

José María Esteve Faubel  
Aitana Fernández-Sogorb  
Rosabel Martínez-Roig  
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(eds.)

# Transformando la educación a través del conocimiento

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(eds.)

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# Towards a sustainable active virtual learning model

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**Abstract:** Although substantial research has been dedicated to refining active learning in recent years, minor improvements have been made to its development within the virtual environment oriented towards sustainability. Few information theorists and practitioners would argue the necessity of the metacognitive evolution of training processes performed via telecollaboration. These problems can be solved by using Active Learning Methodologies and Cooperative approaches. Our research examines the Sustainable Active Virtual Learning or SAVL model, which combines relevant social, academic, competential and sustainable development factors. We analyse four case studies' outcomes accomplished through inter-university virtual collaboration; each followed a different final task engagement (case study 1 – portfolio, case study 2 – video, case study 3 – presentation and case study 4 – poster). The study showed that virtual collaboration might be leveraged to build creative learning environments, allowing more cost-effective university training options. Given the current growth of internet-based educational exchanges, instructors and students will appreciate the suggested model. The proposed model application for enhancing online interactions helps overcome such challenges as schedules or grading systems and boosts learning motivation and purposefulness.

**Keywords:** Higher education, virtual learning, sustainable development, learning methods, case studies.

## 1. INTRODUCTION

We must return to the origins of the contemporary university association to investigate the junction of competence-based higher education, sustainability, telecollaboration and active learning. The Bologna Process ushered in a significant shift in tertiary education: the European Higher Education Area (EHEA), a tiered collaboration system among 48 countries to provide comparable degrees, academic flexibility and high-quality instruction.

Heedful of that, the EHEA's core tasks start to evolve a broader range of perspectives. Over the years, more scholars urged the necessity of value co-creation and teaching quality (Díaz-Méndez & Gummesson, 2012), even implementation of democratic values (Curaj et al., 2018) or transdisciplinary organisation updates (Jæger, 2021), among others. And most clearly, there is a greater awareness of competence-building and sustainability as the means to achieve higher education and employment standards.

Initially, as voiced by Bosselmann (2001), university and sustainability required a better-defined paradigm, overcoming the borders of purely formal division between facts or science and values or arts and humanities. Additionally, the concept of a sustainable university entailed a better consideration and acceptance of the stakeholders (Wright, 2010). Presently, sustainable leadership can help universities engage in institutional culture change, assisting them in finding the best ways to respond to local, regional and global challenges (Leal et al., 2020).

Promoting Agenda 2030, UNESCO, as United Nations' agency coordinating this global commitment, offered an internally consistent and objective explanation of Education for Sustainable Devel-

opment (ESD). According to United Nations (2015), ESD is long-term, transformational learning that equips individuals of all ages with the information, skills, values, and attitudes to confront global issues, such as climate change and environmental degradation, biodiversity loss, poverty and inequality.

Although launched not so long ago, the Sustainable Development Goals (SDG) caused great aspirations and interest within the international community (Bowen et al., 2017; Camacho, 2015; Jones et al., 2017). Specifically, Education for Sustainable Development is acknowledged as a critical facilitator of all Sustainable Development Goals and an essential part of Goal 4 on quality education (United Nations, 2015). Furthermore, Goal 17 involves enhancing global partnerships for sustainable development and encourages effective cooperation among nations.

While the SDGs are organised in principle, they tend to gain relevance and representativeness in undergraduate preparation mainly focusing on technical (Gómez-Martín et al., 2021; Pérez-Sánchez et al., 2020; Turan & Uzunboylu, 2019) or teaching degrees (García-González et al., 2020; Zamora-Polo & Sánchez-Martín, 2019). There is also an urgent need not only to put this in the context of acquiring second and third language (L2/3) for professional purposes (Kwee, 2021), but to integrate content and foreign language learning pedagogies.

Another compelling challenge in this area is the development of distance cooperation opportunities also known as virtual learning (exchange) or telecollaboration, among others. Therefore, the starting point of this research is the virtual learning idea as a process of active learning, cooperation and international online collaboration aimed at the capacity building during formal education stages.

Our study looks at the Sustainable Active Virtual Learning (SAVL) paradigm, which incorporates important social, academic, competency, and long-term development components. We explore the outcomes of four case studies that were completed through inter-university virtual collaboration; each had a different final task engagement (case study 1 – portfolio, case study 2 – video, case study 3 – presentation, and case study 4 – poster). Virtual collaboration may be used to create innovative learning environments, allowing for more cost-effective university training possibilities, according to the study.

We conduct our analysis of the virtual learning cases by centring on the research questions of how the Sustainable Active Virtual Learning framework aids in the development of a meaningful learning experience (RQ1). In addition, we highlight the active learning pedagogies that are required to facilitate sustainable learning on virtual learning bases (RQ2). Finally, we inquire about organisational efficiency in order to gain a fresh view of training outcomes (RQ3).

## **2. LITERATURE REVIEW**

This section primarily seeks to offer a brief overview of theoretical bases that link active and cooperative learning to the process of knowledge acquisition. The theoretical bases include the three fundamental features affecting competence and sustainable education. These aspects are cooperative learning, active methodologies, as well as second language acquisition. Each of these aspects is discussed in greater detail below.

### **2.1. Active methodologies**

The social-constructivist theory holds that individuals learn through the creation of their knowledge and then linking the newly acquired ideas and experiences with the existing information and experiences (Bruner, 1977; Vygotsky, 1978). Resultantly, new or improved understanding is generated. Using active learning approaches, the educator asks the students to explicitly make associations between the current mental models and new material, leading to the extension of their understanding.

Similarly, the educator can offer learning activities that give the learners an opportunity to address concepts that might have been misunderstood. In a big way, this approach helps the students reconstruct their mental models using the more correct knowledge. Both methods, which encourage active learning and learner-centred classroom organization, ensure that the desired social, cognitive, and cultural development is achieved (Brame, n.a.; Felder & Brent, 2009).

However, even with the above evidence, the question of what constitutes active learning often emerges. According to Bonwell and Eison (1991, p. 2), active learning refers to the “instructional activities involving students in doing things and thinking about what they are doing.” Emphasis is placed on the development of students’ skills instead of just imparting knowledge. The engagement of higher-order mental capacities and promotion of participatory education are also encouraged.

These elements are seen in the modifications made in the education format informed by EHEA. The modifications extend beyond purely administrative aspects by introducing new pedagogical methods based on the constructivist approach. Learning is also designed from the students perspective and is based on their motivation and future professional competences.

This approach represents a future-oriented deep university education, according to Matsushita (2018). It also helps guide the students through an experiential and exponential journey, which ultimately leads to the achievement of the expected outcomes. In an epistemological review of the recent foundations of active learning, Robertson (2018) also reiterates the importance of evaluative meta-cognition, learning communities, and active educational co-creation.

## **2.2. Cooperative learning**

This approach is built on the sociocultural theory (Bonk & Kim, 2013), which holds that learning is achieved when a learner solves challenges beyond their current level of development, the zone of proximal development, with the assistance of peers or teachers/adults. In cooperative learning, therefore, groups are formed to aid in both short and long-term activities, which ultimately create an integrative social component.

Both active and cooperative learning techniques borrow heavily from the sociocultural component of the constructivist learning theory. To this end, the techniques leverage peer interaction to support the construction of accurate and extended mental models among the learners. The four main theoretical perspectives that affect collaborative learning on performance, according to Slavin (1995), include social cohesion, motivation, refinement, and cognitive development.

It has also been established that effective community building largely depends on cooperation. In cooperative learning, for example, small groups ensure that the learners do not necessarily maximize their own learning but also help each other in the process (Slavin, 2014). To this end, cooperative learning should be student-centred. It should also seek to go beyond the transfer of information and help in the development of interpersonal skills, teamwork, and critical thinking.

In the classroom, cooperative learning has been shown to boost students’ self-esteem, collaboration, and performance. Strategies that educators can use to promote cooperative learning include the creation of independent groups, securing individual contributions, setting common goals, teaching communication, as well as integrating cooperative learning into pedagogical experiences.

## **2.3. Second language acquisition**

Second language teaching and learning is largely determined by the curricular or institutional background (Dicenlen, n.d.). However, since the 1970s, the communicative approach (Hymes, 1972)



and foreign language learning theories (Krashen, 1981) have highlighted strategies to communicate meanings.


The experts stress the importance of balancing second language instruction with communicative skills development (Spada, 2007), supporting the competence context (Berns, 2013) and using communicative pedagogy (Canale, 2014). The combination of competence development and the integration of second languages enhances the development of communicative skills (Council of Europe, 2020).

English language learning is increasingly utilising virtual learning environments; they assist in the reinforcement of curricular skills and intercultural aspects of communicative competences (Avgousti, 2018; Polyakova et al., 2021; Thamarana, 2016, August 26-27), provide an innovative opportunity for teaching second languages.

Using telecollaboration to learn a second language contributes to an exclusive experience and facilitates a deeper understanding of new cultures and languages. This strategy fully aligns with the 2030 Agenda (United Nations, 2015, particularly Goal 4: Ensure inclusive, equitable and quality education and Goal 17: Partnerships for the goals. As well these aspects, the project presented in this article fosters the critical perception of soft skills and strengthens the opportunities to achieve competence objectives.

### 3. METHODOLOGY

We now propose a methodology for developing and implementing a virtual exchange model using the theoretical foundation outlined above as well as Jager et al. (2021) and Garces & O'Dowd's (2021) suggestions. Figure 1 depicts the Sustainable Active Virtual Learning (SAVL) model aimed at the advancement of transversal, communicative and intercultural competences in the field of specialised language use. The linear configuration creates a permanent background of the Agenda 2030 aware-ness within stages 1-4 as illustrated below. The training model proposed does not require expensive equipment, large organisational costs or other formal arrangements.

S	<p><b>1. SUSTAINABILITY</b>  <b>Sustainable</b> Development Goals (ODS): 17 goals by United Nations</p> <hr/> <p>Agenda 2030 - An action plan for people, planet and prosperity supported by United Nations</p>	<p>Choose your ODS focus:</p> 
A	<p><b>2. ALM &amp; COOPERATION</b>  <b>Active</b> Learning Methodologies involve the movement from LOTS to HOTS, metacognition, ZPD, scaffolding and develops Bloom's taxonomy top abilities by applying active techniques and tasks (demonstrations, mind-maps).</p> <hr/> <p>Cooperation is a joint collaboration work/activity in small groups attaining shared education goals and being embedded in the curricular development.</p>	<p>Activate learning approaches:</p> <ul style="list-style-type: none"> <li>• knowledge-building by students</li> <li>• learning by doing</li> <li>• meaningful and motivating content</li> <li>• ALM techniques</li> <li>• active final task</li> <li>• formative assessment</li> </ul> <p>Cooperate:</p> <ul style="list-style-type: none"> <li>• formal/informal cooperative learning groups</li> <li>• base groups</li> <li>• pair work</li> <li>• inter-group cooperation</li> </ul>



V	<b>3. VIRTUAL EXCHANGE</b> Virtual exchange process based on Erasmus Virtual Learning, COIL, UNICollaboration or own university support.	Determine virtual exchange system: <ul style="list-style-type: none"> <li>• Pre-established systems</li> <li>• Own process design</li> </ul>
	Digital tools for information processing and communication	Use digital tools & support: <ul style="list-style-type: none"> <li>• Moodle / Sakai / LM platforms</li> <li>• Teams / Zoom / Meet / Skype</li> <li>• G-Drive tools</li> </ul>
L	<b>4. LANGUAGE LEARNING &amp; COMPETENCES</b> L2/3 learning process & outcomes linked to Revised Bloom's taxonomy	Determine virtual exchange system: <ul style="list-style-type: none"> <li>• Pre-established systems</li> <li>• Own process design</li> </ul>
	Competence is the ability to successfully perform a particular task.	Involve competences: <ul style="list-style-type: none"> <li>• Transversal (generic) and specific competences</li> <li>• Plurilingual and pluricultural competences</li> </ul>

**Figure 1.** Sustainable Active Virtual Learning (SAVL) model.

In addition, Figure 1 displays the process of virtual collaboration construction. Despite certain reservations shared by Helm (2015) over some organisational, technical and time limitations related to telecollaboration, there is strong evidence of a positive attitude towards this approach. This may or may not be true in practice. The exchange model designed unifies the advantages of the individual or group initiative and the special education mission. A sustainable Active Virtual Learning (SAVL) scheme does not require a theoretical safeguard to function properly. Even though these days we rely on practical involvement for the appropriate performance of any cooperation, SAVL is a truly engaging and student-centred proposal.

#### 4. IMPLEMENTATION

The need to enhance virtual networking among students from different institutions inspired the creation of a methodological approach for combining online tools to carry out four case studies, incorporating portfolio, video, presentation, and poster final tasks. All the students came from three different universities and countries: CEU Cardenal Herrera (Spain), LAB University of Applied Sciences (Finland) and Lomonosov Moscow State University (Russia) to signify diversity as a key consideration in promoting inclusive activity-based learning. Telecollaboration also strengthens the development of intellectual skills, which are very vital due to the dynamic and global interdependencies. The students were led by lecturers and researchers who organised them into workgroups.

Additionally, the researchers used a draft template version for keeping track of each collaboration description available for the participants (see Table 1 below). This resource proved to be timely support in challenging situations of technical or health issues.

**Table 1.** Virtual exchange structure design.

<b>Course details: Dates:</b>	<b>University 1 Faculty</b>	<b>University 2 Faculty</b>
Coordinators:	Number of students	Number of students
Organisers:		
Research support:		
1. Project name		
2. Aim	To design a...	
3. Objectives	a) Identify... b) Compare c) Create d) Develop	
4. Sociocultural topics		
5. Languages	English	Spanish
6. Task	Activity design, process and structure (short description)	
7. Evaluation	Description and rubric	
8. Number of session	3-5	
9. Session planning	Session 1 / 2 / 3 / 4 / 5 details	
10. Final session	Final task presentation and virtual exchange discussion	
11. Grading and feedback	Assessment of the learning outcomes	

#### 4.1. Case Study 1: The Portfolio Approach

The portfolio approach was designed to keep extensive records on tasks, digital reading and writing materials, and online interaction records. To prove the effectiveness of the portfolio in teacher training, a trial applying the development of language-based activities was conducted in the experimental groups in May 2021. It had 21 participants, 10 from CEU Cardenal Herrera and 11 from the Lomonosov Moscow State University, in 4 groups. To get a record of the digital virtual learning interaction, the participants engaged in the project portfolio to showcase their efforts, signs of progress, and achievements.

Moreover, the training process was organised in the following manner:

- (a) the mixed group got together and started working on the assignment;
- (b) the task consisted of detecting the major learning difficulties in L2/3 acquisition and designing activities for younger learners;
- (c) all stages of the working process were documented in detail by using a group portfolio;
- (d) at the end of the study, each group presented the portfolio and discussed the telecollaboration results.

In this learning context, the lecturers organised the participants to conduct various experiments, applying language-based activities' development, and the lecturers, for any necessary corrections, analysed the findings. Since the students were all sourced from different study courses and diverse universities, the lecturers had to provide multiple topics to the students.

The lecturers then allowed the diverse students to vote on the topic deemed fit for them to be discussed in the next session. This gave the students a wider variety of the topics available, and a majority voted topic was selected. The participants met once every week for five weeks, each session lasting 45 minutes. The time frame allowed maximum concentration on the topics discussed since too much time may be boring as they will start showing signs of disinterest. However, the students were not restricted within the 45 minutes meet and could participate in any other discussions. Likewise, the one-week time frame between one session and the other allowed students who may not be well conversant with the topic to grasp what it entailed and thus feel included in the conversation. The learners conducted their weekly meetings via the Zoom platform to facilitate communication within borders due to the Covid 19 restrictions on physical interactions. Zoom is more efficient and effective as it allows video calls, sharing screens, and exchanging messages without barriers and interruptions. However, in an attempt to effectively communicate via the Zoom platform, not all the students dedicated their work to the project, and minor issues of time lateness were noticed. This investigation showed the students' positive attitude regarding the portfolio curriculum approach, as commented during the final discussion (see Figure 2).



Figure 2. Portfolio sample.


#### 4.2. Case Study 2: The Video Approach

During the video case study hold in December 2020, it was noted that as specialised language instructors, we have a large range of evidence that active learning brings numerous advantages over the passive learning environment. Videos have become a key element in higher education (HE), particularly in telecollaboration, blended learning and flipped teaching, an essential content delivery,

and training tool. As an active learning methodology, video review was integrated into case 2. The integration chases three goals: developing cognitive abilities, maximizing motivation, and engaging the participants in an active learning environment. The intervention group consisted of 25 students, with 14 from CEU Cardenal Herrera and 11 from the LAB University of Applied Sciences grouped into 5 teams of 5 students each.

The project participants used the Collaborative Online International Learning (COIL) approach, which the main idea is the fundamental need to challenge the students to establish networks for sharing their different learning experiences. It is consistent with the Social Learning Theory (SLT), which stresses the role of peer learning in fostering information. Participants from the CEU Cardenal Herrera and the LAB University of Applied Sciences institutions used project tools and content related to telecollaboration. They used Zoom for convenience and immediate feedback and allowed video calls, non-video calls, sharing of screens, and getting responses to the messages sent without interruption. The plan needed the students to meet once a week for five weeks, each session lasting 50 minutes, making participants remain active.

Specifically, the participants were drawn from different study courses and took part in online synchronous discussions. Thus, getting common a common topic called “Soft skills” for collaborative work proved adequate. In addition, the project model was based on three components: icebreaker activities, collaborative tasks, and reflection activities. Icebreaker activities enabled students to know each other and collaborate to compute a detailed report. The collaborative task saw students grouped in rooms to discuss the proposed topic each session. Lastly, a reflection session involved sharing a video review and its outline via Google Drive. For detecting the most frequent skills listed in the outline, the Sketch Engine online tool was used. This corpus analysis system processed the outline texts and uncovered the importance of the “time management” in the first place (11) and “emotional intelligence” (5) collocations/skills (see Figure 3).



Collocations	Frequency	Frequency per million	Score
1 soft-j nouns modified by "%w" skill-n	18	6,158.10	13.3
2 skill-n modifiers of "%w" soft-j	18	6,158.10	13.3
3 time-n nouns modified by "%w" management-n	11	3,763.30	13.3
4 management-n modifiers of "%w" time-n	11	3,763.30	13.3
5 important-j verbs complemented by "%w" be-v	7	2,394.80	14.0
6 be-v complements of "%w" important-j	7	2,394.80	14.0
7 be-v pronominal subjects of "%w" it-d	7	2,394.80	13.0
8 be-v pronominal subjects of "%w" you-d	7	2,394.80	12.4
9 be-v pronominal objects of "%w" it-d	6	2,052.70	13.3
10 skill-n verbs with "%w" as object be-v	6	2,052.70	11.9
11 be-v objects of "%w" skill-n	6	2,052.70	11.9
12 intelligence-n modifiers of "%w" emotional-j	5	1,710.60	14.0
13 emotional-j nouns modified by "%w" intelligence-n	5	1,710.60	14.0

**Figure 3.** Sketch Engine text analysis.

### 4.3. Case Study 3: The Presentation Approach

During the presentation case study (May 2021), an active learning method is developed to improve the effectiveness of presentation-based learning through telecollaboration on report elaboration. The method used in this study is Classroom Action Research and has four stages: planning, implementing, observing, and evaluating. The study showed an improvement in active learning by finding, interpreting, and filtering the information. The focus group consisted of 8 students with each university contributing four and were arranged into four groups. It was carried out in stages. Stage 1 was the preparatory stage where the participants and the author of the project were expected to work on the next items according to the plan, which entailed the topic and the different ways of constructing argumentation on the discussion. The topics discussed were together with stereotypes, equality, education, fashion, and social life. In Stage 2, students were divided into two groups, A and B, each group having two students from CEU Cardenal Herrera and the LAB University of Applied Sciences.

The groups and the author met online on zoom to discuss the planned topics all of them related to Sustainable Development Goal 4 (Quality Education). The online session participants were allowed to independently determine the language rules for conducting a debate session on various options. First, participants changed the language after 20 to 45 minutes. The second option entailed participants from CEU Cardenal Herrera speaking English as those from the LAB University of Applied Sciences speaking Spanish. Lastly, the online sessions were divided into two parts, 30 minutes each for both English and Spanish. The project participants (100% female group) were to conduct the conversation without the lecturer's direct input, who acted in an observer mode. Stage 3 consisted of a post-session questionnaire. On completing every session, students were expected to fill out questionnaires on google forms. Stage 4: Post-session discussion. After each session, the authors reviewed the process to determine and identify the following: 1. Linguistic features and techniques used in the discussion by the participants of a foreign university. 2. Ways of constructing argumentations by representatives of foreign universities 3. Cultural features of the discussions by representatives of the foreign country. The project's implementation included a free schedule and synchronous sessions. One of the most relevant outcomes was a presentation based on the Classroom Action Research technique.

Within this experimental setting, we analysed the frequency of words used in presentations as shown in Figure 4. The frequently used words point to the actual connection between education, children, quality and learning in the Case Study 3 setting.



Overall number of words in 5 presentations:  
1309 words

Top 10 words:  
Education (22)  
Children (14)  
Quality (12)  
Learning (11)  
Development (8)  
Teachers (8)  
Countries (7)  
Health (7)  
School (7)  
Impact (6)

Figure 4. Word Cloud text analysis.



#### **4.4. Case Study 4: The Poster Approach**

During the poster case study (April 2021), it was identified that its main aim was to investigate what effect posters as an active learning methodology element have on the students' academic achievements through telecollaboration. The research was conducted through the pre/post-test model to determine the learning outcomes levels. At the end of the four-week research, it was noted that implementing the activity-based posters in virtual learning contributes to effective communication, integration, and creativity competences development. It consisted of 12 participants, with each institution contributing six and there were three groups. The participants from CEU Cardenal Herrera University and LAB Applied Science University were led by their tutor to conduct research through the pre-and post-test models to determine the learning outcomes levels. After the research was done, the outcome showed that implementing the activity-based posters in online learning facilitated effective communication.

The lecturers helped the students identify better drawing apps and recommended trusted sites that will sum up their outcomes in posters. The students were able to meet virtually through the zoom platforms. They then presented their posters, which ensured an interactive session by allowing video and non-video calls, sharing their PC screens, and sending real-time messages to each other. The re-sponses were fast without any interruptions.

The students were organised into five sessions consisting of a session every week, giving students maximum time to understand the next meeting's topic of discussion. Moreover, each session lasted for 50 minutes allowing for maximum interaction and concentration from the students; hence the goal of message transfer is achieved. Still, the students could freely get into their discussions outside the 50 minutes. Students were allowed to independently choose their preferred methods of the lesson's activity-based poster presentation during the meeting.

The learners are allowed to vote on their preferred methods. Through this, the students can closely relate to the graphics the resulting outlook contains the desired information. However, if some students are not supporting the majority voted poster, a time frame of one week is given to allow the re-search and be familiar with the learning activity-based poster. The posters were based on the research topics, including education, fashion, and equality among all the participants. The students came from different cultural backgrounds, with the CEU Cardenal Herrera University speaking English while the LAB Applied Science University students speaking Spanish. The diversity helped students share their different drawing ideas with the rest, thus promoting diverse knowledge. This was necessary to ensure continuous global dynamism.

Lastly, after the correct posters are presented and reviewed by the lecturer, students are issued with the post-session assessment questionnaire for students to fill on google forms. The review process by the lecturer gives room for correction of possible errors. Figure 5 (below) shows two examples of learning outcomes presented by mixed groups of undergraduates who were able to focus on quality education in two national contexts.





Figure 5. Posters designed by students.

## 5. EVALUATION

As we have seen, the Implementation section allowed us to connect the Sustainable Active Virtual Learning scheme to four different training scenarios. The overall performance analysis now seeks to generally envision strong and weak points of every case study. To that end, we use a statistically proven, time-tested data tool called the Denison Organisational Culture Survey or DOCS (Denison et al., 2012). The original model assesses the efficiency of four major characteristics of organisational culture: involvement, consistency, adaptability and mission. As a result, this provides us with the baseline structure and opens the door for relating those features to social, academic, competential and sustainable outlooks.

With this in mind, a research team member and observer evaluated all case studies using the Likert scale (being 1-the lowest and 5-the highest marks) and shared the data in Table 2. The distribution of scores illustrates in more detail that the Video and Poster (both rated 4,83) case studies resulted in slightly stronger prototypes than the Presentation (4,67) and Portfolio (4,58) options. This might suggest a need for updated, stimulating and more creative training goals.

From the perspective of the critical areas, the social involvement factor is relatively high, whereas the Portfolio (4,33) and Presentation (4,33) cases are missing this interaction. Moreover, the academic consistency part is equally consistent throughout the study. On average, the distribution of competential adaptability reached 4,67 in all cases except for the Portfolio approach, which showed a prominent value of 5,00. Finally, the sustainability mission viewpoint was especially noticeable in the case of studies 2, 3 and 4 and required an enhancement in the Portfolio setting.

Taking the Denison Model, we can have the first insight into the virtual learning system as a type of organisational structure and improve some aspects of the training model applied.

**Table 2.** The Denison Model adaptation.

<b>Adapted Denison model</b>	<b>(1-5)</b>	<b>Average</b>
CS_1_portfolio.[Social involvement. Empowerment.]	4	
CS_1_portfolio.[Social involvement. Team orientation.]	5	
CS_1_portfolio.[Social involvement. Capability development]	4	4,33
CS_1_portfolio.[Academic consistency. Core values.]	5	
CS_1_portfolio.[Academic consistency. Agreement.]	5	
CS_1_portfolio.[Academic consistency. Coordination & integration.]	4	4,67
CS_1_portfolio.[Competential adaptability. Creating change.]	5	
CS_1_portfolio.[Competential adaptability. Student focus.]	5	
CS_1_portfolio.[Competential adaptability. Organisational learning.]	5	5,00
CS_1_portfolio.[Sustainability mission. Strategic direction.]	4	
CS_1_portfolio.[Sustainability mission. Goals and objectives.]	5	
CS_1_portfolio.[Sustainability mission. Vision.]	4	4,33
Average	4,58	
CS_2_video.[Social involvement. Empowerment.]	5	
CS_2_video.[Social involvement. Team orientation.]	5	
CS_2_video.[Social involvement. Capability development]	5	5,00
CS_2_video.[Academic consistency. Core values.]	4	
CS_2_video.[Academic consistency. Agreement.]	5	
CS_2_video.[Academic consistency. Coordination & integration.]	5	4,67
CS_2_video.[Competential adaptability. Creating change.]	4	
CS_2_video.[Competential adaptability. Student focus.]	5	
CS_2_video.[Competential adaptability. Organisational learning.]	5	4,67
CS_2_video.[Sustainability mission. Strategic direction.]	5	
CS_2_video.[Sustainability mission. Goals and objectives.]	5	
CS_2_video.[Sustainability mission. Vision. ]	5	5,00
Average	4,83	
CS_3_presentation.[Social involvement. Empowerment.]	4	
CS_3_presentation.[Social involvement. Team orientation.]	4	
CS_3_presentation.[Social involvement. Capability development]	5	4,33
CS_3_presentation.[Academic consistency. Core values.]	5	
CS_3_presentation.[Academic consistency. Agreement.]	4	
CS_3_presentation.[Academic consistency. Coordination & integration.]	5	4,67
CS_3_presentation.[Competential adaptability. Creating change.]	4	

<b>Adapted Denison model</b>	<b>(1-5)</b>	<b>Average</b>
CS_3_presentation.[Competential adaptability. Student focus.]	5	
CS_3_presentation.[Competential adaptability. Organisational learning.]	5	4,67
CS_3_presentation.[Sustainability mission. Strategic direction.]	5	
CS_3_presentation.[Sustainability mission. Goals and objectives.]	5	
CS_3_presentation.[Sustainability mission. Vision. ]	5	5,00
Average	4,67	
CS_4_poster.[Social involvement. Empowerment.]	5	
CS_4_poster.[Social involvement. Team orientation.]	5	
CS_4_poster.[Social involvement. Capability development]	5	5,00
CS_4_poster.[Academic consistency. Core values.]	5	
CS_4_poster.[Academic consistency. Agreement.]	4	
CS_4_poster.[Academic consistency. Coordination & integration.]	5	4,67
CS_4_poster.[Competential adaptability. Creating change.]	4	
CS_4_poster.[Competential adaptability. Student focus.]	5	
CS_4_poster.[Competential adaptability. Organisational learning.]	5	4,67
CS_4_poster.[Sustainability mission. Strategic direction.]	5	
CS_4_poster.[Sustainability mission. Goals and objectives.]	5	
CS_4_poster.[Sustainability mission. Vision. ]	5	5,00
Average	4,83	

## 5. CONCLUSIONS

The Sustainable Active Virtual Learning (SAVL) model is the original method for managing online collaboration schemes, which we described in our research. This approach enables stakeholders to interact with an enhanced vision of collaborative learning goals, social challenges and technical issues.

The SAVL outline can bring together international users within an innovative L2/L3 language context combined with the promotion of sustainability. Continuing with this logic, we claim that not only does the model provide for effective virtual learning procedures, but so do the research questions answered here:

RQ1. Because of the widespread availability, cost-effectiveness, and efficacy of training practices, incorporating Sustainable Active Virtual Learning into the learning process is a practical approach to acquiring intercultural L2/3 skills.

RQ2. We revealed an interesting pedagogic way of ensuring a quality learning experience oriented towards sustainability by implementing a common training pattern.

RQ3. The virtual exchange was also considered from the perspective of organisational efficiency according to the Denison model and its benefits lie beyond the process of communication online.

The findings of the research imply that future studies should focus on virtual exchange systems, including international HE participants in a guided project interaction. Another crucial part of sup-

porting learning outcomes is to introduce a four-tiered way of managing online training where sustainability, active learning methodologies, virtual collaboration, foreign language acquisition and competences play a special role.

Further experimental investigations on targeting the Sustainable Active Virtual Learning telecollaboration should be conducted due to the relevance of plurilingual development to HE training. One potentially significant shortcoming of our approach is that it must account for more testing; we want to address this in future research.

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