# Institutional teaching choreographies in education for sustainability in times of pandemic: the *Ocean i*$^3$ project

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## Abstract

**Purpose** – The purpose of this paper is to examine the design of choreographies or learning environments which the students participating in *Ocean i*$^3$ pass through during their participation in the project, which requires constant review and interpretation, in times of COVID-19. To this end, it is proposed to: define the institutional teaching choreographies to create authentic and meaningful environments for the active learning of university students; interpret the transversal competences for the sustainability developed in *Ocean i*$^3$ within the framework of institutional teaching choreographies; and value the strengths and weaknesses of the teaching choreographies implemented for the development of transversal competences for sustainability in a situation of health-care crisis.

**Design/methodology/approach** – An exploratory method with an interpretative approach has been selected that enables us to address living and evolving scenarios, didactic choreographies and the development of competences for sustainability.

**Findings** – The perception of students and teachers reveals that it is the use of a multilingual linguistic repertoire (multilingualism) that is most enhanced in *Ocean i*$^3$, although the global and integrative vision of problems and the integration and management of knowledge through contributions from different disciplines and the social context (transdisciplinarity) are also highlighted.

**Originality/value** – This paper describes how face-to-face institutional teaching choreographies for an innovation project have been transformed into synchronous online choreographies encouraging the development of competences for sustainability.

**Keywords** E-learning, Sustainable development, Competency-based teaching, Educational environment, Educational planning

**Paper type** Research paper

## Introduction

Over the years a culture around sustainability has been created in Higher Education (Wright, 2002). Many universities have developed different approaches and frameworks to put Education for Sustainable Development (ESD) into practice (Byrne, 2000; Haan, 2010; Orr, 2002; Parkin *et al.*, 2004; Sipos *et al.*, 2008; and Wiek *et al.*, 2011).



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*Ocean i*$^3$ is an interuniversity [Universidad del País Vasco/Euskal Herriko Unibertsitatea (UPV/EHU) and University of Bordeux (UBx)] and cross-border international (Basque-New Aquitaine Coast) project that responds to the positioning of both universities with respect to sustainability and valuation of the oceans and directly addresses Sustainable Development Goals (SDGs) 4 (Quality Education), 6 (Clean Water and Sanitation), 13 (Action for Climate) and 14 (Underwater Life) of the *2030 Agenda*. *Ocean i*$^3$ has been selected by the European Regional Development Fund, via the third call for the Spain, France and Andorra Interreg V-A program (POCTEFA 2014–2020).

Within the framework of *Ocean i*$^3$, students are offered the chance to develop various work modalities [final degree project – capstone (FDP), end-of-master's projects – master's thesis (MT), voluntary internships, projects and coursework] aimed at a common mission, which focuses on plastics polluting the oceans in this first stage (2019/2020 and 2020/2021 academic years). It is tackled using the so-called mission-oriented research and innovation approach (Mazzucato, 2018; Sachs *et al.*, 2019) which claims to point research, innovation and training toward global challenges to thereby transform them into achievable, specific and measurable territorial objectives. It also uses the Civic University to propose that participating universities should be competitive on a worldwide scale and committed at a local level (Goddard *et al.*, 2012).

The purpose of the study focuses on examining the design of the teaching choreographies or learning environments which the students participating in *Ocean i*$^3$ pass through during their participation in the project, which requires constant review and interpretation, in times of COVID-19. To do so, the following objectives are considered:

- define the institutional teaching choreographies to create authentic and meaningful environments for the active learning of university students;
- interpret the transversal competences for the sustainability developed in *Ocean i*$^3$ within the framework of institutional teaching choreographies; and
- value the strengths and weaknesses of the teaching choreographies implemented for the development of transversal competences for sustainability in a situation of healthcare crisis.

## Theoretical framework

### *Education for sustainable development: a complex task for higher education institutions*

In 1990, the Talloires Declaration debated the role of the university in the transition toward a more sustainable society (Knapp, 2000). The Halifax Declaration (1991) encouraged universities to rethink their environmental policies and practices (Wright, 2003). In 1992, the Rio Declaration on Environment and Development was drawn up with 27 principles seconded by higher education institutions. A year later, the Swansea Declaration and the Copernicus Charter reinforced the ethical and moral responsibility of universities to contribute toward a safer and more civilized world from the environmental point of view (Herremans and Reid, 2002). In 2000, the World Association of Higher Education for Sustainability rallied countries and universities to implement actions:

- approval and implementation of the Talloires, Kyoto and Copernicus Declarations;
- devising of a tool kit to move from commitment to action in teaching, research and outreach; and
- strengthening the development of centers of excellence and committing them to setting up collaboration networks (Corcoran *et al.*, 2002).

The United Nations General Assembly declared 2005–2014 as the Decade of ESD (Stubbs, 2013), with the aim of Agenda 21, which invited governments to design sustainable development actions for the 21st century (Leicht *et al.*, 2018). In contrast to previous initiatives, the Agenda 2030 for Sustainable Development (United Nations, 2015) focuses on action and addresses 17 SDGs from a quality perspective and it is an opportunity for universities to rethink their role and shed light on the wisdom of incorporating certain values and practices into their mission from a holistic approach. Indeed, universities have taken the 2030 Agenda on board and have incorporated Sustainable Development principles and values (CRUE, 2019). A specific example is the EHU Plan for the 2030 Agenda by the University of the Basque Country (UPV/EHU), on global and holistic sustainable transformation to move toward a verifiable and pragmatic contribution to sustainability (Sáez de Cámara *et al.*, 2021).

*Competences for sustainable development in higher education*

The 21st Century Skills Framework proposed by the World Economic Forum (2015) makes up a universe of skills for the transition that seeks to train competent people to carry out a certain task or profession. In essence, what a person should know and be able to do to navigate the challenges of this century, following the rules of the economic markets (Musselin, 2018).

In the research by Rieckmann (2011, 2012), sustainability key competences were defined and the following three were highlighted as the most relevant ones: systematic, anticipatory and critical thinking. Wiek *et al.* (2011) identified five competences: systematic thinking, anticipatory, normative, strategic and interpersonal competences. In 2016, Wiek included problem-solving competence as a metacompetence of the others. Murga-Menoyo (2015) recreated a basic matrix of competences for sustainability in which critical analysis, systematic reflection, collaborative decision-making and the sense of responsibility are highlighted. Evans (2019) described a set of five major competences: systems; critical and normative; interpersonal and communication; creative and strategic; and transdisciplinary competence.

However, it must not be forgotten that the identification and monitoring of competences in ESD are key in the curricular development of higher education to move forward sustainably in light of the serious and global challenges faced by mankind (Evans, 2019; Rekalde-Rodríguez *et al.*, 2021). It is also important to create authentic and meaningful formal and informal learning environments in which these skills can be observed (Barth *et al.*, 2007). Integrative, active, collaborative approaches and those that directly involve students in learning and practicing transdisciplinary engagement as the most beneficial to students and the environment in service to sustainability (Evans, 2019).

*Teaching choreographies in education for sustainable development a didactic approach*

Oser and Baeriswyl (2001) introduced the choreographies metaphor into the world of education to link learning to the context created for this. Teaching is focused on how to organize stimulus-rich learning environments which bring about an active learning process (Zabalza and Zabalza, 2019). These choreographies may be educational or institutional. In the former, the teaching staffs create and recreate the scheme on which the learning of their students is based. On the other hand, institutional choreographies refer to the way in which each entity organizes the teaching and learning processes that occur within and/or outside the organization. And it is known, from literature, that students become more intensely involved if the university and its academic practices are appropriate and encourage their participation (Astin, 1999).

In the Oser and Baeriswyl model (2001), the choreographies are made up of four basic components:

(1) The anticipation is the preliminary idea, the intention that moves the authors to design the choreography, an explanation of the intentional process involved in teaching;

(2) the external and visible choreography is the learning environment that it is designed, the materials are offered, the instructions they convey, the time and pace they establish, the activities, the grouping categories, etc.;

(3) the internal and invisible choreography is the way in which students learn, the sequence of mental and functional operations that lead to the expected result and the affective and emotional dynamics that occur in the learner; and

(4) the result of the learning that may be a tangible reality (a product, knowledge, an action) or a subjective state (the reinforcement of an attitude or a state of mind).

As Biggs (2005) reminds us, the organization and selection of highly relevant situations for students implies generating spaces of synergy between the curriculum and professional practice. The institution, like the teaching staff as a whole, must offer students real contexts of academic, professional and personal enrichment, in which the tasks proposed are:

- authentic, putting students in situations that are as realistic as possible, which help them get into the professional role;
- integrated, which are linked to the degree curricular project; and
- active, which integrate knowledge and procedures, leaving a certain margin of vagueness so that they manage to solve the task with flexibility, openness and creativity, as professionals do in real life. Evans (2019) points along the same line when she mentions the seven methodologies that provide the most benefits on the development of competences in ESD: discussion-based learning, writing-intensive learning, case studies, creative work/expression, learning communities, internships/apprenticeships and experiential learning.

The latter is described as "an overarching category that includes project/problem-based learning, service learning, collaborative learning and research-based learning" (Evans, 2019, p. 19). Both the experiential learning involved in the implementation of active methodologies for learning and the practices in social entities are methodological modalities that are referred to in *Ocean* $i^3$.

### *Ocean* $i^3$ *conceptual framework*

*Ocean* $i^3$ makes up a complex ecosystem in relation to five key aspects (Barrenechea *et al.*, 2019):

(1) Conceptual. The project is conceived from approaches seeking socially distributed innovation as the result of bringing together different groups with a range of interests and knowledge and where the initiative is not concentrated on a particular group but is rather more socially distributed (Arocena and Sutz, 2001). Responsible innovation, socially desirable with positive impacts (Owen *et al.*, 2012), which leads innovation toward creating a Civic University that highlights its role in search of renewed commitment to regional stakeholders and problem issues by promoting teaching and research for public benefit (Goddard *et al.*, 2012).

(2) Pedagogic. *Ocean* $i^3$ creates contexts that promote high impact learning experiences because it involves student and teacher immersion and commitment to

the territory's real problems and stakeholders. The whole community works toward a mission that stimulates increasing collaboration processes between different interdisciplinary stakeholders (Mazzucato, 2018; Sachs *et al.*, 2019); in this case, the mission is to reduce plastic pollution in the Bay of Biscay and it is structured through challenges. As reported in literature, challenge-based learning is very close to problem-based learning and to service-learning, but the challenges are the resolution of a real problem through a specific action, rather than a problem designed for the classroom (ITESM-Instituto Tecnológico y de Estudios Superiores de Monterrey-, 2016).

(3) Institutional. This project has strong institutional support both from the universities and from its connector, € *Euskampus Fundazioa*, which was established as an inter-institutional instrument for the management and governance of the *Campus of International Excellence* project. It seeks understanding between the different institutional cultures so as to work in favor of an understanding between the bureaucracy of the different corporations to achieve transnational educational innovation. In the project, it is considered that the institutions are living organizations that reflect and learn from their practices (Gairín, 2000) and work together to meet social and environmental demands that do not recognize borders.

(4) Territorial. This experience fits into a cross-border environment with added international value provided by the confluence of various languages (Basque, French, Spanish and English, as the *lingua franca*) and cultures. Furthermore, the regions have the peculiarity of sharing a history, culture and common language that brings about a feeling of brotherhood and belonging to a territory regardless of its borders. Consequently, this leads to commitment not only to cultural aspects but also to the economy of both territories and the actors upholding and promoting it and commitment to the Ocean, which once more unites and commits us both.

(5) Employability. International organizations, such as the World Economic Forum, warn that 75% of future professions are not yet known (Stefanova and Leopold, 2018), and that transversal skills, or soft skills, will be the most sought after in the 21st century (OECD, 2019). Therefore, this project fosters the development of transversal skills for sustainability (Barth *et al.*, 2007; Murga-Menoyo, 2015).

With regard to this latter point, the design and development of didactic choreographies does not lose sight of the competence framework on which the educational work of the *Ocean i*$^3$ community is upheld. This have derived from the papers by: CRUE (2012), Haan (2010); Murga-Menoyo (2015); Rieckmann (2011, 2012); UNESCO (2015), Uranga *et al.* (2019); and Wiek *et al.* (2011). The first column of Figure 1 shows the three dimensions on which the work of *Ocean i*$^3$ is based and which link it to the project name: learning, research and sustainability (in Basque *Ikaskuntza*, *Ikerkuntza*, *Iraunkortasuna*). The second column shows the competences that are developed through the activities inserted in the didactic choreographies in the form of workshops (synchronous activities) and on the *Oktonine* platform (asynchronous activities).

## Methodological approach

The nature of the methodological approach is qualitative. The qualitative approach allows close contact with the context and has a special interest in reaching the experiences, interactions and documents that are generated in the natural context (Rapley, 2014). In this case, it is formed by two cross-border public universities (UPV/EHU and UBx) that offer an


**Figure 1.**
Competence framework (Cruz-Iglesias *et al.*, 2022)

authentic context of education for sustainability by inserting it into the curriculum of the different degrees through subjects, internships, etc.

This context is established as a working and learning community. The community is structured into the following defined work teams and extended spaces (Barrenechea *et al.*, 2019; Rekalde-Rodríguez *et al.*, 2021):

- Campus *Ocean* $i^3$ *team*. It participates actively in project conceptualization and design, taking on facilitator roles between the university community and territorial players and resolving internal and external organization and logistical aspects.
- Academic coordination. This includes a reference person from each university (UPV/EHU and UBx) who centralizes the bond between the teaching teams in each institution, the campus *Ocean* $i^3$ team (COT) and the different university services and organizations.
- Teachers. This is made up of teaching and research staff from both universities who tutor the students' experience and support them as they develop skills for sustainability in cross-border environments. In total, 30 teachers from 17 different disciplines participated in the 2020/2021 academic year.
- Students. This is made up of third and fourth year undergraduates and master's students at the (UPV/EHU) and degree, master's, university diploma and PhD students from UBx. Each student is involved in *Ocean* $i^3$ on at least two levels: group: commitment to and responsibility for the challenge raised by the social actor, which is addressed as a group, and individual with two models: academic work (FDP/MT, coursework [. . .].) and/or voluntary internships in the entities of the social actors. In total, 43 students have participated in *Ocean* $i^3$ during the 2020/2021 academic year.
- Social partners. The social actors are public and private entities based in the territory which work directly or indirectly to reduce plastic pollution of the sea.

In the 2020/2021 academic year, the choice of social actors and challenges has been carried out online, providing students with information on each of the entities and their work proposals. The students selected five challenges that were of most interest to them from those proposed.

- Extended community (concept extracted from Lahneman, 2010). This is made up of the university community along with the cross-border public and private territorial stakeholders who take part at different points in the project.

Figure 2 shows the *Ocean i*$^3$ community and the relationship with the participants.

In this study, in coherence with the theoretical framework and the objectives set in this article, an exploratory method with an interpretative approach has been chosen. The purpose of the study focuses on examining the design of choreographies or learning environments which the students participating in *Ocean i*$^3$ pass through during their participation in the project, which requires constant review and interpretation. This exploratory study is used to increase familiarity with this relatively unknown topic and take the first steps before considering more in-depth research (Ferreyra and De Longhi, 2014; Hernández *et al.*, 2003). Therefore, it is an exploratory study in its chronological (living and changing scenarios/contexts/choreographies), interpretative (few prior studies related to the topic) and in-depth (future research) dimension.

Instruments have been used, such as the timings made by the COT and each university academic coordination, the audiovisual material derived from the workshops and work tools and field notes taken from participant observations in the different scenarios.

The analytical procedure was based on examining the activities proposed in the different scenarios and collected through the research instruments, looking at the development of *Ocean i*$^3$ competences and how and when the internal or external choreographies were being emphasized. So, it has represented an essentially inductive and dynamic process to get to the complexity of the situations (Coffey and Atkinson, 2003).

## Findings

### *Learning environments in Ocean i*$^3$ *teaching choreographies in workshops*

The keys of the conceptual framework are implemented by offering five interlinked choreographies in a workshop format, characterized by research, problem-solving, participation,

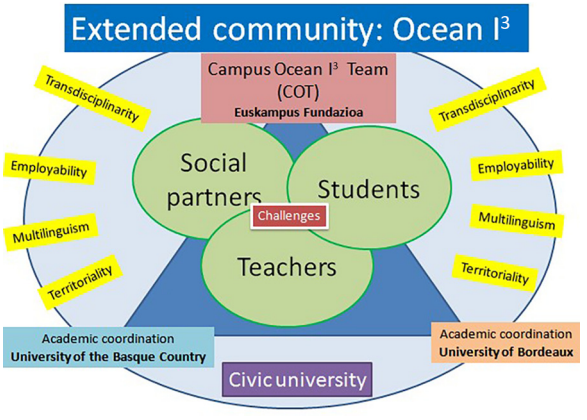


**Figure 2.**
*Ocean i*$^3$ diagram

teamwork [. . .], with the aim of producing a tangible product (FDP/MT, coursework, internship report [. . .]). In short, the workshops are a strategy that focuses the actions on know-how toward comprehensive learning that implies performing an activity (Ander-Egg, 1999). Figure 3 shows the sequence of the five workshops.

Each of the teaching choreographies deployed using the workshop model following the structure put forward by Oser and Baeriswyl (2001) is briefly described below. As the external choreography does not vary significantly between the different workshops, it is jointly explained at the end.

*Workshop 1. Launch: meeting with social actors from the Basque-Aquitaine territory.* Anticipation: the aim of this workshop is to redefine the initial challenge launched by the social actors in the territory in such a way that each party's commitment to the challenge is clarified.

Internal choreography: collaborative work to consolidate the commitment of the team members and reinforce the sense of belonging; extend and share information on the group challenge to be addressed; and be aware of the learning from individual reflection, paying attention to the project's multilingual and intercultural reality and its transdisciplinary approach.

Learning product: creation of the first version of the joint project in contrast with social actors and agreement on its scope, considering the possibilities of student dedication to it.

*Workshop 2. Transdisciplinary vision/interuniversity collaboration.* Anticipation: the aim of this workshop is to define actions and assume responsibilities and tasks to be carried out to address the challenge-creation of the joint project.

Internal choreography: the session begins with the multilingual challenge raised for this workshop and the formulation of questions on how each person experiences the multilingualism related to the *Ocean i*$^3$ project. A mural is prepared with the next sequence of actions: decision-making on what can be produced together to respond to the challenge, what is going to be handed over to the social actor in the next workshop, along with the format and contents. The outline, structure and contents are decided. Then, reflection is made on how the challenge is being addressed bearing in mind what has been prepared and

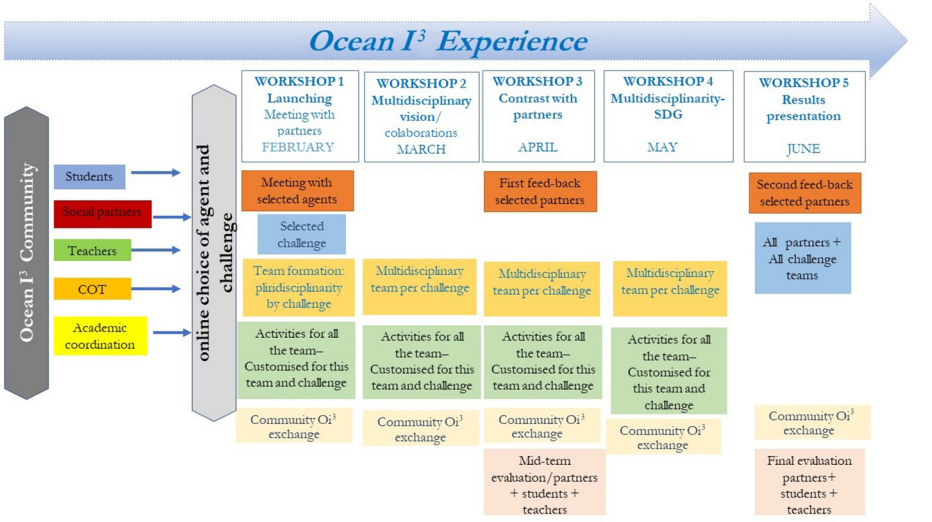


**Figure 3.**
Chronological portrayal of the five workshops, 2020/2021 academic year (Rekalde-Rodríguez *et al.*, 2021)

considered to date, whether the stakeholder will be satisfied with the proposal and whether there is anything else to be added. Finally, everything that has been worked on during the session is prepared for its presentation to the plenary that closes the workshop.

Learning product: preparation, in the determined format, of the proposals to be presented to the social actor in the next workshop, along with specific actions to be carried out Joint construction of a speech argued with everything that has been worked on during the session, highlighting the consideration of version 2 of the product/prototype prepared.

*Workshop 3. Contrast with social actors.* Anticipation: the aim of this workshop is to contrast the prototypes/products/proposals prepared so far with the social actors.

Internal choreography: The session begins with the multilingual challenge for the workshop and questions related to the *Ocean i*$^3$ project. The contents agreed in Workshop 2 and subsequently prepared are presented to the social actor in a decided format (report, poster, video, etc.). The social actor offers feedback in terms of professional knowledge and experience related to the proposal and a dialogue is established to adjust what has been worked in relation to the challenge. Then, reflection is carried out based on the contrast with the social actor and the work is redefined. Finally, the content of the information worked on is prepared, which will be shared at the close of the plenary session.

Learning product: dialogue, argument and contrast related to the feedback received from the social actor to re-define version 3 of the joint work and redirect the individual study based on it.

*Workshop 4. Rebuilding the work proposals and raising awareness of the Sustainable Development Goals.* Anticipation: the aim of this workshop is to collaboratively integrate the progress and results obtained from the previous workshop and raise awareness of the impact of individual and group work on sustainable development.

Internal choreography: like in the previous sessions, this session begins with the multilingual challenge for the workshop and then, what has been worked on individually since the last workshop is shared in small groups for each challenge, so that the product is shaped and the final content is defined, which will be presented in the last workshop. In this choreography, a work space is also incorporated to investigate and be aware of the contribution of both the group and individual work on the SDGs. Addressing this question is of utmost importance to be aware of what, how, what with and why each participant is contributing to making the planet sustainable. This activity is carried out through a joint construction exercise with the 17 + 1 SDG cubes. Each student must select and place a star on the five SDGs to which he/she is most contributing through individual work and the team challenge (Figure 4).

Figure 4 is intended only to provide an overview of collective activity. In contrast, Figure 5 presents the content of one of the SDGs as an example. The use of different languages in the workshop activities can also be seen. In this case, the languages that appear in the figure are, in this order: Basque, Spanish, French and English.

Following the group work, a pyramid with the five SDGs that have been most selected by all of the teams is built. The SDGs on which the *Ocean i*$^3$ community is having the most impact is viewed in this way (Figure 6): Life below water, Clean water and Sanitation, Good health and well-being, Cultural and linguistic diversity and Responsible consumption and production. This does not mean to say that some works do not have an impact on the rest of the SDGs, but rather, the five goals that are in the upper vertex are those in which all of the groups have coincided.

Learning product: joint construction of the final product to be presented to social partners and individual and group decision-making on the contribution of *Ocean i*$^3$ to the SDGs.


**Figure 4.**
Activity to raise group awareness of the SDGs, 2020/2021 academic year

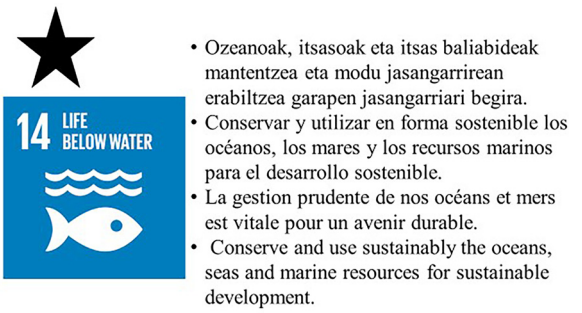


**Figure 5.**
Activity to raise group awareness of the SDGs, 2020/2021 academic year (II)

*Workshop 5. Presentation of the results to the social partners and close.* Anticipation: the aim of this last workshop is to present the final results to the entire community and disseminate the results obtained.

Internal choreography: the session begins with the multilingual challenge for the workshop and questions related to the *Ocean i*$^3$ project. On this occasion, the completed results are presented one by one to the extended *Ocean i*$^3$ community. Then, their contribution to the SDGs are debated and reflected upon, and finally, the future projection of *Ocean i*$^3$ is shared, or in other words, its projection for future academic years.

Learning product: presentation and defense of the final version of the individual result and the contribution to the group challenge in terms of impact.


**Figure 6.**
Result of the activity to raise awareness of the SDGs in the I[3] Community, 2020/2021 academic year

Finally, as far as the development of the external choreography of the workshops is concerned, it must be understood that they were all developed experimentally during the 2018/2019 academic year in a face-to-face format. The five workshops were held halfway between Bordeaux and Donostia-San Sebastian in morning and afternoon sessions, sharing both formal and informal moments of knowledge exchange and human relations. With the outbreak of the pandemic, consideration was given to how to continue with the innovation although not in person (remotely). The aim was to keep the structure as similar as possible but bearing in mind the difficulties of synchronous e-learning (González, 2012).

The conclusion was reached that for the synchronous external choreographies the Gather software could replicate a face-to-face environment and the working conditions in a small group and in the plenary as reliably as possible. Furthermore, the dynamics that were implemented in person through the construction of a physical mural with post-its were replaced with miro and mural platforms. The *Oktonine* platform was used for asynchronous external choreographies.

Following these adaptations, the common external choreography for the five workshops was redesigned as follows: the plenary session kicks off in the Gather platform. Then, the work is carried out in small groups of participants belonging to the same challenge. With the collaboration of a staff catalyst and a social actor (who participates in workshops 1, 3 and 5) in each group different dynamics are implemented. To group all of the decisions, a mural is created through the mural or miro platform (inserted so that the community can become familiar with different software). All of the sessions are held without abandoning Gather at any time, providing the framework of the major choreography in which the different micro choreographies developed by each activity are inserted. Finally, in the plenary, what has been worked on in each challenge is presented to the group as a whole, sharing the results of the information with all of the participants in the workshop.

It is important to highlight that a great deal of value was given to the management, organization and performance of the roles in the external choreographies. The COT members led plenary spaces and three different roles, which were performed voluntarily,

were identified in the group-challenge activities. They are: the group *catalyst*, who has explained the task instructions, coordinated speaking times, managed time and kept the objective of the activity in mind at all times; the *secretary*, who has focused on taking notes in miro and mural to ensure consensus and leave a record of the group work, without annulling the possibility of the rest of the participants being able to write freely with these tools; and the person supporting multilingualism, who has focused on translating what is communicated orally into other languages (depending on the command of the languages in the group-challenge), in such a way that nobody is unable to follow the thread of oral messages.

As for the asynchronous choreography, different activities are established that help prepare the online synchronous activities through the *Oktonine* platform. The tasks for each challenge are incorporated into this platform before each workshop and the teachers monitor them and provide the corresponding feedback between workshops.

*Online didactic tools for learning in times of pandemic*

The main online tools used for the development of choreographies have served two objectives: recreate the experience of meeting the entire *Ocean i*$^3$ community in person and monitor student activities between workshops, between one choreography and another.

As for the online meetings, the use of the Gather remote social platform must be highlighted. This virtual space merges the esthetics of retro video games in which an avatar is chosen in the form of a minute, pixelated and two-dimensional character, with the widely extended video calls for meetings, but making it more creative, playful and interactive. It presents a two-dimensional map from top to bottom, which participants can browse to connect with each other and visit different spaces as part of the online meeting experience. The map is fully personalized and the objective is to recreate a face-to-face workshop with work tables for each challenge/social actor (as can be seen in Figure 7: *Mater Museo*, *Kutxa*

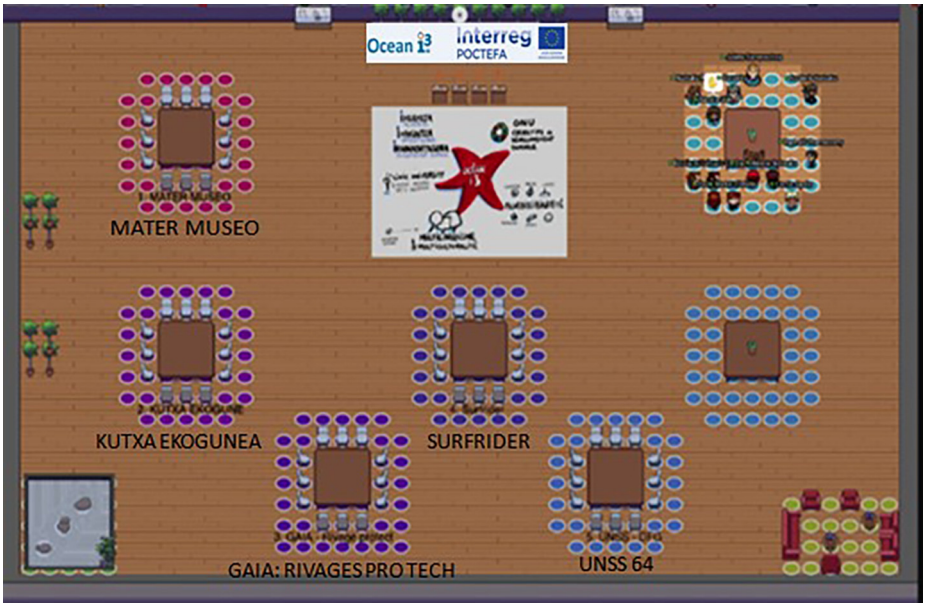


**Figure 7.**
Design of the virtual *Ocean i*$^3$ environment to hold the workshops preparation meeting for the 1st workshop of the 2020/2021 academic year

*Ekogunea*, *Surfrider*, *Gaia and Rivages Protech*, *UNSS64* [...]), around which the corresponding students, teachers and social players work. A staff table has also been created so that COT members and the academic coordination or the international innovation team can meet, along with a rest area to discuss other issues that are not directly related to the workshop. In addition, the podium is placed under the *Ocean i*$^3$ logo, designed in such a way that it enables people accessing this space to be seen and heard by all of the workshop attendees and prevents the rest of the participants from speaking and being seen on the work table when somebody takes the floor from the podium.

The usual dynamics of a plenary session in a workshop are recreated: opening, procedure guidelines, time management by tasks, exposition of activities carried out by groups, closure of the workshop. However, when participants are sitting around the work table, those who are virtually around them can be seen or heard and if they move around the map, those approaching can be seen and heard. In other words, movement around the map enables natural conversation flows to be connected and created, recreating the mobility and relationships of a face-to-face workshop. Indeed, the private audio spaces are a unique characteristic that makes this platform useful for meetings of large groups and also enables participants to work in small groups. Furthermore, there is a chat to communicate in writing, either privately with another person, or with participants in the group-challenge, or with the entire community. It is important to highlight that the chat option has been very useful for simultaneous translations in the plenary.

To document the work process and decisions made during the workshops held in Gather, tools like mural and miro were used concomitantly. These platforms enable work to be carried out collaboratively and creatively in real time, presenting interactive murals or multimedia posters that virtually reproduce a whiteboard. Each participant can share not only information but also drawings, shapes, notes, photos, videos, files, etc. As can be seen in Figure 8, the interface is highly intuitive and participants can participate in the discussion and contribute new ideas at any time (the languages in which the participants made their contributions remain unaltered in Figure 8). The aim is to foster collaborative and creative dialogue through which concepts and ideas are created, consensus is reached, etc. In our experience, it has fostered teamwork, the search for and processing of information, creativity, analytical and synthesis capacity.

As in previous images, in this case, Figure 8 is intended to illustrate the collective dynamic just discussed in the previous paragraph, where the three columns respond to the dialogue and contrast regarding: opportunities and strengths of the challenges; constraints, risks and shortcomings in the challenges; and ideas, suggestions and other comments regarding the challenges being addressed. The comments are collected in the different languages that coexist in the *Ocean i*$^3$ environment.

Finally, another complementary tool used occasionally in the workshops was the mentimeter platform, which has enabled the opinion of the *Ocean i*$^3$ community regarding the tasks addressed, the different topics they are working on, self-evaluation of learning progress and evaluation of the workshop to be expressed online in real time through response scales answered via mobile phone or computer. In short, it facilitated participant feedback to carry out a rapid and cooperative evaluation that was displayed on screen as a numeric graph, word cloud, etc. (Tomás, 2019).

The *Oktonine* platform was used to monitor the students' work between workshops. Thanks to this tool, each challenge work group enjoyed a space for asynchronous collaborative teamwork on specific tasks. Specific actions to be developed by each group were defined in accordance with the agreements reached in the workshops to progress and present proposals at the next workshop so as to move forward in the challenge. In this

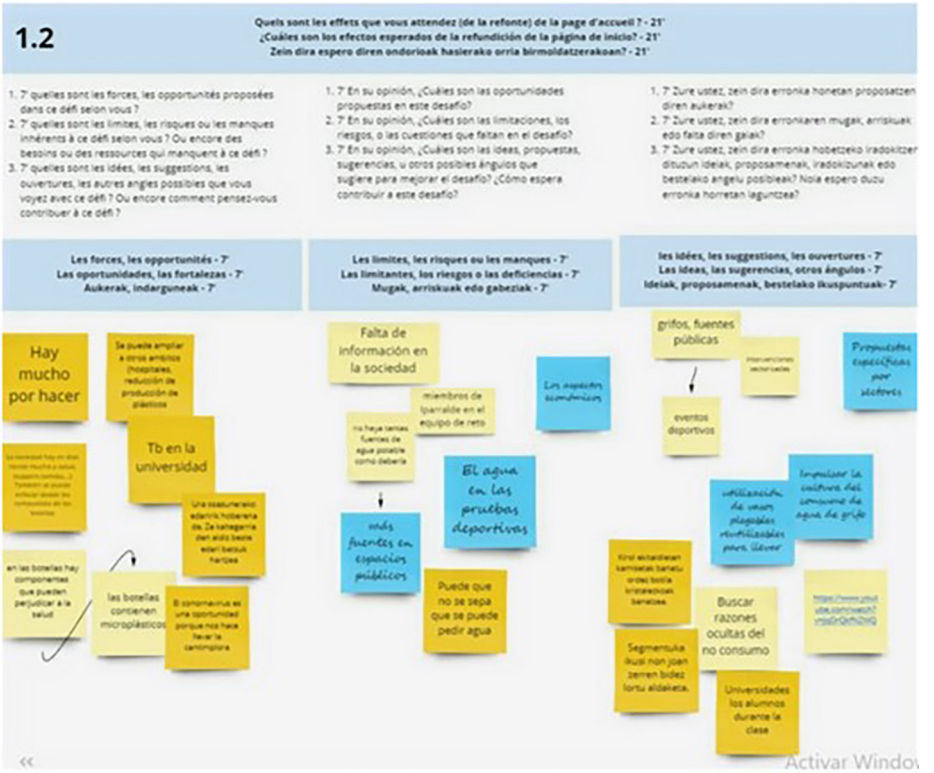


**Figure 8.**
Snapshot of the miro tool used in the 1st workshop, 2020/2021 academic year

environment, the role of the teachers was key, as they monitored the work of their students – guiding, reviewing and validating the tasks – and the progress made in the development of the competences, as the tasks are related to the learning outcomes and the transversal competences for sustainable development. As can be seen in Figure 9, the teachers manage the activities of their students related to the challenge in which they are participating.

In short, *Oktonine* was a tool to apply and manage the project/challenge-based learning methodology that derived from an online environment. It also helped to guide the students' learning, highlighting the competences to be developed and with a progressive vision of their evolution. For the students, it was a learning environment in which they could collaborate with peers and teachers from other disciplines in an asynchronous way. As already mentioned, unlike other management platforms, here, activities are associated with what the students are expected to achieve, or in other words, learning outcomes grouped into clusters which correspond to the ten transversal competences for sustainability that *Ocean i*$^3$ addresses (Figure 1) and which are being monitored by the research group *IKasGura* (2021).

After each workshop, the coordination team had the opportunity to evaluate each of the workshops, bearing in mind the variables of anticipation, internal choreography, external choreography and product and the choreographies have been adapted to increase their efficiency. Consequently, the duration of the workshops was modified from 3 h for the first two workshops to 2.5 h for the subsequent ones. The internal choreography was modified,

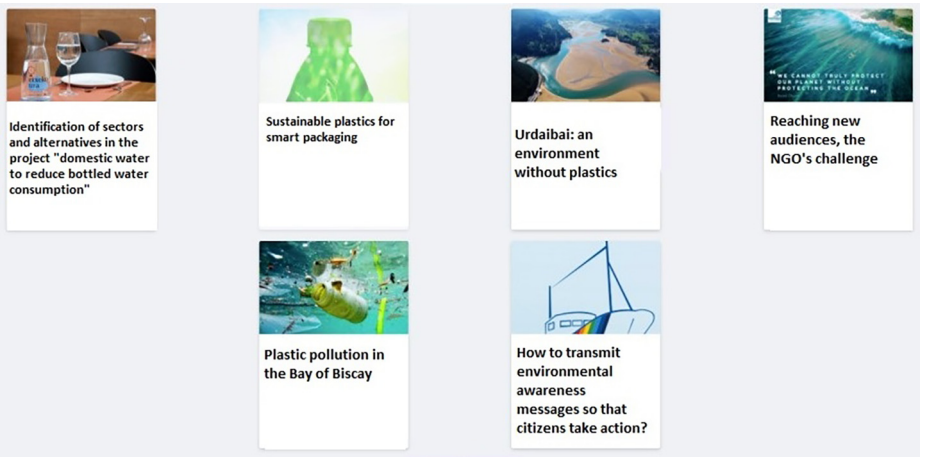


**Figure 9.**
Oktonine platform interface for the *Ocean i*$^3$ experience

but the external choreography, background and product were not, although they had been considered in greater depth, moving on to asynchronous work between teaching staff and students in *Oktonine*.

*Development of competences in Ocean i*$^3$ *teaching choreographies*

The learning outcomes obtained by the students through this choreographies were compiled by means of two situations: on one hand, asking students openly and in general terms what they think they are learning and, on the other hand, asking them to identify which *Ocean i*$^3$ project competences have been developed.

The students' answers to the open question in the mural post-its confirm that they admit to having developed seven out of the ten transversal competences considered in the project. The competence that has obtained the most references (7) is "Transdisciplinarity: integration and management of knowledge through contributions from different disciplines and the social context," followed by: "Global and integrative vision of problems" (6); "Creativity: problem-solving from different angles" (5); "Communication in inter-cultural contexts" and "Multilingualism: handling of a multilingual repertoire" (4); "Negotiation, horizontal participation and commitment to share outcomes" (3); and "Analysis, understanding and solving of complex problems" (2).

As previously mentioned, students are provided with a list of the project's target competences to reflect on their fulfillment. They must evaluate one by one whether they consider they have been developed or not and they can add any comments.

Bearing in mind the diversity of student opinions in relation to the results obtained with respect to the competences of the *Ocean i*$^3$ project, it can be said that each work team developed its own process related to a challenge, and this led to a different level of development of the competences.

Even so, the students stated that the following competences had been developed: "Communication in inter-cultural contexts," "Negotiation, horizontal participation and commitment to share outcomes" and "Integration of SDG values." However, the competence that appeared to have been developed the least was that of "Consistency" and some people attributed this low level of development to the fact that their participation in the project consisted more of an intervention than an investigation.

The students had not reached a consensus in relation to the development of the remaining competences. Regarding the "Multilingualism" competence, for example, some were doubtful, although they did recognize that they were free to switch from one language to another. In relation to "Analysis, understanding and solving of complex problems," some stated that there was a need for a global understanding of the problems.

Finally, in spite of the differences of opinion among students, it must be pointed out that all of the project competences were developed to a greater or lesser degree.

## Conclusions

In this innovation experience, active learning scenarios have been cocreated, in which the participation and involvement of the extended community is vital. The didactic choreographies designed call for activism with a sense of team mission. The project community works collaboratively to address a common mission, developing research processes and materializing thinking, thanks to the collaboration of specialist professionals to share knowledge and real experiences. In short, *Ocean i*$^3$ is a sweeping wave because of its freshness, attractiveness and relevance in which participants can develop their personal and professional abilities to the full. A connection is established between formal learning and the real world, thanks to the choreographies deployed, enabling the content to be applied, discussed and experienced in a real context.

The strengths of the choreographies presented are an institutional guarantee that supports the set of choreographies fostered, enabling the internal choreographies to be adjusted to the educational needs detected throughout the process and enabling the incorporation of the necessary tools to adapt the project to the pandemic situation, in line with Zabalza and Zabalza (2019) regarding the impact on learning.

In addition, and following the model of Oser and Baeriswyl (2001), it has a didactic approach set out under previously established and justified space-time coordinates but with margins of flexibility and openness to adjustment and restructuring.

In the other hand, it is an aligned and uninterrupted between synchronous and asynchronous activities that make up the choreographies, making the entire community move forward at the same time.

Following the principles set out in the work of Lahneman (2010) and Ponsa (2016), this project promotes a horizontal relationship that it established between participants from the design, whereby each person contributes based on what he/she knows, his/her experience, expectations and is committed until it is carried out

The choreographies build an environment that adds value to the students' learning. They are an identification flagship in products/individual outcomes that are a guarantee of the development of transversal competences in an environment of sustainability compared to the rest of the students. As the literature acknowledges, the characteristics of choreographies (environment, methodology[. . .]) are beneficial for the development of ESD competences (Evans, 2019).

One of the weaknesses is the imbalance between the perceptions of the development of the different *Ocean i*$^3$ competences, whereby the activities/tasks proposed to students may need to be reviewed to align them with the expected learning outcomes.

Moreover, the way of addressing the teaching choreographies virtually through thinking and experience in the face-to-face setting shows that there is a high dependence on technology for the success of the choreographies (poor connection, incompatibility of browsers, need for training in the use of virtual tools, etc.).

The perception of students and teachers reveals that it is the use of a multilingual linguistic repertoire (multilingualism) that is most enhanced in *Ocean i*$^3$, although the global

and integrative vision of problems and the integration and management of knowledge through contributions from different disciplines and the social context (transdisciplinarity) are also highlighted. This indicates which actions need to be introduced to the current choreographies to strengthen the rest of the *Ocean i*$^3$ competences and, above all, those that are relegated to the lower places.

In short, *Ocean i*$^3$ is made up of institutional teaching choreographies that foster student involvement in challenges to improve the environment and work toward a more unified, fairer and committed society. This paper offers us the opportunity to continue delving into the educational impact of each choreography on the different groups participating in the extended *Ocean i*$^3$ community. It would be desirable to translate this impact into changes in action for sustainability.

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