarks

This collective monograph titled *Higher Education Contemporary Learning Landscape: Virtual Collaborative Learning* is both a reflection of the profound changes reshaping higher education and a call to action for educators, policymakers, and institutional leaders in the Western Balkans and beyond. Through its four-part structure, it offers a panoramic view of the theoretical foundations, practical implementations, challenges, and transformative potential of Virtual Collaborative Learning (VCL) in higher education. As emphasized in the first chapter, Virtual Collaborative Learning is a broader concept that encompasses collaborative learning in virtual environments without being limited to international contexts. Therefore, the subsequent chapters focus on Virtual Collaborative Learning rather than the distinct yet related concept of Collaborative Online International Learning (COIL). The chapters make clear that VCL is not a mere temporary pedagogical trend but a transformative framework redefining how we approach learning, teaching, and collaboration. This monograph provides not only a comprehensive analysis of current trends in digitally enhanced higher education but also a clear direction for its future.

A Paradigm Shift in Higher Education

Part 1 of this monograph highlights how Virtual Collaborative Learning offers innovative responses to the challenges of internationalisation, accessibility, and digital transformation in Higher Education. Far beyond content delivery, both models are proactive pedagogical frameworks that address the demands of a globalised, interconnected, and rapidly evolving world. By leveraging technology, they foster collaboration and help students develop essential 21st-century skills such as critical thinking, digital literacy, teamwork, and intercultural competence.

VCL reflect a shift from traditional, lecture-based teaching toward participatory, student-centred learning environments where knowledge is co-created. VCL is especially relevant in resource-constrained regions, including the Western Balkans, where many contributors to this volume are based. Grounded in constructivist, Active Learning, and connectivist theories, the VCL framework promotes active, social,

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

and networked learning that fosters autonomy, problem-solving, and intercultural understanding.

The monograph also provides practical guidance on the administrative, technological, and pedagogical conditions necessary for successful VCL implementation. It emphasises the need for institutional support, professional development for faculty and e-tutors, and the creation of inclusive digital infrastructures. The COWEB Erasmus+ project, particularly in the Western Balkans, serves as an instructive case study in regional capacity building and international collaboration.

Parts 2 and 3 delve into the operational dimensions of VCL, exploring both its educational benefits and implementation challenges. Case studies and assessments validate VCL's impact while also revealing obstacles, such as resistance to change among faculty and limitations in institutional infrastructure. While stressing the need for ongoing staff development, interdisciplinary cooperation, and alignment with institutional strategies and quality assurance systems, the monograph advocates for a shift from traditional, individualistic assessment models to more holistic approaches that capture both individual and group contributions, foster self- and peer-assessment, and align with the collaborative character of VCL. Empirical findings presented across the chapters provide strong evidence of VCL's positive impact on student engagement, motivation, and the acquisition of transversal skills. It highlights how real-world projects, facilitated through VCL, motivate learners by giving them a sense of ownership, relevance, and purpose in their studies. It confirms that students participating in VCL and COIL projects report increased digital literacy, intercultural sensitivity, and readiness for global citizenship.

Part 4 addresses the human dimensions of virtual learning. It reaffirms that digital tools are only as effective as the pedagogies they support and the values they uphold. Intercultural collaboration, reflective learning, and meaningful student engagement are central to the success of VCL.

Finally, the monograph underscores the importance of supportive institutional policies, sustainable investment in digital infrastructure, and the integration of VCL into broader strategies for internationalisation. Equally, the monograph acknowledges a necessary philosophical questioning to remind us that technology must serve pedagogy, and not the other way around.

Future Directions

Looking ahead, this monograph also identifies key future directions:

- *Integration of Artificial Intelligence:* The potential of AI to personalise learning, support formative assessment, and enhance collaborative dynamics is explored, with a call for ethical, inclusive, and human-centred implementation.
- *Lifelong Learning:* VCL is positioned as a framework not only for traditional higher education but also for lifelong learning, professional development, and community engagement.
- *Policy and Institutional Support:* The need for policy frameworks, continuous faculty development, and the integration of VCL into accreditation and quality assurance systems is highlighted as critical for mainstreaming virtual collaboration in higher education.

With the right conditions in place, like pedagogical integrity, digital infrastructure, faculty training, and inclusive policies, VCL can serve as a long-term commitment to accessible, high-quality education.

Call to Action

- *For Faculty:* Educators are the cornerstone of any successful VCL initiative. As this monograph shows, innovative pedagogy does not require abandoning disciplinary content; it requires reimagining delivery, engagement, and assessment. Faculty are encouraged to experiment with collaborative methods. With structured support, including from e-tutors, educators can play an active role in shaping inclusive, transformative learning experiences.
- *For Students:* Students are not just consumers of education; they are co-creators of knowledge in a global learning community. VCL invites students to engage, reflect, collaborate, and lead across cultural and disciplinary boundaries. The skills gained are not only academic assets but vital competencies for a dynamic, interconnected world.
- *For Policymakers:* Digital transformation in higher education requires more than funding technology. It demands regulation, institutional incentives, and cross-border cooperation. Clear accreditation standards, support for teacher development, and the inclusion of virtual collaboration in national and regional strategies are essential to unlock VCL's full potential.

The future of higher education depends on the collective commitment and ability of faculty, policymakers, and students to build inclusive, innovative, and collaborative learning ecosystems for all. Let this monograph serve as both a roadmap and an invitation for further research, practical implementation, and experimentation.

Let us move forward, together, and collaboratively.

Dr. Esmir Demaj
COWEB Project Manager

https://doi.org/10.53615/978-83-65020-54-3/311-314

Reviews

The monograph *Higher Education Contemporary Learning Landscape: Virtual Collaborative Learning* constitutes a substantial and forward-looking contribution to the ongoing scholarly discourse on digital education and international collaboration within the evolving landscape of higher education. Thoughtfully edited by Valerij Dermol, Esmir Demaj, and Dardane Nuka, this volume presents a rich and diverse compilation of perspectives, empirical findings, practical experiences, and theoretical frameworks. It addresses the increasingly important and timely topics of Virtual Collaborative Learning (VCL) and Collaborative Online International Learning (COIL), offering valuable insights for academics, practitioners, and policymakers engaged in the internationalisation of higher education.

The monograph is systematically divided into four thoughtfully composed sections, providing:

- A comprehensive examination of the pedagogical foundations that support Collaborative COIL and VCL;
- Progressive analyses addressing emerging topics, including transversal skills development and the integration of artificial intelligence;
- Applied case studies alongside practical methodologies for evaluation and for addressing challenges related to implementation;
- An in-depth consideration of the institutional, cultural, and policy frameworks essential for ensuring the long-term sustainability of VCL initiatives. This structure provides a holistic overview of the subject matter, encompassing topics ranging from general background content and analytical insights to concrete examples, as well as a broader examination of the content's impact in relation to institutional, cultural, policy, and strategic effects at the individual, institutional, and broader regional levels.

A primary strength of the monograph lies in its capacity to position digital collaboration not merely as a transient phenomenon, but as a fundamental pillar in shaping a resilient, inclusive, and globally connected higher education system. Through a skillful integration of criti-

Dermol, V., Demaj, E., Nuka, D., & Altmann, M. (Eds.) (2025). *Higher education contemporary learning landscape: Virtual collaborative learning.* ToKnowPress.

cal theoretical analyses and empirical insights drawn from the VALEUX and COWEB projects, the volume offers an authentic and multifaceted perspective that holds significant value for both scholars and practitioners engaged in the field.

Of particular importance is the monograph's emphasis on capacity development within the Western Balkans, a region that remains comparatively underrepresented in existing scholarly work on digital pedagogy. By spotlighting this area, the publication not only broadens the scope of the global conversation on digital and international learning but also underscores the vital role of regionally adapted strategies in addressing disparities in access to education. Such an approach highlights the necessity of context-sensitive methodologies for fostering equitable participation in the internationalised higher education landscape, thereby contributing meaningfully to the broader objectives of inclusivity and sustainability in educational development.

Although the case studies presented in the monograph are both insightful and engaging, certain chapters would be further enhanced by the inclusion of more comprehensive longitudinal analyses. Such extended studies would allow for a deeper understanding of the sustainability and the enduring impacts of VCL initiatives, particularly within the specific context of the Balkan region.

Additionally, the monograph would have been further strengthened by more frequent citations and integration of regional scholars, enhancing its authenticity, relevance, and credibility within the academic community dedicated to the internationalisation of higher education. Moreover, the incorporation of wider international comparisons could have reinforced the global applicability of the findings, offering a more nuanced understanding of how VCL models function across different educational, cultural, and institutional environments. Expanding the comparative framework would have allowed the monograph to speak even more powerfully to diverse audiences and to highlight best practices adaptable across varied higher education systems.

In conclusion, *Higher Education Contemporary Learning Landscape: Virtual Collaborative Learning* emerges as a highly commendable and essential contribution to the scholarly and professional discourse. The volume successfully encapsulates the profound transformation currently reshaping the higher education sector, while simultaneously offering a clear and forward-looking strategic vision for the future development of internationalisation of higher education at strategic level.

Moreover, the monograph thoughtfully addresses the crucial dimensions of internationalisation at home and internationalisation of the curriculum, recognising their growing significance in fostering inclusive and globally engaged academic environments. By integrating these concepts with digital collaboration and intercultural learning, the publication positions itself as a critical resource for a diverse range of stakeholders.

Educators, academic leaders, policymakers, and researchers committed to embedding virtual collaborative practices and enhancing intercultural competencies within their institutional frameworks will find this monograph to be an invaluable guide. Its strategic insights and practical recommendations provide a robust foundation for those aiming to advance the quality and inclusiveness of internationalised higher education in both policy and practice.

Dr. Katarina Aškerc Zadravec

The monograph *Higher Education Contemporary Learning Landscape: Virtual Collaborative Learning* represents a timely and comprehensive exploration of digital pedagogical approaches in higher education. Edited by Valerij Dermol, Esmir Demaj, and Dardane Nuka, the volume offers a rich and well-structured compilation of theoretical reflections, empirical findings, and practical recommendations focused on Virtual Collaborative Learning (VCL) and Collaborative Online International Learning (COIL).

Structured into four parts, the monograph provides:

- A clear conceptual framework distinguishing VCL and COIL, their pedagogical underpinnings, and transformative potential;
- A critical expansion into transversal competencies, AI integration, and critical theoretical perspectives;
- A practice-oriented examination of assessment strategies, real-world applications in the Western Balkans, and implementation challenges;
- A discussion of the broader impacts of VCL on student engagement, intercultural competence, pedagogical innovations, and supportive institutional policies.

One of the monograph's significant strengths is the balance between academic rigor and practical applicability. The theoretical chapters are enriched with detailed case studies and empirical data, offering readers not just insights but also tested models for implementation. Detailed case studies from the Erasmus+ projects VALEU-X and COWEB bring valuable real-world insights, while conceptual discussions are always linked to actionable recommendations. Particularly commendable is the volume's emphasis on VCL as a sustainable, future-ready model of education, rather than a temporary solution prompted by crises.

The monograph also highlights the need for institutional commitment, technological infrastructure, and faculty training to ensure the successful integration of VCL and COIL initiatives. By addressing these systemic aspects, it provides a roadmap for higher education institutions aiming to embed digital collaboration within their curricula and policies. The emphasis on fostering intercultural competencies, critical thinking, and digital fluency reflects the evolving needs of the global workforce. Minor limitations include occasional brevity in methodological discussions and the focus on a specific regional context (Western Balkans), which could have been broadened with comparative perspectives from other global regions. Nevertheless, these aspects do not diminish the volume's overall contribution and relevance.

In conclusion, this monograph is a valuable resource for scholars, educators, and higher education leaders interested in the advancement of digital collaboration, internationalization, and the development of 21st-century skills. It successfully bridges theory and practice and offers a forward-looking vision for the future of higher education. It is a recommended read for anyone seeking to innovate educational practices in an increasingly interconnected world.

Dr. Viktorija Florjančič

The monograph *Higher Education Contemporary Learning Landscape: Virtual Collaborative Learning,* edited by Valerij Dermol, Esmir Demaj, and Dardane Nuka, presents a comprehensive analysis of current educational challenges and responses in the context of a digitized and globally connected academic landscape. It addresses the changing requirements of higher education institutions aiming to integrate internationalization, digital collaboration, and competency development.

The volume successfully integrates theoretical foundations with practical applications, offering relevance for both researchers and practitioners. Its primary strength is the structured presentation of various aspects of Virtual Collaborative Learning (VCL) and Collaborative Online International Learning (COIL), supported by conceptual discussions, empirical investigations, and illustrative case studies. Notably, the discussions connecting VCL to transversal competencies and lifelong learning are particularly insightful. The authors effectively position VCL not just as an alternative delivery format but as a transformative pedagogical strategy essential for cultivating digital fluency, intercultural communication, and collaborative skills.

Informed by the VALEU-X and COWEB Erasmus+ initiatives, the monograph proposes practical frameworks for course design, institutional integration, and assessment practices. The inclusion of case studies from the Western Balkans introduces context-specific insights that emphasize the flexibility and applicability of VCL across diverse educational settings. Importantly, the monograph openly addresses technological, cultural, and administrative challenges, offering realistic strategies for overcoming these obstacles. This critical engagement enhances its practical utility.

Although the emphasis on the Western Balkans contributes meaningfully to the global discourse, comparative perspectives from other regions would have further strengthened the generalizability of the conclusions. Furthermore, a more in-depth critical analysis of unintended consequences associated with digital learning—such as equity concerns or digital fatigue—would have enriched the overall critique.

In conclusion, *Higher Education Contemporary Learning Landscape: Virtual Collaborative Learning* constitutes a forward-looking and pertinent resource for academic leadership, instructional designers, researchers, and policymakers. It makes a valuable contribution to the evolving discourse on higher education and offers implementable strategies for embedding collaborative, intercultural, and digital competencies into academic practice.

Jonathan Dyrna, M.Sc.

This book explores the transformation of higher education in the digital era, with a particular focus on Virtual Collaborative Learning (VCL). As universities and colleges adapt to global interconnectedness, technological change, and new expectations from students and employers, VCL emerges as a key pedagogical approach that combines digital tools, international collaboration, and intercultural dialogue.

The volume brings together contributions from scholars and practitioners across Europe and the Western Balkans, drawing on the experiences of Erasmus+ projects dedicated to advancing and applying the VCL methodology. It provides theoretical foundations, practical strategies, case studies, and critical reflections that illustrate how VCL can be designed, implemented, and scaled within diverse institutional and cultural settings. The book's four parts cover pedagogical frameworks, transversal competencies and AI, assessment, and infrastructural support, and finally, evidence of impact on learners, educators, and institutions.

The book aims to inspire innovation, provide actionable guidance, and strengthen the academic community's capacity to create more accessible, collaborative, and future-ready education. By bridging theory and practice, it demonstrates that VCL is not a temporary response to crises but a long-term pathway toward inclusive and globally connected learning.

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