

101004027

GRANT AGREEMENT NUMBER

EAC-A02-2019-1

EACES.A - ERASMUS+ PROGRAMME

A.1 – European Higher Education

ENLIGHT – EUROPEAN UNIVERSITY NETWORK TO PROMOTE EQUITABLE QUALITY OF LIFE,
SUSTAINABILITY, AND GLOBAL ENGAGEMENT THROUGH HIGHER EDUCATION TRANSFORMATION

Deliverable

WP No	Del. Rel. No	Del No	Title (see SygMa list)	Lead beneficiary
WP2	D2.11	D25	Guidelines for transfer of practices to other ENLIGHT contexts	UBx

Nature	Dissemination Level	Related to Del. No (if applicable)
Report	Public	D16, D20, D23

Description (short – see SygMa list)

D25 is a study aiming at collecting knowledge and feedback on ENLIGHT pilot courses, designed and tested by WP2 and WP3, which use a CBL approach and a blended format. The objective is to assess contextual adaptations of each university, to identify lessons learnt and develop recommendations for future iterations and new pilots to make them more accessible and sustainable.

Target group

- | | |
|--|--|
| <input type="checkbox"/> students | <input type="checkbox"/> researchers |
| <input checked="" type="checkbox"/> teaching staff | <input checked="" type="checkbox"/> administrative staff |

How will the deliverable contribute to the goal of a Task, WP and the overall goals of the project?

Task	<ul style="list-style-type: none"> - Collect practices for exploring new ways of teaching, designing, engaging with challenges - Assess embedding capacity and relevance depending on the context - Identify rooms for improvement to upscale and share successful learning formats.
WP	Sustain iterations of pilots portfolio as well as broaden academic engagement and student participation for mainstreaming future-proof education in view of ENLIGHT phase 2 (2024-2028)
Project	Engage institutional decision-making for guaranteeing the conditions of a long-term education offer (resources, facilitation of embedding, cooperation goals, etc.).

What is the place of the deliverable in the Plan-Do-Check-Act cycle ?

Check

Which steps were needed to achieve the deliverables?

If applicable: please provide a Gantt chart or schematic of activities which have led to the actual deliverable.

- Comparative study (based on chosen study cases) led by UBx WP2 coordinators
- Validation of methodology involving consultation of Project Board and Directors
- Discussion of preliminary findings with WP2/3 coordinating teams
- Participatory observation of one study case
- Problematization and report writing by UBx
- Feed-back to Project Board and Directors
- Exploration workshop around conclusions (dissemination, General meeting, June 2023)

Document Version Control

Version 0.1	<p>Originated by: UBx</p> <p>Authors : Myriame Ali-Oulla, Laurie François</p>	
-------------	---	--

The content of this deliverable represents the views of the author only and is his/her sole responsibility. The European Commission and the Agency do not accept any responsibility for use that may be made of the information it contains.”

Table of Contents

Introduction	4
Rationale	5
Methodology	6
Axes of study	6
Panel of interviewees	7
Chosen study cases	8
Lessons learnt, successes and recommendations	9
Chapter 1: Genesis of the course and partnership	10
Chapter 2: CBL implementation methodology	15
Chapter 3: Course design	20
Chapter 4: Student' recruitment, mobility and experience	25
Chapter 5: Sustainability	32
Conclusion	38
Annex: Flyers of initiatives	39

Introduction

This study analyses three years of experimentation carried out by the alliance, counting on the unfailing implication of the academics, researchers, educational developers, coaches, and administrative teams who have accepted to approach this field of innovation, with efforts, creativity, and patience. We thank everyone, especially those who have volunteered for the interviews, the students for their honest feedback and non-academic partners for their enthusiasm.

Rationale

The ENLIGHT European University alliance leads different models of challenge-based learning (CBL) courses, including various organizational formats and course designs. These eclectic experiences are submitted to a step-by-step charter adapted each time to the local context.

ENLIGHT initially started by focusing on two course formats, “Living Labs” and “Short programmes”, as test-beds to seed and develop challenge-based educational opportunities across the network. However, these formats proved to be very similar in the design approach, content, and targets. Funding structure of the courses mainly used the Blended Intensive Programme (BIP) funding instrument, introduced by the Erasmus+ programme in 2021. As such, we now refer to “ENLIGHT CBL pilot courses” as a common label.

Each CBL pilot course model varies in:

- Scope,
- Theme,
- Temporalities,
- Course design,
- Teaching and learning methodology,
- Student, lecturer, and coaches engagement modes,
- Multi-stakeholder approach,
- Embedding and funding models,
- Mobility experience.

The overall objective of this study is to report on the benefits and challenges of CBL, by assessing design approaches and contextual adaptations of each university, as well as embedding capacity and resources management.

Engaging with challenges and transforming educational practices take capacity and time that equally need institutional support and design improvements over time to guarantee upscaling of produced training resources and sustaining quality in Education. Long-term implementation of challenge-based learning or similar approaches prove to be beneficial for future-proof education and support students in their journey to become agents of change. It requires not only academic engagement but also systemic change of the university management as well as fluid administrative procedures.

In that perspective, we aim to provide valuable return of experience with critical thinking and recommendations to prepare future courses and facilitate the transfer of practice over iterations of the successful pioneering blended courses across the network. It is also an opportunity to disseminate knowledge and good practice on the experimentation around the Erasmus+ BIP instrument.

Methodology

This study uses comparative research method to identify and analyze main differences and similarities between CBL pilots developed within WP2 (challenge-based education) and WP3 (global engagement) during the ENLIGHT pilot phase. It encompasses the following steps:

- Analysis of pilots' documentation (programmes, end reports, and student feedback surveys),
- Semi-structured interviews of chosen study cases (see 1.4) with key stakeholders (see 1.5), based on a pre-list of possible questions in relation to determinate axes of study (see 1.3),
- Discussion of preliminary findings with WP2/3 coordinating teams,
- Participatory observation of a specific survey sample in relation to the objective of diversification of CBL models (May 2023, Equity and Sustainability Transition, Galway),
- In-depth reflective analysis and summarizing report.

Complementary actions:

- Participation to the EAIE community survey on BIPs (March 2023), coordinated by Universidad de León (Spain) and Ruhr-Universität Bochum (Germany),
- ENLIGHT Mobility taskforce meeting (Bratislava, 3-4 May 2023),
- Exploration workshop around D25 conclusions (dissemination, ENLIGHT General meeting, June 2023).

Axes of study

As part of a process of capitalizing on knowledge and feedback, the objective of the study was to investigate the implementation of these courses and their sustainability by looking back at the following sub-themes:

1. Genesis of the course and partnership

2. CBL implementation methodology

3. Course design

4. Student' recruitment, mobility and experience

5. Sustainability

Panel of interviewees

In total, we count **32 interviewees from all 9 universities** (figure 1), involved in 11 initiatives with different responsibilities (figure 3).

In addition, a WP6 (Impact) representative observed some interviews that relate to the *ENLIGHT impact study cases* on challenge-based learning and the Global Engagement Module (GEM).

Figure 1: Distribution per university

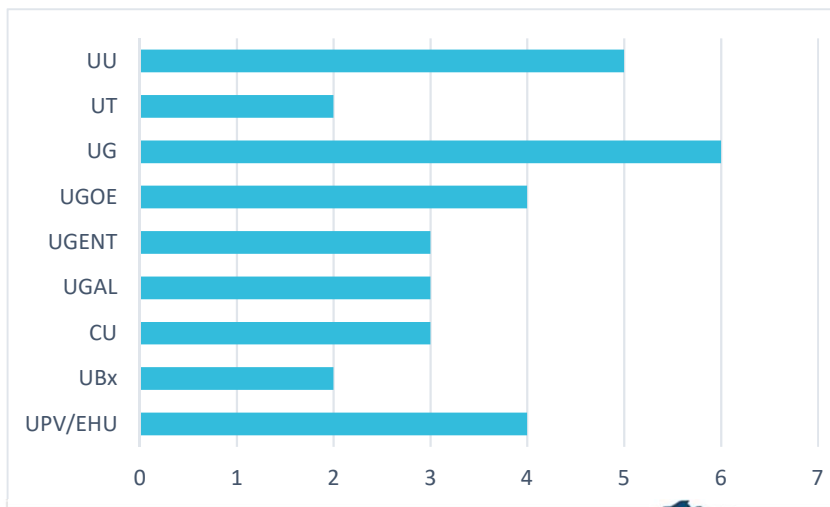


Figure 2: ENLIGHT universities

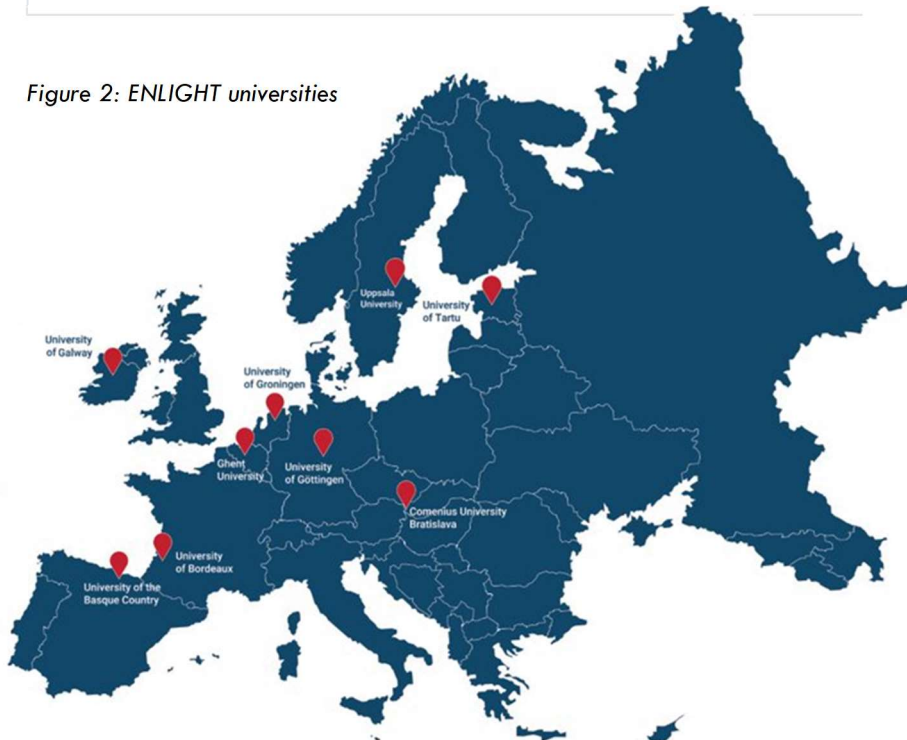


Figure 3: Distribution per type of responsibility



coaching/teaching role (academic profile)



technical role (course design & mobility)



coordinating role (ENLIGHT staff)

Chosen study cases¹

Objective #1

Creating CBL teaching communities around flagship-related macro-challenges

3 selected pilots (+1 to come), complementary joint blended programmes and their sequential implementation in different ENLIGHT contexts (rotation of leading University/Regional academy) - joint training cycle:

Interdisciplinary study of the Climate Neutral City (UGENT, 2021)

Urban Mining (UBx, 2022)

Sustainable Experimental Student Housing Living Lab (UBx, 2022)

Upcoming development:

Inclusive and just energy transition (UG, 2023-24)

Objective #2

Connecting existing CBL practices to ENLIGHT by broadening access to partners and flagship domains (explore potential for duplication process)

2 selected pilots, based on the “Innovation Games” model developed by UU:

Applying Serious Game Design in Health Care and Education (UU, 2022 & 2023)

Applying Serious Game Design in Climate change (UU, 2023)

Objective #3

Strengthening CBL learning opportunities for everyone (upscaling diversity and inclusion)

3 selected pilots, one framed as a co-coordinated blended programme simultaneously tested in different ENLIGHT contexts (co-leading system between different universities and regional academies), and two framed as one blended programme successively tested in different ENLIGHT contexts (rotation of leading University/Regional academy):

Global Engagement Module (UG, UGENT, UGOE – 2021, 2022)

AI for non-IT students (UT, 2022; UPV/EHU, 2023 ; upcoming iteration: AI for everyone, CU, 2024)

Researching equity (CU, 2022 ; UGOE, 2023)

Objective #4

Diversifying CBL practices by testing lighter/shorter formats

2 selected pilots, Summer school type with crediting capacity (first iteration in progress, no rotation or co-leading system envisioned yet) :

Equity and sustainability transitions (UGal, 2023)




Blurred meanings in Law, Regulations, Guidelines (UT, 2023)

¹ See descriptive flyers in Annexe 1.

Lessons learnt, successes and recommendations

Chapter 1: Genesis of the course and partnership

Guiding questions

-  Prior to the ENLIGHT course, did you know anything about blended intensive programmes?
-  (coordinator) What motivated the choice of the topic and the format of the course? How did you build the partnership around the programme? How did each party contribute to the dynamics of the course design? Were there any negotiations with the ENLIGHT organization regarding the conceptual framing of the course?
-  (partner) What motivated your contribution in relation to the overall theme?

Lessons learnt

All respondents had **no prior knowledge** of blended intensive programmes, nor experience of blended mobility.

Motivation to develop and/or participate in an ENLIGHT course using CBL methodology relies most of the time on multiple factors:

1. **Exploring a topic of current interest that has a growing impact on the global evolution of society and furthering personal research development** (*learning opportunity for lecturers, educate on societal challenges*),
2. **Implementing more interdisciplinarity** (*in own personal research and teaching*),
3. **Strengthening professional networks** (*opportunity to work with external stakeholders*),
4. **Socializing with other professors from different universities** (*a way to find common grounds with other researchers and professors and create sub-networks*),
5. **Opening and/or upscaling preexisting courses to a new audience** (*stepping-stone strategy, sharing a well-established model with the ENLIGHT network, internationalizing a methodology, include new profiles of students*).

The blended modality is considered optimal to:

1. **Offer students with no prior international experience an international perspective** (*different visions, intercultural approach*),
2. **Facilitate access to students who have limited mobility opportunities** (*inclusiveness of the virtual component*),
3. **Challenge students with a different learning approach** by allowing the combination of in-person and remote learning over a defined period of time (*hybrid study mode, immersive study in different learning environments, intensive modality*),
4. **Experiment new topics with both local/European applications** (*different regional perspectives for more sustainable local courses*).

Cross-disciplinary structuration of the academic community can speed up the process for creating interdisciplinary links around societal topics and SDGs. However, this is not always the case, and collaborating with different academic fields is **often difficult to implement in the current state of the university environment**.

The involvement of external stakeholders is managed differently by each university, considering various parameters such as access to relevant actor networks, personal networks of course coordinators, the scope of the course challenge (local, conceptual, global), and temporalities of the virtual and physical course components. For instance:

Partnership relies on Regional Academy:

As part of the module “*Interdisciplinary Study of the Climate Neutral City*”, the challenge was prepared together with the City of Ghent. Students worked on the overall theme of the Climate Neutral City Mission through the lens of water, mobility and energy. The case they worked on was the Meulestede neighborhood in Ghent. Students selected and formulated their own challenge in this framework. The City's mayor introduced the course by providing an overview of the issues that the students will have to explore.

Partnership relies on personal contacts

In the first iteration of the course on “*Researching Equity*”, students were guided by a variety of examples of equity-related topics as well as by lectures about quantitative and qualitative research methods that are needed to design research on equity-related issues. The course involved local Slovak partners from the Migration office, the Major office (expert dealing with “diversity”), and an NGO for refugees.

Engaging a meaningful and direct connection with non-academic actors:

1. **Allows for the integration of the knowledge developed and acquired into the reality of the field and the multidimensional challenges.** As a result, students not only learn, but they also engage in proposing solutions, with the potential for evaluation and implementation. They are not only responsible for their own academic success, but also for contributing to real-world changes.
2. **Benefits from institutional support to impulse the dynamics within an established Regional academy**, although in some cases challenges proposed by external stakeholders did not generate the expected interest from students, who instead chose to work on alternative themes considered non-priority. This divergence in student focus caused confusion among external partners, who failed to see the full relevance of the solutions presented by the students.
3. **Relies a lot on the academic coordinator, who is the owner of the primary concept of the course** and has the capacity to validate the coherence between the academic expertise and the field work / challenges,
4. **Requires significant time.** One of the challenges in effectively involving external partners in the course design is the limited time available to allow professionals and experts to provide their input, which can be valuable for the overall coherence of the course. One of the educational developers considered that the team did not have sufficient time to have a proper involvement of the external partners: “*They are executing and not developing. We rushed, so we didn't ask for their input*”.

Success stories

Academics' converging vision and approach to teaching, related to agreed-upon topics, paves the way for seamless collaboration and cooperation.

The decision to work on “Artificial Intelligence (AI)” was unanimous in the core group on “Digital revolution and impact of digitization”, given that members of the group either were curious about the topic or were working on it already and wanted to broaden the scope of interdisciplinarity needed today to address the opportunities and challenges of AI. It is also a way to demystify the topic as it is usually mainly addressed from a technological and purely algorithmic point of view, to make it more accessible, as it touches upon many other aspects such as law, ethics, social interactions, economic growth, health, and so on. “AI for non-IT students” (“AI for everyone” as of 2024) is now one of the most popular ENLIGHT course within the student community, attracting interest among a variety of academic fields.

Guest lecturer A: “I think the benefit of this module to academics and the partners in ENLIGHT like ourselves is primarily from coming together to meet up with colleagues from similar background, learn from mutual experiences, identify opportunities for doing research together and ultimately, you know, make new friendships”.

Guest lecturer B: “Artificial intelligence has becoming more and more important in today’s society and it’s crucial that people, also those who are not experts on AI, have some at least basic understanding of what we can expect from AI solutions that will be deployed in today’s society in order to help people.”

The European collaboration enriches the challenge component. Because of the nature of the challenge and its applicability to diverse local contexts, the course can also easily take advantage of an extended collaboration with experts from others Regional Academies, in alignment with their priorities.

The challenges offered by ENLIGHT raise interest of Comenius University’ regional partners at different scales. Based on its long-term plan of development (2021-2027), Comenius University puts the emphasis on “offering education closely connected with teachers’ research activities and the demands of society”, with the strong objective to “raise its profile in addressing societal and regional issues”. To do so, Comenius University “strengthens cooperation between universities and applied practice, in particular through partnerships with employers, companies, non-profit organizations, local authorities, professional associations, and public institutions.” Local partners contribute to ENLIGHT CBL courses developed by Comenius University, which considerably strengthened the strategy to impulse transformation in student learning. Some of them are keen to nurture relations through the ENLIGHT network to internationalize their challenge policies, and do not hesitate to offer their expertise to other ENLIGHT universities, with for instance:

- the participation of the chief innovation officer from the municipality of Bratislava, to the Summer school of Galway on Equity and Sustainability transitions,
- or the participation of ombudsman office to the Uppsala’ Innovation Games on Health and Education.

A more diverse student audience enriches the learning goals and impulses a comparative dimension of local problems, especially when those are in direct connection with student' life and learning environment. It allows considering the student her/himself as both the owner and user of the challenge, which engages her/him in self-reflection and firmer engagement. This also benefits local research and investigation with a broader scope on how to engage students in the overall institutional strategy of greening campuses.

IMAGO, the project proposed as a case study in the "Sustainable and Experimental Student Housing Living Lab", has the advantage of exploring numerous avenues of research and reflection on the resilience of housing, encompassing environmental, technical, social, and economic aspects. This richness makes it an ideal subject to offer to an interdisciplinary panel of students, enabling them to engage with the specific aspects that interest them. Within a tight timeframe and constrained deadlines, students from the ENLIGHT alliance have managed to provide relevant solutions to the project, which have not only reassured us about certain choices already made but have also raised new questions that had not been thoroughly explored, such as the issue of well-being and mental health in student housing. A collaborator from a private company said: *"It's a real win-win collaboration for us and for the university. The real value is that students are a real source of ideas."* The cultural and disciplinary diversity among the students has allowed for valuable insights into certain choices, without necessarily calling them into deep question. However, the external perspective brought by the ENLIGHT students has brought nuance to the project.

The interdisciplinary and trans-sectorial dimension of the partnership, coupled with the diversity of the student audience, pushes lecturers to adopt a different point of view and perspective on their own topics. Most of the lecturers intend to use this scientific development and adaptation in their own local courses after the ENLIGHT experience.






Guest lecturer A saw an interest and added value in adapting his/her research and approach to the topic "Urban Mining", although his/her intervention in the course was in response to the unavailability of other colleagues who would better suited to the theme. Participating to the course allowed him/her to take a step back from his/her research and teaching work and to question his/her area of expertise through a new thematic entry, by preparing a conference from scratch. Guest lecturer B had never worked on this topic before, but seized the opportunity to explore a new field. It pushed him/her to step out of his/her usual classes to adapt own expertise to the theme of the course.

The European universities' initiative impulses institutional dynamics to strengthen strategic partnerships for excellence and transformational education and research. The ENLIGHT Think Tank, despite its top-down creation, has successfully initiated academic collaborations around new types of projects and innovative topics, some of them with high potential for synergies and expansion to establish rich research networks.

The "Energy Use and Circular Economy" core group has developed a series of four BIPs in response to the broad EU mission for "Climate Neutral and Smart Cities". This theme has enabled the development of synergies based on the academic expertise of the universities that have successively taken the lead of the core group. The seeding of the collaboration from topics such as water and mobility management, urban mining, sustainable buildings, and energy transition and justice is now converging towards the creation of research networks on circular economy and positive energy districts. An academic coordinator said: *"If ENLIGHT was not there, we would probably have not done this."*





Student: *“I think the most innovative aspect of the course was connecting nine universities together and the students could work together, our generation can have a word in actual changes, and we actually can change a little bit of the world.”*

Recommendations

-  **Act towards converging teaching and research components to strengthen and sustain connections between academic partners.** Testimonials from academic coordinators and lecturers demonstrate that their involvement in the development of courses sparks a desire to further enhance collaboration and co-develop research projects. While ENLIGHT RISE serves as strong framework, most academics remain unaware of its existence or hesitate to embark on additional procedures alongside their teaching commitments. Consolidating the two networks into one would intuitively facilitate this process and prevent protocol duplication.
-  **Integrate long-standing pre-existing collaborations and networks, as well as bottom-up calls for initiatives to leverage the cooperation potential.** Because of time constraints with the urge to design and experiment CBL pilot courses, the core groups did not fully operate their dissemination goals to broaden their communities and highlight existing initiatives. Some academics felt they had no space to integrate their expertise or connect their pre-existing networks to ENLIGHT.
-  **Establish long-term cooperation objectives with regional stakeholders is essential to retain their investment and interest.** By outlining the scalability of priority themes, it becomes easier to formalize a set of interconnected challenges that could be captured by students, at different stages of their curriculum, and at different levels of maturity. This not only fosters a more focused use of CBL methodology by the students, but also ensures sufficient time to process challenges and reflect on solutions.
-  **Define topics and central themes in coherence with the ambition of the regional academies and ensure alignment with student efforts** to avoid them being distracted by secondary challenges. A detailed outline of the course, shared with students during their recruitment, could include this information and serve as a guide for student and partner expectations.
-  **Involve one or two external partners during the early stages of the course, specifically in the course design process, as consultants** to provide valuable insights for aligning the knowledge to be imparted in the lectures. It is crucial to avoid regarding them solely as implementers and instead provide ample room and time for their contributions to the course design.

Chapter 2: CBL implementation methodology

Guiding questions

-  What was your experience with the CBL approach (prior to the ENLIGHT course)? Did you follow specific training to implement CBL in your course?
-  What are the main benefits of a CBL approach in teaching?
-  What obstacles have you encountered in implementing CBL?
-  Are there any specific skills and/or knowledge you wanted students to acquire or develop through the CBL approach? How did you define the assessment modalities? What would you keep or change?

Lessons learnt

What we know

Challenge-based education:

1. Focuses on real-world challenges that students are motivated to solve.
2. Encourages collaboration and communication among students and teachers.
3. Involves collaboration with professionals and external stakeholders to help stay in touch with the scope of the challenge.
4. Emphasizes student-centered learning, where students take the lead in driving their own learning.
5. Involves a process of inquiry, investigation, and reflection.
6. Considers the social, economic, and environmental impact of potential solutions.
7. Often involves the use of technology and multimedia resources.

What we observed

Challenge-based education:

1. Is **not used that often worldwide** and it is fairly specific to some programmes.
2. Requires **extensive self-training**, although it has many shared aspects with “project learning”, “problem-solving learning”, and other nuanced variations to enhance understanding of the methodology.
3. Can seem abstract, making it **crucial to receive feedback from individuals who have implemented this methodology** to gain insight into its implementation.
4. Is **sometimes hard to execute and make it operational**. Although it is not a difficult model to implement in the structure of the course, prior clarification of the course objectives and their relation to CBL methodology is needed for lecturers, coaches, and students.

Educational developers are primary course designers. They are prone to experimenting with new methodologies and have no difficulty in setting up a course following a CBL framework. However, much of the approach's theoretical and empirical learning is done individually, using personal resources or resources found on the internet.

A **significant workload** related to course design falls under their responsibility, and **can easily dramatically increase if the academic coordinator has no prior experience with CBL and limited time to invest in the course**. For instance, most of the time, their contribution has been extended to developing course content, conducting research, selecting lecturers and external contributors, and, in some cases, selecting students.

Academics were not required to undergo specific training. **Most academics had prior experience** with implementing challenges in their courses, **in some way or another**. Linking learning to a societal challenge is part of the teaching practices. Most academics work on **industrial case studies and large projects, on social inclusion** in technical projects, with **experiential learning** as pedagogical approach. **However, few of those have been involved in such a European / international/ interdisciplinary scale.**

While it is widely assumed that the academic staff participating in ENLIGHT courses have in mind the programme's transdisciplinary scope, its focus on real-life problem solving, and its operational applicability, this is not always the case.

The design of the virtual part, as it is often established, does not necessarily explore the challenge component, which is mainly explored during the physical mobility (i.e. immersive week to which lecturers cannot always attend). Because of that, when giving a lecture in the ENLIGHT course, some academics did not fully experience the challenge-based learning aspect, **except in recognizing the interdisciplinary and multicultural nature of the audience**. This does not allow them to have a comprehensive understanding of the overall course structure and expected competencies that they need to impart to the students. This can result to **limited interaction and passive learning** from the students, **depending on the lecture format** developed by the lecturer.

PhD students have played an important role in some ENLIGHT courses with a **coaching responsibility aside the academic team**. Preparing the coaches is an important step and educational developers have designed and developed CBL training exclusively for them.

Coaches **facilitate group work on the challenge** by providing **tools, techniques, and methodology to the students** to help them to:

1. manage group work and exchanges

- sharing perspectives, experiences, and knowledge from different backgrounds (encouraging interdisciplinary and intercultural dialogue, thinking outside the box),
- understanding and managing group dynamics (roles, addressing encountered problems, finding solutions),
- supporting the development critical and reflexive thinking.

2. manage investigation methodology on the challenge

- investigation planning and distribution of tasks between the students,
- collecting, analyzing and summarizing information from lectures and research work,
- supporting the transitioning from broad reflections on a big idea to concrete propositions of innovative solutions.

3. prepare assessments






- managing work progression to final report and oral presentation,
- advising students in creatively presenting their results by capturing the attention of the jury.

In general, PhD students have assessed their contribution positively and enjoyed their role. Like students, they have developed /strengthened a wide range of expert and soft skills.

Coach: “A natural dynamic was created really quickly between the students. Extroverted students don’t hesitate to interrogate the quietest student that now feels more at ease to talk”.

Student: “We decided to contact our coach with the concern of how to lower the pressure for us and increase the other’s engagement [...] By doing so, our coach got more involved in our group discussions and helped us to set strict deadlines where everyone got a specific task assigned.”

Gained competences for coaches

-  Understanding the needs of students
-  Helping students to summarize ideas, to refocus to the theme
-  Mastering team work and intercultural communication, in English
-  Strengthening organizational skills
-  Enhancing motivational leadership skills

Learning outcomes are hard to define and evaluate considering the multi-scale skills approach. Educational developers and academics have sometimes faced too complex learning outcomes, whereas in some courses, learning outcomes could have been more ambitious. This affects the methodology and quality of their assessment.

Students need a considerable amount of time to fully assimilate the CBL methodology, and what is expected from them, while the academic coordinators have a complete understanding of the learning outcomes and pedagogical approach. For students, understanding CBL comes in addition to the time they need to assimilate the objectives of the course. **In some cases, pushing CBL approach forward can overshadow a broader purpose** as it puts the emphasis more on finding solutions to a given challenge (i.e. climate change) than the main course objective. In some courses, academics’ expectations were more focused on the change of students’ perspective and how they would integrate the new knowledge in their respective fields, than on them coming up with an operational application of a solution to a specific challenge. In some cases, it was difficult to center students’ attention on the reflective global learning component, given that the course is primarily focused on a localized and territorialized challenge.

The evaluation methods for student work vary depending on the course. At the core of most ENLIGHT courses lies the CBL approach, which centers around the development of new knowledge through the resolution of real-life problems. The assessment of this aspect of student work is based on evaluating the quality of their contributions in terms of concrete perspectives and practical solutions. This assessment focuses on examining the applicability and resonance of their ideas with the challenges presented to them. Below are the most commonly used modalities of assessment:

<p>Continuous evaluation of intermediate deliverables to ensure that the knowledge conveyed in lectures is translated into concrete solutions by students. The focus is not on evaluating a finished product but on gaining insights into the collective thinking process and its evolution throughout the sessions, observing how these intermediate projects contribute as building blocks to the larger challenge.</p>	<p>Written reports required at the end of the course, presenting the problem, methodology, solutions, and identified limitations in a scientific format. These reports demonstrate the students’ ability to mobilize the interdisciplinary strengths of their team and present a coherent reflection on their proposal.</p>	<p>Oral presentations of team results, allowing academic coordinators and the jury to assess the students’ ability to deliver a relevant, engaging, and concise presentation that highlights the added value of their developed solutions. Beyond the content, this aspect aims to prepare students for public speaking and encourage them to pay special attention to how they present and "sell" their project.</p>
--	--	--

Intangible Skills are less measurable in such a short timeframe. The CBL approach promoted by ENLIGHT emphasizes student empowerment in their learning process, fostering new habits of inquiry, investigation, and reflection that transcend traditional disciplinary boundaries. It also cultivates collaboration, teamwork, empathy, collective organization, and the effective use and channeling of group intelligence. These skills are not quantifiable, which makes it hard to really assess the full impact of the course.

In the case of the Global Engagement Module, for example, the course explores the concept of "global citizenship engagement," which requires students to engage in introspection, although it may be challenging for some. These parameters are crucial aspects of the alternative teaching approach offered by ENLIGHT. Evaluating these "immaterial" or "soft skills" is challenging, as their concrete manifestation in the participants' educational and professional journeys may take time and emerge in a delayed manner. "As coach, we know what the Global Engagement Module has to offer. The students see it just as an opportunity to go somewhere else, an opportunity to discover another country. The students never spoke on becoming globally engaged citizens. Because of the dual content, it was harder to raise attention towards the learning goals. A student even said it's ironic: how can they be globally engaged versus they have to study culture, habits, people for each city case?"

Success stories

The organization of an ENLIGHT course is part of that change and motivation to try out new ways of teaching and learning.

As part of the "Equity and Sustainability Transitions" Summer school, a lecturer did not have the opportunity to apply the CBL approach in teaching, but has integrated it to some extent into his/her research work. The format of the summer school is well suited for him/her to experiment with this alternative form of teaching/learning because it allows for transdisciplinarity and multiple perspectives from different lecturers on a specific topic, on a scale that this lecturer has not experienced before, particularly with the involvement of various European universities, departments, and disciplines.

Being part of a European university alliance encourages the sharing of innovative pedagogy and instill change locally to strengthen learning perspectives towards a joint educational strategy.

A transformation in the configuration and expected outcomes of the "Innovation Games" (Uppsala) came into effect in association with ENLIGHT. Initially, the course largely emphasized the entrepreneurial aspect and the development of the economic model for the solutions chosen by students. However, considering the content-rich nature of the course, with pedagogical content and theories demanding assimilation, it appeared more appropriate for the coordination team to sideline the economic model and concentrate on the fundamental reflection around the challenge, which imbues the challenge with greater depth, thus minimizing distractions. By integrating the course into the ENLIGHT programme, the goal is now to leave space and time for a reflective approach around the identified challenge, to master the "design thinking" and "game design" tools developed for this course, and to achieve better social dynamics within student teams in general.








Testing the CBL approach encourages not only the academic collaboration but also exchange of practices between educational developers (impulse of pair learning). In some universities with no prior support structure dedicated to innovative course design, this experimentation leads to the upscaling of profiles of administrative staff who gained competences in course design.

Educational developer A: *“For us, it was the first time to organize such course. There is no clear framework on how to create such a blended course. Now this framework exists. I feel more secure, with more ideas how you can design and make content stronger. I gained more maturity.”*

Educational developer B: *“Meeting with Educational developer A was very important for me. As it is sometimes “abstract” it’s important to meet people that actually implement this methodology.”*




Administrative staff: *“It was very difficult for me to have a double role in the course: the one of administrative support and the other of educational developer who should direct the course to more challenge-based approach. At my university, we had no experience with the methodology and no clear examples of such courses. Overall, I think, the course was partially challenge-based and students worked in groups on topics they chose.”*

Recommendations

-  **Structure the entire course with more fluidity as a coherent and comprehensible narrative for both students and guest lecturers.** Guest lecturers should be informed of their role in the course narrative and the potential impact they can have on students' learning.
-  **Establish more balance among guest lecturers by including more professionals and representatives from civil society.** This approach would help set a different knowledge transmission relationship, fostering a more active exchange of experience rather than a hierarchical dual relationship between the academic expert and the one-way learner.
-  **Introduce a focused CBL training format for lecturers** to ensure pedagogical consistency throughout the course and among all stakeholders (students, coaches, educational developers).
-  **Provide academic coordinators and educational developers with increased autonomy to explore alternative approaches alongside CBL.** By allowing for experimentation, they can delve into additional unconventional methodologies that offer novel ways of addressing complex issues.
-  **Provide students with additional tools to understand the pedagogical approach, including concrete examples of CBL applications, well before the start of the course, to facilitate self-guided learning.**
-  **Adapt and simplify student assessment methods and criteria to benefit their process of inquiry, challenge identification, and solution creation.** While providing the academic coordinators with the essence of the expected outcomes of the ENLIGHT courses in terms of active pedagogy, it is relevant to leave some space for personal innovation.
-  **Preserve the coaches' role as student mentors and advocates,** fostering student support, and facilitating collaborative dynamics. Coaches can act as a "sounding board", offering feedback, and sharing observations with the academic teams and evaluators.

Chapter 3: Course design

Guiding questions

-  Who is locally part of the design of the course? How did you share the responsibilities?
-  How did you approach the course structure? Did you follow the structuring documents provided by ENLIGHT (deliverables, internal tools provided by educational developers...)?
-  What are the characteristics of the virtual component / the physical component? What is ideal, what is not? Are the two components interlinked and how? How does the blended format complement or contradict the CBL approach?

Lessons learnt

Team dynamics: the creation and organization of a blended course integrating the CBL approach cannot only rely on the academic coordinator, nor the educational developer or administrative equivalent staff. In most courses, the respondents acknowledge that the amount of work was clearly underestimated, and that they sometimes had to take decisions that lie beyond their own competences. Some academic coordinators have taken up administrative and logistics aspects, whereas some educational developers or administrative staff have been more involved in co-writing and developing the course syllabus.

Such courses require **an organized design process under the responsibility of a multi-profile team** (content experts, educational developers, teacher assistants...), which implies:

1. **consequent** personal time investment that needs **institutional recognition**, and prior validation of administrative departments ready to dedicate supporting staff,
2. **a fluid communication, especially with locally involved faculties** (to avoid any conflict with regular internal processes),
3. **a broader sharing of resources and practices**, for improving design methodology over time and for automatizing tasks when possible.

Content-wise, it is crucial:

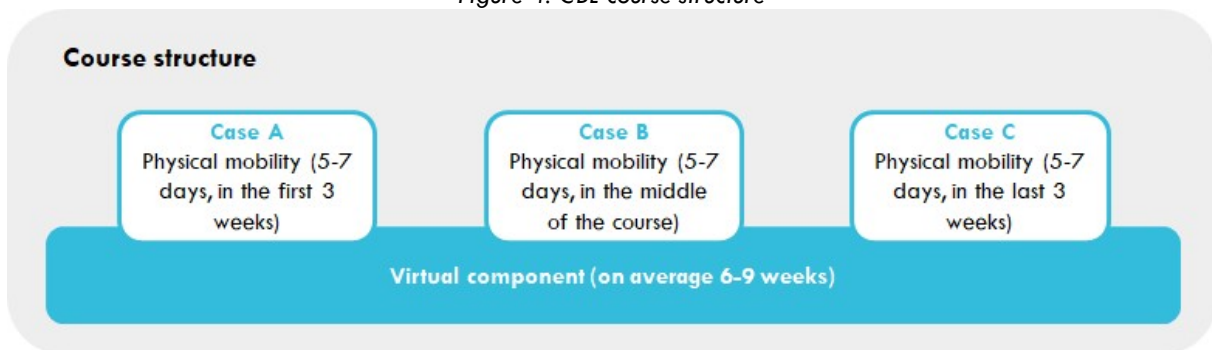
4. to implement a **collaborative framework all along the process between teachers, but also with external stakeholders** so the course concept and the learning activities are developed taking into consideration the nature of the challenge(s) and the local priorities.
5. to ensure a **meaningful interconnection between teacher contributions, and to accommodate them with the challenge(s)**.

The universities in the alliance make every effort to facilitate the recruitment of local lecturers to participate in courses organized by one of the partners. This involves a **targeted dissemination** to their local scientific staff, or directly contacting the academics who are identified as relevant lecturers for the course theme. A lot of work is done by most academic coordinator to “*purposefully find local lecturers to fill the gap*” in case of low external lecturers’ recruitment. **Communication with lecturers is generally satisfactory**. The majority confirms having received sufficient support before the course, and have been provided a guide explaining the course outline and the scientific context to which they contribute.

However, it sometimes happens that the material proposed by the lecturers is not aligned with the expectations or the core of the challenge, and timeframes are usually too short to consider other alternatives. The discrepancy between the content of the course and the expectations can have an unwanted impact on the engagement and motivation of students. One of the respondents explains that it can create confusion: "Some students wonder why this lecture is proposed? [...] do take the time to interview the lecturer." This applies both locally and with ENLIGHT partners. In addition, lecturers invited to participate in the course do not always have follow-ups beyond their actual intervention time. Although some are invited to participate in the immersive week (and several regret not being able to do so due to a busy schedule), most of them do not access to further information beyond their one-time contribution. As such, they do not have feedback on the solutions resulting from the students' work to meet the challenge and are thus disconnected from the course's outcomes.

Blended "learning" approach: the total study load represents **3 to 6 ECTS**, consisting of virtual and physical components. **Three different timeframes have been tested within ENLIGHT.**

Figure 4: CBL course structure



The highlight of all courses was the immersive week, during which students were welcomed on-site by the organizing university. The immersive week typically represents the **main motivation for students** to enroll. The opportunity for mobility opens the door to discovering a new country and engaging in intercultural and transdisciplinary socialization.

Type of activities

- Group work and practical studies,
- Meeting with experts and field visits,
- Workshops (entrepreneurship and business planning, intercultural learning, ...),
- Student presentations (challenge concept or final presentation) and evaluation,
- Energizers and social activities.

The online path has an average duration of 6 to 9 weeks and contains virtual synchronous and/or asynchronous learning (live lectures or pre-recorded lectures, online assignments, individual readings, Q&A sessions...). However, **its content often questions its benefit for the challenge exploration.** In many instances, the virtual component tends to become a succession of lectures that, while they are relevant to the theme, do not have a clear and cohesive methodological thread nor a true alignment with the on-site week's programme. In those regards, there is a serious need to delve into the "blended" format, to go beyond the mere alternating of virtual and physical components.

Placing the immersive week at the beginning, middle, or end of the course has its advantages and disadvantages, and so far, no model has proven to be tangibly superior.

Case A

Positive	Possible side effects
<p>Programming the on-site week at the beginning of the course creates a collective student dynamic from the outset, allowing each team member to recognize the strengths of the group and its transdisciplinary scope to better integrate it into the overall reflection on the identified challenge throughout the remote sessions. One educational developer who participated in a course with the immersive week at the beginning and another with the week at the end <i>"felt with the first option that it was easier to jump into the challenges, understand the context."</i> However, the educational developer cannot give a definitive judgment, having had only one experience of each model.</p>	<p>The planning of the on-site immersive week at the beginning of the course as a high point raises concerns about students' engagement with the subsequent virtual sessions. Educational developers, academic coordinators, and coaches agree that there is a significantly disproportionate level of engagement between in-person and online learning. While the period of forced lock-down in recent years has allowed students to become familiar with remote learning, their investment in virtual sessions is still noticeably lower compared to the energy generated by in-person exchanges. The challenge for academic coordinators and lecturers in this case is to ensure the group's energy is maintained and remind students of their responsibilities to their team members, as well as to external partners who are waiting for their solutions and visions.</p>

Case C

Positive	Possible side effects
<p>Programming the on-site week at the end of the ENLIGHT course allows for a culmination of the experience through a series of events and activities, providing an intensity of interactions that keeps students engaged in the early weeks of distance learning. The immersive week at the end of the course represents the highly anticipated moment for students, during which they finally meet their fellow group members and concretely establish their collaboration. The fact that students may have already started identifying their work areas during the first few weeks of distance learning enables the selection of the most relevant external experts and interveners to provide targeted answers to students during the immersive week. This is also an opportunity to organize a time for students to present their solutions to external individuals and organizations that initiated the proposed challenges, providing a solemn moment during which students are encouraged to innovate both in terms of content and presentation of their work.</p>	<p>Several reports from coordinators, educational developers, and coaches show that deploying all virtual sessions over several weeks, with the immersive week only arriving at the end of the course, does not fully help implement the CBL approach during 80% of the course duration. Although by definition the course modalities include transdisciplinary student teams and some connection to an emerging problem, it is indeed difficult to start a concrete work for finding a solution with just one reflection session per week, usually following one or two lectures. Furthermore, these lectures do not always emphasize the relationship between the theoretical and scientific content and the problem raised by the course. In addition, feedback from students who have completed a course with an immersive week at the end confirms that most of them did not have full understanding of the CBL approach and did not see a real distinction from a traditional course until the immersive week.</p>

Case B - Programming the on-site week in the middle of the course calibrates a little bit the dynamics, however some positive and side effects of Case A and Case C can still appear, depending on the student groups, and design of the virtual component, and whether it enables continuous engagement.

Success stories

Implementing a continuous appropriation of the global challenge by connecting the two components to real-life experimentation at a smaller-scale enables a more proactive participation of the students, as they work on issues they can personally relate to.

In the “Sustainable and Experimental Student Housing” Living Lab, the decision to schedule the immersive week at the end of the course was made in anticipation of the challenge of maintaining proactive engagement from students throughout the virtual sessions. It was recognized from the beginning that a different, CBL-adapted approach was needed, considering the constraint of groups of students who were not familiar with each other and yet had to make the effort to come together every week for collective reflection. To address this, the coordinating team asked students to work on remote mini-challenges, with each challenge related to one of the thematic areas presented in the pre-recorded lectures (supplemented by Q&A sessions). These mini-challenges aimed to bridge the gap between theoretical knowledge and students' everyday lives (given that student housing was central to the course), providing them with opportunities for reflective feedback on their learning progress. It also served as a means to help students discover the specific aspect they wanted to delve into for the big challenge, thereby avoiding last-minute rushes during the immersive week.







Co-design is key for crystalizing synergies. Not only does it bring coherence for both teachers and students in course creation processes (qualitative iterations) but it also opens up future perspectives (bigger objective, continuity of the cooperation).

Academic: “I easily found colleagues with similar interest among the core group, we were able to develop the course together, because we do this topic/ research, and overlook human relationships. The contact was very easy, you don't have to think strategically how to communicate an issue. It's a good opportunity to work with colleagues. Once we have the 3rd edition in place, we could start to think further and build research projects from that, and PhD collaborations. A long term objective could be to extend this course to a joint programme, although we need a gradual approach to have a good knowledge, and we need institutional support.”

A creative immersive experience is key to expose students to the realities associated with the challenge at hand. They are then able to gain better understanding of how the identified issues affect everyday life and how it correlates with local policies and innovation.





Student: “We were talking about water management in Bordeaux, and how they collect rainwater and what are the solutions to use. It was really interesting to see all the solutions that exist in Bordeaux, and it really inspired us about our subject. I think the immersive week is really an important week.”

Recommendations

- 
Involve all the participating lecturers and speakers in course design. This helps the educational development team better understand the course's objectives, leading to greater overall efficiency and effectiveness.
- 
Reduce the number of conferences and theoretical sessions, which are often delivered in a passive learning format, overloading students' capacity to effectively integrate information. Rather incorporate intermediary assignments into the overall duration of the course to enable active learning and reflective exploration of each thematic area in relation to their personal, local, territorial, and cultural experiences.
- 
Provide more time for student reflection on the challenge, by incorporating alternative rhythms of academic lectures or by diversifying the conference programme. This can involve a mix of conventional lectures, interactive academic and non-academic presentations, as well as open exchange sessions with guest speakers. By providing these varied formats and less intensive and condensed content, students can engage in a more meaningful exploration of the challenge, fostering critical thinking and interdisciplinary perspectives.
- 
Encourage and facilitate participating lecturers' attendance to the immersive week, or at least provide a timeframe of interaction between lecturers and students before the beginning of the course. By interacting with students and gaining insight into their interests and disciplinary backgrounds, the lecturer can design his/her course more effectively to meet their needs. Furthermore, the attendance of the immersive week provides an opportunity for lecturers to meet and collaborate with other colleagues of the alliance, and to identify common areas of interest and define more meaningful learning outcomes.
- 
Design dynamic learning “capsules” coupled with regular interactive sessions between students and non-academic partners (not limited to the virtual or on-site phases) would prevent non-academic collaborators from becoming disconnected from students' progress. At the same time, it would reassure the students in regards to the alignment of their solutions with partners' expectations.
- 
Mutualize and share pedagogical resources to provide academics and supporting staff with inspiring methods and tools (i.e. “course design” toolkit, as part of the continuous development of the ENLIGHT “Teaching and Learning Lab”). This will enable the enhancement of creativity in the teaching process, effectively integrate “hybrid” learning by strengthening the interconnection of the virtual and physical components, and thus, increase design quality through iterations.

Chapter 4: Student' recruitment, mobility and experience

Guiding questions

-  Did you encounter any obstacle to recruit ENLIGHT students/local students? Did you encounter dropouts of students from selection to mobility logistics? How did you manage this? How did this affect the course delivery?
-  What motivated the choice of funding and mobility instrument at your university?
-  What are the main challenges regarding the management of student mobility? Did you encounter any difficulty in sending/receiving students? How was the communication with students and partners?
-  How do you think we can maintain this type of module in the mobility offer?

Lessons learnt

Recruiting students presents various challenges depending on the specific circumstances and organization of each course. The most recurring problems include:

- 1. Lack of formal embedding or accreditation:** When the blended course is not formally embedded into the curriculum and does not offer credits, it discourages students from registering. Even some of those who were initially interested drop out after the initial sessions, realizing the course requires significant effort while lacking formal recognition or rewards, apart from personal gratification associated with interdisciplinary and experimental experiences. The “*Sustainable and Experimental Student Housing*” Living Lab is an example of the difficulty to maintain local students’ engagement throughout the course, as it suffered from quick and considerable students’ dropout, due to lack of formal embedding, the last-minute launch within the local programme, and the inability of students to take upon additional workload to the already busy studying schedule.
- 2. Scheduling misalignment and discrepancies:** Courses like “*Climate Neutral City*” or “*Researching Equity*” scheduled during holiday periods, such as Easter break or just before the start of the semester, can create difficulties for local students. Additionally, the timing of the immersive week may coincide with periods of heavy workload and exam preparation. ENLIGHT courses often remain on the periphery of the curriculum, and teachers may not always have the flexibility to allocate sufficient time for their students to effectively participate in these optional courses.
- 3. Time constraints in application calls:** The narrow timeframe for student application calls is a challenge regarding attracting potential candidates. To manage administrative registrations and accommodate scheduling across partner universities, it is essential to initiate recruitment campaigns well in advance, preferably one or two semesters beforehand.
- 4. Difficulties in coordinating communication and dissemination:** Differences in communication and the sharing of dedicated calls for applications among alliance universities hinder the anticipation of targeted disciplinary profiles. Internal rules within certain partner institutions limit the exchange of

information among multiple departments, potentially impacting the desired interdisciplinarity of student groups.

- 5. Incoherent targeting of student audiences:** Some courses lacked a clear definition of the target student level and thus suffered from difficult group harmony and coherence. In the initial edition of "AI for non-IT students," the recruitment of undergraduates, post-graduates, and Ph.D. students led to discrepancies in mindsets and approaches to the theme, as the participants did not manifest the same level of maturity, which resulted in a certain level of confusion.

The "Innovation Games" exception

The challenge faced by the "Innovation Games" coordinating team in Uppsala regarding student recruitment does not concern internal student recruitment, as the course was initiated locally even before the creation of ENLIGHT and Uppsala University's membership in the alliance. Each year since 2016, an approximate number of fifty students participate in the course, and this number has remained almost unchanged since joining ENLIGHT. However, **the insufficient representation of students from partner universities is notable, with only 11 ENLIGHT students out of a total of 45 participants in the last edition.**

The success of this unique course locally can be attributed first to the unified logistical and administrative management within the same institution, as well as the immediate proximity of instructors who can more easily encourage their own students to participate. The dispersion of human and logistical resources, coupled with the scale of the alliance network, poses challenges in effectively disseminating information through the appropriate channels. Moreover, the limited accessibility of the organizers to master's programme directors and instructors from other universities, who are best positioned to recruit their own students, hinders the highlighting of the course's interdisciplinary merits. These difficulties in information dissemination necessitate the organizing team to extend the recruitment period, even resorting to last-minute recruitment open to partner universities. Although this approach reduces the scope for optimal anticipation and organization desired by the coordinating team, it becomes necessary to overcome the diffusion challenges.

Blended Mobility has its own specificities, which may unsettle traditional mobility management.

Looking back at this 3-year period, we must acknowledge **that increasing and diversifying mobility is a complicated ambition to achieve at a 9-university scale.** Because of their **reliance on a short duration and a blended and interdisciplinary format**, CBL courses are challenging in many aspects of mobility management.

Mobility officer A: *"Financing and paperwork was new to all of the partners, figuring out the processes at each partner individually was a laborious task. This type of exchange was not yet included in the regular operations of our mobility offices."*

Mobility officer B: *"My advice to an unexperienced mobility officer would be, to get ready, mentally prepared to deal with a project like this. The decision-making is not through us but through National Agencies."*

The creation of the ENLIGHT Mobility taskforce has facilitated the understanding of (blended) mobility issues and related practices/knowhow, but still needs to embrace the big challenges around it, which are to:

1. Secure a solid and reliable funding structure.

Most of ENLIGHT CBL blended courses make use of the **regular Erasmus+ mobility budget** (blended mobility, BIP organizational support), when possible. In practice, it is **hard to predict** whether the Erasmus+ mobility budget will be activated or not, considering:

- **Differences in interpretation the National Agencies may have** regarding the structure of the course itself: significant virtual phase (to be awarded with a *blended* mobility scholarship), meaningfully bridged with the on-site part (to be awarded with an organizational budget for the hosting institution).
- **Uncertainty in student participation.** Despite active promotion and sufficient number of received applications, some courses have faced consequent dropouts, which have considerably decreased student participation. Because of low student participation (below eligibility criteria), the university in charge of organizing the on-site event cannot activate the Erasmus+ budget (organizational support). This tends to lead to last-minute change in the programme, and/or to the need of unlocking secondary budgets. From both mobility officers and course organizers' point of view, the situation can be stressful: *"We had to adapt a few things spontaneously without information; it was quite difficult to deal with"*.

When students are traveling to the host-university for their physical mobility, we have observed **variations in mobility budget calculation, which can lead to lower satisfaction of students.**

- Depending on the sending university, **top-ups are not always applied the same** because of local regulations, **and/or need time to be implemented** in the university system.
- When it comes to green mobility, **some students felt disadvantaged, facing higher travel expenses without having the choice to use green transportation** (very large distance from their home university).

The "Global Engagement Module" model

Whereas all other courses are combining the virtual component with a single on-site component, the "Global Engagement Module" offers three mobility pathways at the universities of Groningen, Ghent and Göttingen. Students are split into three learning communities. The programme includes a site visit of 1 week to one of the three organizing universities (by random selection), each of them with its own challenge: "Public Health" (Groningen), "Migration and Society" (Ghent), "Climate Change" (Göttingen). The long-term ambition is to integrate other ENLIGHT universities to consolidate additional mobility pathways and increase the number of participants for greater impact. Whereas the integration of a fourth partner was envisioned already during the ENLIGHT pilot phase, the implementation of this upscaling strategy requires first a more robust framework. There is a need to stabilize a sustainable funding scenario, rationalize mobility management, and enhance students' understanding of the primary learning goal on "Global engagement".

2. Manage calendar misalignments' side effects

- Whereas regular exchange agreements have a definite recognition structure already in place based on **semester units**, a blended intensive programme represents only **few credits** in the curriculum. The student needs to build up the blended course integration around her/his own

semester period at the home university, which comes with a set of obligations and commitments to manage.

- Such scenario implies for the mobility officers to **constantly double check the student's eligibility** to participate, to avoid complex recruitment tasks. *"Students say they have room in their curricula but in reality after checking, they had no free ECTS, so it was not possible."*
- For course organizers, finding a joint time window to organize the on-site component while taking into account the constraints of the nine partners is very complicated. In fact, in some instances, **the chosen timeframe has proven to be less than ideal** for mobility officers, and for students in terms of housing availabilities.
- **Scheduling a short, blended course during the first semester of the academic year may increase the risk of dropouts.** In order to properly activate the mobility and recognition arrangements, and proceed with student registrations before the start of the course, recruitment and nomination procedure must be treated before Summer. The administrative calendars do not align with the student's capacity to engage in mobility at this period of the year, which is even more problematic for those who are not yet enrolled in a curriculum at the time of the application (case of Master profiles for instance).

3. Harmonize paperwork and processes

- **Lack of coordination between partners and/or differences in mobility management** (different templates, documents) is **not only confusing for students, but also for mobility officers themselves**, who need to double check procedures before contacting the students. *"Sometimes, students receive a general information package that does not fully apply to the blended mobility format, or they need to sign the same documents multiple times."*
- **Dealing with different sending universities is not the only factor that complicates the paperwork.** For instance:
 - a. The **interdisciplinary dimension** offers the possibility to locally promote the course to multiple faculties, meaning for mobility officers the need to tag the course with more than one disciplinary code.
 - b. The calculation mode includes variables leading to **personalized amounts of scholarships.**
 - c. The **reporting parameters settled by the National Agencies** require the alignment of mobility grant agreements to achieve a smooth budgetary conciliation. Mobility officers must thus coordinate in due time the sharing of data needed for the Beneficiary Module (Erasmus+ reporting system).

As such, one mobility officer said: *"Almost for each student that we send, it requires an individual procedure, this represents so much effort in different ways, and extra workload"*.

Success stories

Despite complications in recruitment and multiple administrative hurdles, CBL courses are truly attractive for ENLIGHT students who see a real benefit for enhancing their knowledge on societal change and for acting on big challenges, while being responsible of their own learning experience. The interdisciplinary dimension gives them the right impulse to gain insights from different and complementary perspectives they can apply back in their own university and share with those who did not attend (snowball effect).

Student: *"I believe that in future, that will be many obstacles to come across, and as young people we need to prepare the future for ourselves and also our future generations that will come after us."*

Student: *"The most interesting thing that I learned was how we view cities in the future from a sustainable perspective. I hadn't given almost any thoughts on it before, for example, how water can be used much more efficiently in the city."*

Student: *"The challenge for me in working with other disciplines has been that we have different ways of looking at problems but also different ways of thinking about solutions."*

Academic: *"We have a very, very diverse mix of personalities and backgrounds. But to speak on the topic of AI, and what it means for them, and to engage with that content and material by, you know, talking to the academics, reflecting themselves on the material, and then bringing that back to their own universities and their own classrooms where they can imagine how AI can have implications for them in areas of drama, arts, business, politics, and so on."*

The overall setting of CBL courses promote an open and safe learning environment, guided by non-traditional teaching methods directed towards practical and real aspects. The proximity with teachers, coaches, professionals, from different learning environments, backgrounds and cultures, coupled with the intensity of learning needed for such a course format, enables students to increase and diversify their learning practices and knowledge, and from this, to enhance their soft skills and gain in maturity.

Student: *"One of the purposes, why I came to Uppsala, was to experience the different teaching methods used outside my home country. I have never been an Erasmus student before. I really liked a lot the involvement level of teachers you have here even though it might not be the same everywhere in Swedish Universities. The continuous feedback is really valuable and the check-ins and check-outs are needed to create a good working environment for the whole group."*

Student: *"I really like and enjoy the living lab concept because by having like a real experience into the site, we actually think outside the box how is it in real life, and then we can apply it in the prototype or in the future building that they will make."*

Academic: *"We are doing this in very hands-on way, with post-its, framework, storytelling, rapid prototyping and testing. That's a very important aspect of today's learning, we should be able to make things tangible and testable in a very hands-on way to understand what the implication of theory are. That's our mission of teachers, to try to explain complex ideas in simple terms."*

ENLIGHT courses have allowed the test and acceleration of short-term mobility across the network, with the aim of increasing and diversifying mobility options. It contributes to the development of new flexible learning paths, ‘customized’ to adapt to students’ needs. Although dealing with timing and internal regulations was and is still challenging, the alliance has developed around thirty short programmes in less than three years. Their blended format has considerably enhanced the recognition of virtual mobility and, in some instances, introduced universities to this practice. This successful experimentation had since revealed a growing demand for more diverse offers of international experiences.


Student: “For me it was really great to be able to study at the same time in my university and still be able to study abroad via this course. I like the idea that I did not miss whole semester of my study and still can manage some plus abroad programme with a topic that I really like.”


Student: “It’s nice to have a small Erasmus experience if a semester abroad is too hard for any reasons.”

The multi-partnership dimension of the short programme strengthens the student intercultural experience thanks to the diverse cultural and linguistic background of the ENLIGHT network. If most students are curious about others and see direct benefits in practicing one or several languages at the same time, the experience can go a step further as some students have had the opportunity to reflect on what being a European citizen truly means, and how the diversity affects their own perception and reality.








Student: “Getting to meet the other students from all over Europe has been an amazing experience. I never thought I could relate to so many people from so many different cultures and it’s been amazing to see how their different backgrounds melt with mine.”

Recommendations

 **Add generic modules to enhance local student recruitment.** To address the lack of local student recruitment due to the absence of an administrative framework for formally integrating the course into the curriculum, which currently offers limited flexibility for accommodating formats like BIPs, Summer Schools, or other configurations, it would be beneficial to consider the addition of generic modules, as proposed by the University of Galway. These modules, with no thematic constraints, would aim to expose students to novel learning experiences unrelated to their main field of study, thereby highlighting the value of interdisciplinarity and the CBL approach more broadly. A similar project is in progress in the University of Bordeaux, through the use of new learning modules focusing on societal and environmental transitions, via the recently created “Institute of Transitions”.




 **Address calendar misalignments and course iterations.** Resolving calendar misalignments in the scheduling of ENLIGHT courses across partner universities for student recruitment purposes can be challenging. This requires closer collaboration between the course organizers and the academic programmes, aligning course schedules more effectively, and providing proper recognition and incentives for student participation. However, a more feasible approach would be to limit the number of participating universities, thereby reducing the logistical burden. Instead of targeting all nine alliance institutions in each course, focusing on a subset of universities and rotating the course offerings among them could be considered. For example, each edition of the course could be tailored to a portion of alliance members. Within each selected university, the ENLIGHT course could be open to

a diverse range of disciplines. This approach would ensure alignment of schedules and promote the involvement of a wider variety of disciplines.

- 
Upscale communication and marketing strategies. It would be beneficial to integrate the promotion of the BIPs / interdisciplinary blended courses to the regular mobility campaigns, especially once their iteration process is stabilized. An effort can be made as well to make use of faculties' communication channels for reaching out more targeted student audiences when specific disciplines are envisioned. To address these recruitment challenges within ENLIGHT, it is also crucial to enhance communication channels between the organizing team behind the course and relevant stakeholders (Bachelor/Master's programme directors, and other key individuals) across partner universities to better promote the course and its interdisciplinary nature. This would facilitate better planning, coordination, and recruitment efforts, ultimately attracting a diverse range of students to participate in ENLIGHT courses.
- 
Establish minimum lead time for student application calls. To avoid tight deadlines in opening student applications, it is necessary to establish and enforce a minimum lead time for the call to applications prior to the course start date. A sustainable and systematic approach to ENLIGHT courses cannot be achieved without technical coherence in recruitment timelines across all alliance universities. The second phase of the ENLIGHT project requires logistical rigor, which may appear as a constraint for academic coordinators and local pedagogical development teams at each university. However, this constraint is necessary to ensure the smooth progression of the recruitment process. A trial calendar convened by the ENLIGHT Mobility taskforce has been launched in February 2023 and is currently tested.
- 
Ensure coherent recruitment of students in regards to their university level. To avoid discrepancies in students' skills and levels of maturity in approaching real-life challenges, it is relevant to limit the targeted students' audiences in order to ensure harmonious group work and align the course's outcomes accordingly.
- 
Ensure coherent recruitment of students in regards to their graduation date. In order to finalize the assessments and edit the transcripts of record in manageable time conditions, it is highly recommended not to select students who are finalizing their degree, if the course takes place only 3 months before their graduation date.
- 
Streamline administrative processes pertaining to mobility management, under the control of the mobility taskforce. To rationalize efforts of mobility officers, and limit as much as possible confusion among students, academics, mobility offices, it is crucial to establish a structured protocol ("who is involved" and "for what purpose" – step by step), and a unified mobility toolkit which can be available online and would include guidelines, templates, funding rules and a Q&A. If possible, a simplified signature process should be part of the reflection to avoid the multiplication of signatures.
- 
Increase opportunities to foster the understanding of mobility practices across the network, with the development of mobility staff weeks and job shadowing.
- 
Increase internal dissemination. Gaining control over the internal functioning of each university, particularly in terms of interdepartmental communication and information dissemination, can be challenging. Nevertheless, as the ENLIGHT cooperation becomes more integrated into the academic environment of partner universities, it is essential for these institutions to uphold their commitments to the alliance. This includes ensuring effective dissemination of application calls to the appropriate departments, as well as creating safe administrative conditions to efficiently partner with mobility offices for following-up recognition procedures. While many ENLIGHT members have already made significant efforts in this regard, further generalization of these practices would be highly beneficial.

Chapter 5: Sustainability

Guiding questions

-  How difficult is to embed this type of courses at your university? Is it embedded structurally or artificially (temporary, free-floating course...)? Was the course optional/compulsory?
-  Do you have resources to sustain this type of course? Do you intend to iterate the course at your university / in other university, or not at all? What's next?
-  What are the expected outcomes of the course as a whole? Who are the main beneficiaries? Do you think this experience may impact your teaching practice / design practice? How? Do you think this format will continue to inspire local teaching programmes?

Lessons learnt

Building on experience: the benefits of iterative course design in ENLIGHT

1. **Capitalizing on the skills developed by academic and coordinating teams after the initial experiences.** *"I feel more secure. I have more ideas about how to design and make stronger content [after the first trial]. It's a pity if you cannot iterate and improve"*, explains one of the educational developers. The effort invested in understanding, implementing, and taking ownership of the ENLIGHT course has provided a proven opportunity for skill enhancement among many coordinators who would like to continue improving the ENLIGHT model with each edition.
2. **Leveraging the pedagogical resources** created by lecturers and academic coordinators within the framework of BIPs and other pedagogical formats in ENLIGHT.
3. **Using course iterations as an experimental pedagogical springboard leading to longer and more sustainable teaching formats** (specialized master's programmes, joint degrees, international research projects).
4. **Establishing continuity that allows each class to build upon and enhance knowledge based on solutions developed in previous editions**, leading to increasingly relevant and in-depth responses over time.
5. **Strengthening relationships with external stakeholders involved in the challenge**, and accompanying them from the strategy phase to the concrete execution of solutions through the work of students from each run of the course.
6. **Structuring a solid framework for inter-university collaboration** in pedagogical and scientific projects through repeated opportunities to lead courses.
7. **Contributing to the visibility and international recognition of the university** and showcasing it as a leading example in educational innovation.
8. **Demonstrating evidence of success and sustainability to question existing teaching methods** and encourage them to establish stronger connections with societal challenges.

The embedding of ENLIGHT courses, particularly the BIP format, into the curriculum, represents arguably the **greatest obstacle to the sustainability** of the programme in many universities within the alliance, with a few exceptions.

The recently developed Erasmus+ course format has proven challenging to be adopted by the administrative and mobility services of universities. Among the reasons highlighted by the interviewees are:

1. **The interdisciplinary nature of the learning experiences inherent to the ENLIGHT BIPs and the involvement of multiple academic institutions.** This richness and diversity make it difficult to establish clear equivalences of academic outcomes and goals, which are already complex to assert between different faculties and disciplines within a single university.
2. **The diversity in evaluation methods, their formalization, and the associated timelines for their implementation** (namely providing adequate academic transcripts at the right time for every participating student).
3. **The lack of preparation of mobility services for integrating the BIPs as an alternative model to the established modes of operation in the Erasmus+ programme**, due to:
 - the lack of initial information between course organizers and mobility officers,
 - divergent rules communicated by the National Agencies,
 - the size of the BIP partnership which can considerably slow down the capacity of the mobility services to merge their processes,
 - and the additional workload of managing BIPs alongside existing mobility programmes.
4. **The uncertainty about the local course iteration.** The absence of mid to long-term projection in future editions discourages coordination teams from committing to the laborious administrative process of embedding the course permanently in the curriculum. The Erasmus+ funding itself amplifies this uncertainty considering the different interpretations of funding and sustainability criteria the National Agencies may have. At this level of experimentation, the following questions raise concern of the Mobility taskforce: *“Can BIPs easily be iterated at a new host university or would the course title or even the content have to change slightly? If we aim for iterations of the same or slightly modified course at different host universities, how can we ensure recognition at those universities where the same module already exists from former iterations?”*.
5. **The lack of full adherence to the ENLIGHT programme across the decision and execution chain.** In certain cases, while pedagogical developers are committed to implementing the course, the reluctance of their superiors towards the additional investment required for the implementation of BIPs not only discourages the staff but also does not pave the way for course iteration.
6. **The still marginal recognition of the ENLIGHT programme within certain universities.** The lack of the programme's popularity limits the academic and administrative collective engagement necessary for its embedding. Most course coordinators are part of the social/academic network of individuals in charge of the ENLIGHT programme within the alliance universities, indicating its relatively modest demand and the absence of effective communication.
7. **The requirement to embed the BIP into specific programmes in some universities.** This administrative constraint limits the desired interdisciplinary recruitment at the local level.
8. **The hasty launch of certain BIPs.** The precipitation encouraged by the desire of certain universities to show their contribution to the ENLIGHT programme allows little time for a comprehensive review by the relevant committees and validation of effective integration.

Besides embedding, the **lack of resources** is the second greatest obstacle. Main issues are:

1. The limited human resources capacity:

Such courses require the involvement of multiple actors in both the preparation and delivery phases. So far, all the tasks leading to a successful implementation have been time consuming for all respondents, should they be academic coordinators, educational developers, mobility officers or ENLIGHT coordination staff.

For academics, the course was an additional workload to their regular duties:

"I had to prioritize, which means drop things"

"It's an actual workload, extra work"

"It's extra work. Long-term and permanently, we need office persons"

For educational developers and administrative staff, their disproportionate contribution to the ENLIGHT course has affected and limited their involvement in locally prioritized projects. This scenario contradicts the university departments' resource planning and raises concerns about the systemic organization and the cost efficiency.

Only a few universities have managed to secure extra capacity with the recruitment of students or PhD students to assist with logistics and preparations. In this case still, this requires mobilizing management capacity of the local teams to supervise and control the (PhD) students work.

2. The unbalanced incentives' policies

For some academics, the extra work was not recognized as it was supposed to be in their regular workload. For others, local rewarding policies enabled the compensation of extra hours, should they be paid or partially deducted from regular workload (time compensation). In the end, the fact that there is close to no reward can lead to frustration and demotivation among academics, even if they have a personal interest in the project.

3. The financial risk

In the current experimentation, the funding scheme can be different from one iteration to another, depending on the organizing university and available resources (Erasmus+ Mobility, ENLIGHT project, national funding...).

Most courses used the Erasmus+ Mobility funding, but this scenario jeopardizes the financial viability of the course, since the funding is not automatically renewed for further iterations. The highest risk relies on the on-site part. Its eligibility for funding depends on the number of non-local participants. In the case of the GEM, the course has three distinct on-site weeks at three different universities, but only one could activate the Erasmus+ mobility funding, considering the eligibility provided by the National Agencies. One of the partners has not benefited of any specific funding for the on-site part, which has limited a lot the activities this partner could offer.

To decrease the financial risk, the course should not be considered as a side/top-up offer. It must be properly embedded in the regular study offer of the university (fixed costs linked to a curriculum). However, if the iteration is not delivered by the same university, this contradicts the cost planning of the department holding the programme.

Mobility funding is also part of the financial risk, especially for doctoral students. If all universities engage with no difficulty Erasmus+ funding to cover student mobility, it seems more complex for doctoral mobilities. In some cases, doctoral students do not have access to ENLIGHT funding or Erasmus+ funding from their university, as it is exclusively reserved for Bachelor / Master's students. This means they rely on funding from their laboratory, which significantly depletes their annual budget for other events they would like to attend throughout the year (conferences, symposiums, seminars, etc.). However, they are still willing to participate in ENLIGHT courses due to the interdisciplinary richness they have access to through this opportunity. *"The good thing is that as doctoral students, we can't always afford to be absent for too long, especially if we are in the laboratory and have tests to conduct. So it's an ideal format!"* stated a doctoral student participating in the "Equity and Sustainability Transitions" Summer School in Galway.

4. Complex booking of premises

Booking premises for the on-site component appeared to be very challenging in some university environments. Due to the very short duration and the artificial embedding of the course, local departments tend to prioritize their local regular courses, which leave no classrooms for the ENLIGHT course when it is organized during a semester unit. This example highlights the logistical burden and waste of time faced by coordinators and administrative staff who have to address additional organizational issues, instead of saving energy and efforts to focus on qualitative tasks pertaining to course preparation and content development.

Overall, while all the interviewees agree on the positive outcomes and assessment of the ENLIGHT courses, there is a shared sentiment that the benefits may be questionable if weighed against the resources invested, namely the human resources. The time and energy project teams devote to building a blended course of 6-9 weeks, is unbalanced relatively to the limited return on investment (limited student participation), which is often difficult to quantify, and frequently results in "one-shot" experiences that do not allow for capitalizing on the accumulated experience of the team and possible course iterations.

Success stories

The decision to iterate a course enables the improvement of its quality and its popularity among students, and encourages the participating academics from the alliance network to further extend the team effort by exploring opportunities for future joint research projects or teaching collaborations.

The “AI for Non-IT Students” short programme serves as a good example of a module that has been successfully iterated thanks to the effective collaboration between the lead universities, the topic's appeal to a broad student audience, the optimized use of pedagogical resources, and the teams' shared interest in developing research projects of mutual interest. While the initial launch of the module faced challenges, including a lack of precise information during the implementation of the BIP format and the complexity of embedding the module within the university's curricula, the fact that coordination was limited to three universities and that the transfer of expertise was effectively done from one edition to another have allowed each coordination team to enhance the course year after year. Furthermore, the course's interdisciplinary richness and the defined outcomes, which emphasize using acquired knowledge to navigate societal advancements in technology rather than exclusively generating operational solutions, provide flexibility in how each partner institution engages with the course. By leveraging the lessons learned from the course's evolution, the coordinators aim to forge deeper partnerships and promote ongoing innovation in the intersection of AI and non-IT disciplines. The course will be renamed “AI for everyone” for the upcoming third iteration.






Opening pre-existing courses to ENLIGHT is an opportunity to benefit from local stability. This preserves the teams from the embedding challenge and extensive workload, since the core administrative struggle is already tackled. They are then able to focus on upscaling ambitions.

The course was created and embedded in the local curriculum of Uppsala University long before its inclusion in the ENLIGHT programme. The academic coordinators received significant local support to successfully carry out this pedagogical experiment, and its integration into ENLIGHT represented a new experimental milestone for the internationalization of the module and its increased interdisciplinarity. It was even decided to test the approach of innovation games on a new topic other than health – namely climate change – to evaluate the conceptual framework's applicability to other challenges. The stability of student and lecturer recruitment has inspired the coordination team to upscale the number capacity of participants in the upcoming editions by involving a larger number of students and co-leading universities, provided there is technical and pedagogical support through the integration of more coaches to accompany the student teams.

The overall experimentation fosters the desire to disseminate and transfer the acquired knowledge and tested innovative pedagogies within existing communities of practices. In most universities, this raises interest among the academic community and already stimulates pedagogical transformations.

Educational developer: *“As an educational developer, I focus on many different didactical models and overall work in a 'backwards design' manner. In this case I have learnt more on the topic of CBL and how this works in practice, but also how it relates to other educational models (like problem based learning). The complexity of the module is interesting and a challenge because it is an international and interdisciplinary course mostly offered online. Within our university, we have Community of Practices (CoPs), and the CoP on “Interdisciplinary education” has a sub-group focused on “Challenge Based Learning”. So the model seems to be of interest to a lot of teachers, who try to integrate it in their education. My knowledge on how to design these courses is useful.”*

Recommendations

-  **Consider workload more carefully and engage resources.** The majority of academic coordinators choose to dedicate their own time and effort, often beyond their regular work hours, to develop and implement the ENLIGHT course, thanks to their strong drive and enthusiasm for its educational, scientific, and operational benefits. One suggestion put forward to alleviate their workload is to **recruit a student assistant** to provide logistical support, or to offer technical assistance. At the same time, it is essential to develop **joint incentive principles** (at least time compensation) to sustain academic motivation.
-  **Engage structural change to unlock the interdisciplinary potential.** Even though funding instruments, public policy, and academic matchmaking are evolving towards a more comprehensive approach of the interdisciplinary links needed to face a world in transition, it is a common fact that the internal university organization needs more preparation and adaptation, especially in education, to facilitate the recognition of cross-faculty flexible learning paths.
-  **Define a larger time unit to effectively witness CBL in the making.** Within ENLIGHT, the current time unit to experiment CBL is the semester; the courses are developed separately and individually on one specific challenge. Using the same challenge with progressive milestones during the curriculum would enable better assessments of students' newly acquired skills, and leave them more time to fully engage with the CBL methodology.
-  **Connect challenges to umbrella priority themes** to converge towards fruitful synergies and broad sharing and re-use of course resources.
-  **Convert some resources into open-source material,** to allow their free use in other university environments and instill part of the challenges/expertise connected to the ENLIGHT flagships in pre-existing courses.

Conclusion

The survey conducted for this deliverable provided insights into several significant milestones achieved in terms of pedagogical innovation, which would not have been possible without the structured framework of the ENLIGHT alliance. Unprecedented collaborations have emerged between Research and Teaching communities, surpassing the scope defined by traditional teaching modules. Reflecting on how to incorporate concrete challenges in course design, manage the intrinsic and uncertain nature of real-life problems, and stimulate future-proof skills development and students' engagement, play an important role in elevating ENLIGHT universities' innovation potential and societal performance. ENLIGHT, along with other European university alliances, effectively contributes to transforming the educational landscape and fostering the creation of relevant knowledge for the benefit of society. This is made possible through the unwavering commitment of coordination teams at all stages of development, as well as the intellectual and operational excellence cultivated by student teams.

However, logistical, organizational, administrative, and resource management challenges complicate the sustainable implementation of innovative hybrid formats, which often serve as the sole opportunity for mobility and intercultural and interdisciplinary immersion for certain students. Despite the effort to support academics, administrative teams, and pedagogical engineering in experimenting with new knowledge transmission methods that place the student at the center of the learning process, institutional rigidity necessitates ad hoc solutions that heavily depend on the specific levers and barriers within each university context. This makes it difficult to disseminate alternative teaching methods more widely. Whereas most faculties are open to internationalize existing curricula, integrating isolated pieces of innovation of short time units is usually hard to implement. ENLIGHT courses often remain on the periphery of curricula due to the inconsistent timing in their delivery and the complexity local regulations. It is thus essential that university management of the nine universities delineate a joint systemic approach to allocate flexible learning paths in curriculum structures, in full alignment with the “European strategy for universities” (2022).

“This strategy sets out a European vision for the future of universities and how the Union can support them across Europe. [...] To succeed, the European strategy for universities requires alignment of policy priorities and investments at EU, national, regional and institutional levels. [...] support is also needed to stimulate pedagogical innovation, focused on the learners, with a variety of learning spaces and flexible, interdisciplinary paths. The creation of ‘living labs’ should be promoted as a good example of how students can be trained to work on challenges in a holistic way, across disciplines, and how to support students’ critical thinking, problem-solving, creative and entrepreneurial skills.”

Despite these challenges, the thirty courses already developed within ENLIGHT, along with numerous success stories highlighting the richness of creating new knowledge and fostering rewarding and high-quality relationships within the entire ecosystem (students, teachers, researchers, external stakeholders), underscore the need to continue the pedagogical and scientific experimentation that is still in its infancy. The skills acquired by the teams and the lessons learned from these experiences will only be meaningful through long-term capitalization, thereby encouraging the removal of barriers to sustainability and promoting course iterations in a second phase of the ENLIGHT project. Iterations, but also post-curriculum and employability feedbacks are needed to effectively assess the student's learning experience as a whole, meaning how the participation to an ENLIGHT course is impactful in regards to their personal, professional, and civic development, how it provided them with meaningful and remarkable future-proof skills in the job market and society. Mid- to long-term impact-driven studies are also crucial to assess how such pedagogy contribute to deep changes in the partnership landscape of each university, how non-academic partners themselves perceive the added-value in collaborating with other universities, and how this impacts their challenge culture.

Annex: Flyers of initiatives