Dialogue 5+5 for Research, Innovation and Higher Education

"Blended learning for increasing youth opportunities"

Co-leaders Morocco and Spain

Blended Learning in EIT Digital

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eit Digital

POLITÉCNICA "Ingeniamos el futuro"

CAMPUS DE EXCELENCIA INTERNACIONAL

Contents

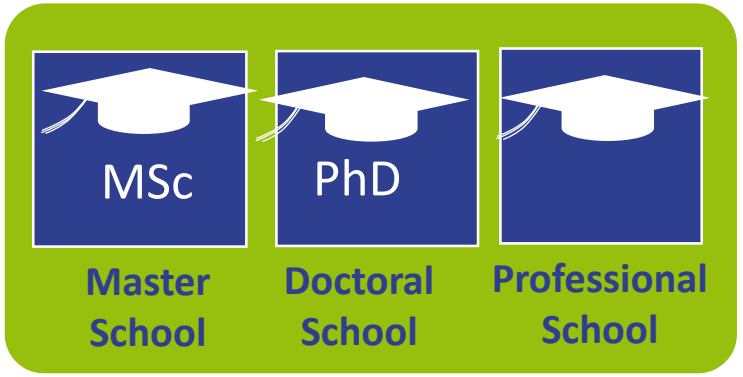
- Master School I&E minor as example
- Blending models used
- Towards the standard suite: Red-thread
- Blended learning benefits and challenges

Master School I&E minor as example

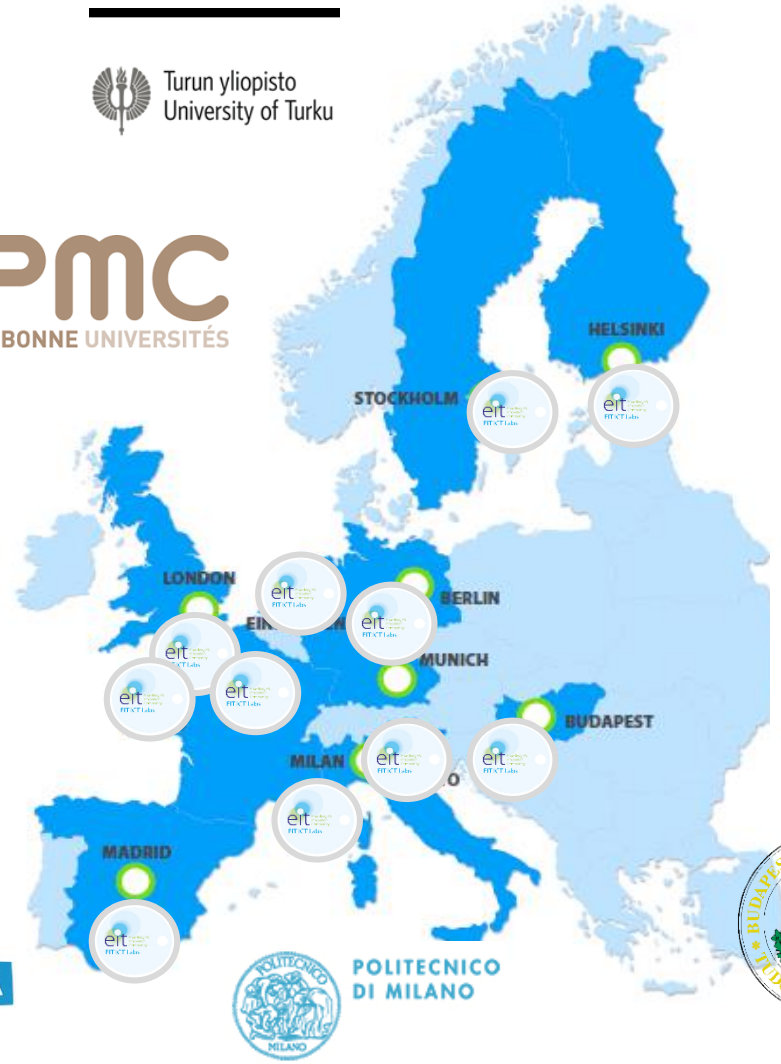
EIT Digital Education Strategy

EIT Digital Education Strategy

- Attract and breed **top talents** via **pan-European** Master and Doctoral Schools
- **Combine technological excellence** in ICT with integrated hands-on expertise in **innovation & entrepreneurship**
- Expand into **life-long** ICT education based on Action Lines



Master School
More than 20 leading universities in ICT



UCL

Turun yliopisto
University of Turku

Aalto University

Åbo Akademi University

UNIVERSITÉ PARIS SUD
Comprendre le monde, construire l'avenir

UPMC
SORBONNE UNIVERSITÉS

TU/e

UNIVERSITY OF TWENTE.

TU Delft

TU berlin

UNIVERSITÉ DE RENNES 1

MINES TELECOM
INSTITUT Mines-Télécom

TECHNISCHE UNIVERSITÄT DARMSTADT

KTH VETENSKAP OCH KONST

Université Nice Sophia Antipolis

POLITÉCNICA

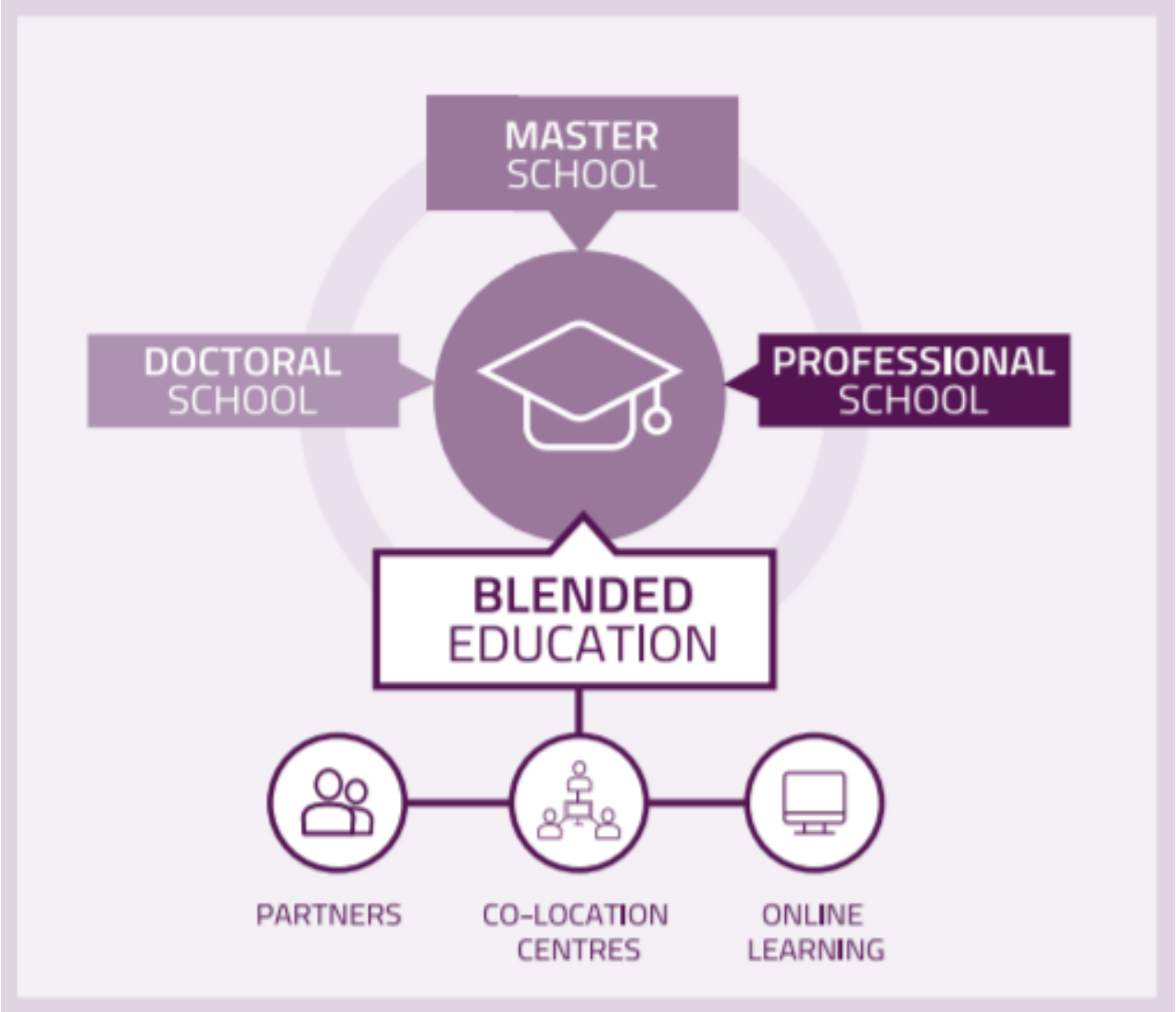
POLITECNICO DI MILANO

UNIVERSITY OF TRENTO - Italy

MŰEGYETEM 1782

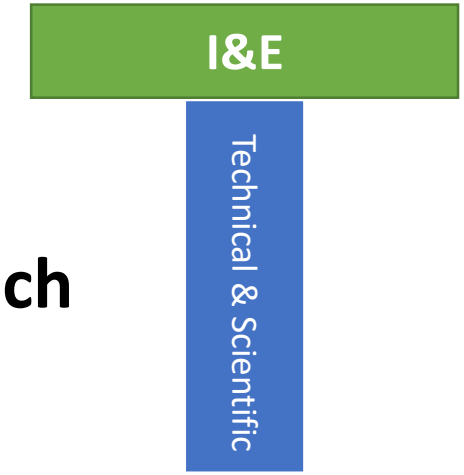
European-wide professional network

Master School I&E minor as example (I)



EIT Digital blended education model

Master School I&E minor as example (II)



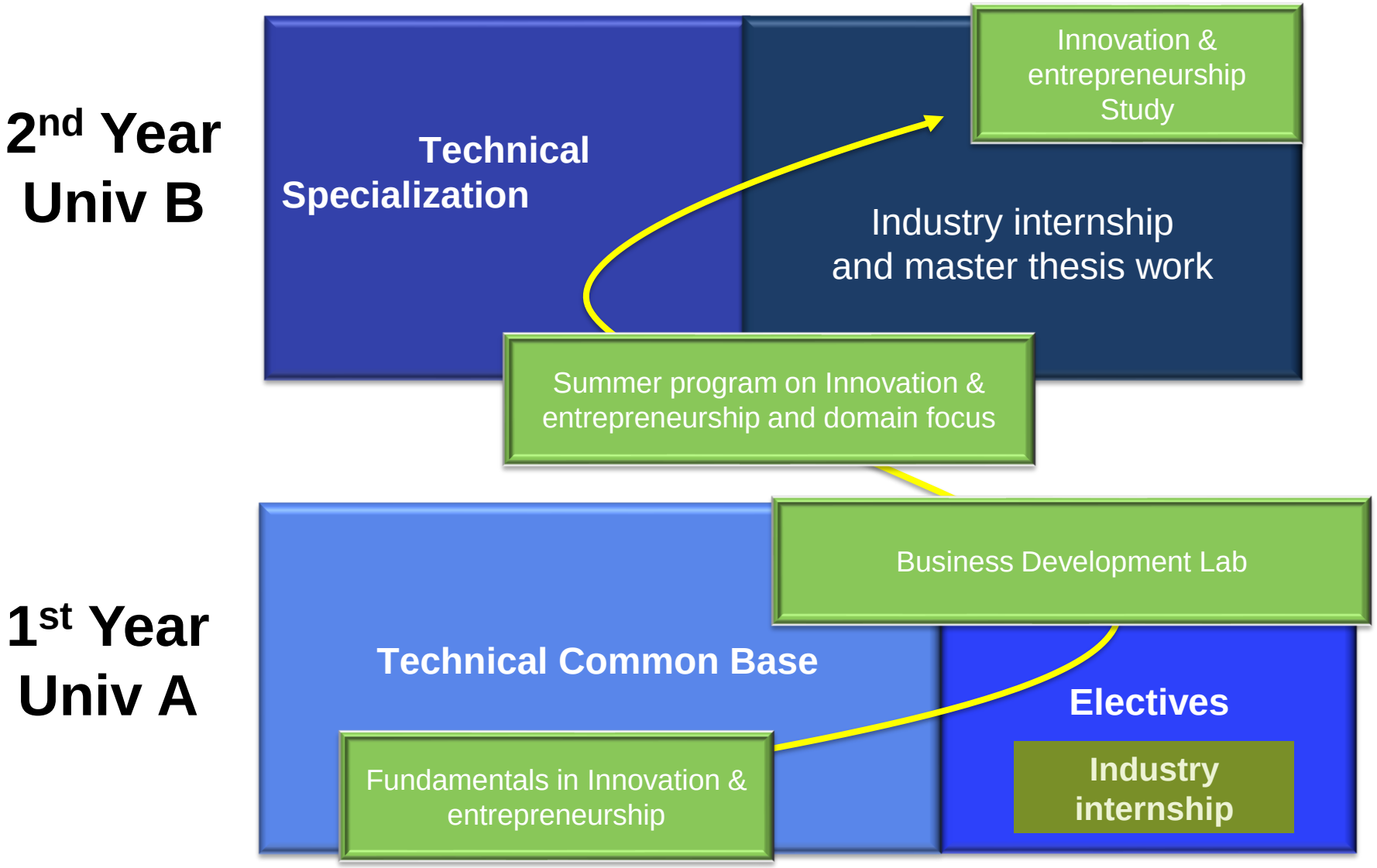
T-shaped approach

	Innovation & Entrepreneurship	Technical & Scientific
Master School	25% 30 ECTS	75% 90 ECTS
Doctoral School	20%	80%

- *Autonomous Systems*
- *Cyber Security*
- *Embedded Systems*
- *Human Computer Interaction and Design*
- *Cloud and Network Infrastructures*
- *Data Science*
- *Fintech*

I&E minor

Master's School educational programs two-year journey



Why did we blend our I&E education? (I)

Within the Master and Doctoral schools there are a **strong commitment to support** innovative learning approaches by combining face-to-face and on-line techniques in the so-called "**blending learning approach**".

Based on the general goals, and **as a part of the development of the priority lines of EIT Digital**, relevant on-line contents for Innovation and Entrepreneurship (I&E) subjects have been produced and used in regular education in the last five years.

Why did we blend our I&E education? (II)

The objective is to get these contents regularly used by partner universities, which committed efforts to "**going-blended**".

Current implementation hints of blended approaches depend too much on the experience and wishes **of individual teachers and/or common practices** found in engaged universities to ensure smooth formal grading according to their internal rules.

For that reason, **the going blended strategy of EIT Digital** was defined.

Going blended implementation (I)

Since 2015, the focus of the **EIT Digital Master School I&E community has been to progressively blend the I&E courses**, **according to various blending models**, by introducing more and more EIT Digital online I&E contents.

A blended education approach is fundamental in the co-design process of EIT Digital I&E courses, something **that allows the alignment of our Master and Doctorate training programs**, regardless of whether these programs are taught in France, Finland, Spain, etc.

Going blended implementation (II)

A blended education approach also **allows the dissemination of shared content**, something that we have used **to create a repository of content** that we use for different purposes: regular classes, summer schools, etc.

This approach is flexible enough to deal with different situations (maturity, legacy, specific local assets) by using different combination models.

Blending models used

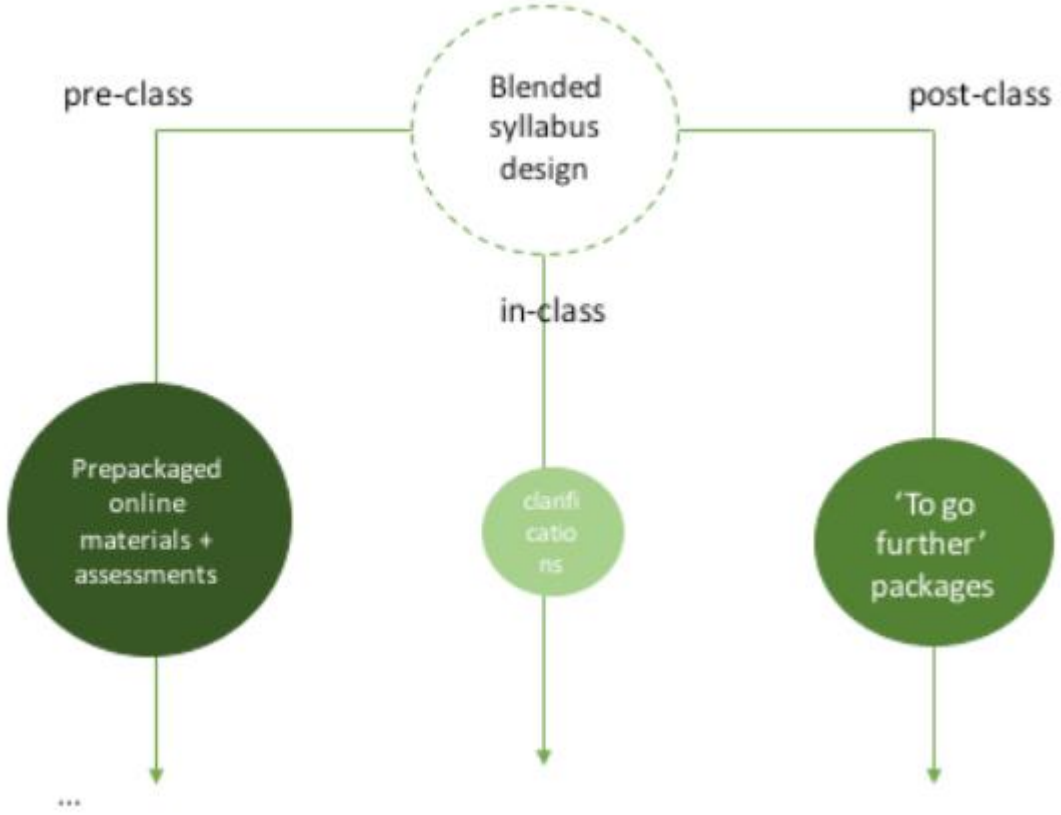
Blending models used (I)

Independent levelling-up

Contents are delivered to the students before the class, they are usually accompanied with quizzes or assignments, which students have to complete, and then are not necessarily followed up in class.

Session 1

This is on purpose, with the aim to leave the in-class time available for invited guest lectures or practitioners or topics, and/or for any other planned activities with the students, such as visits of companies and startups, or participation to networking events.



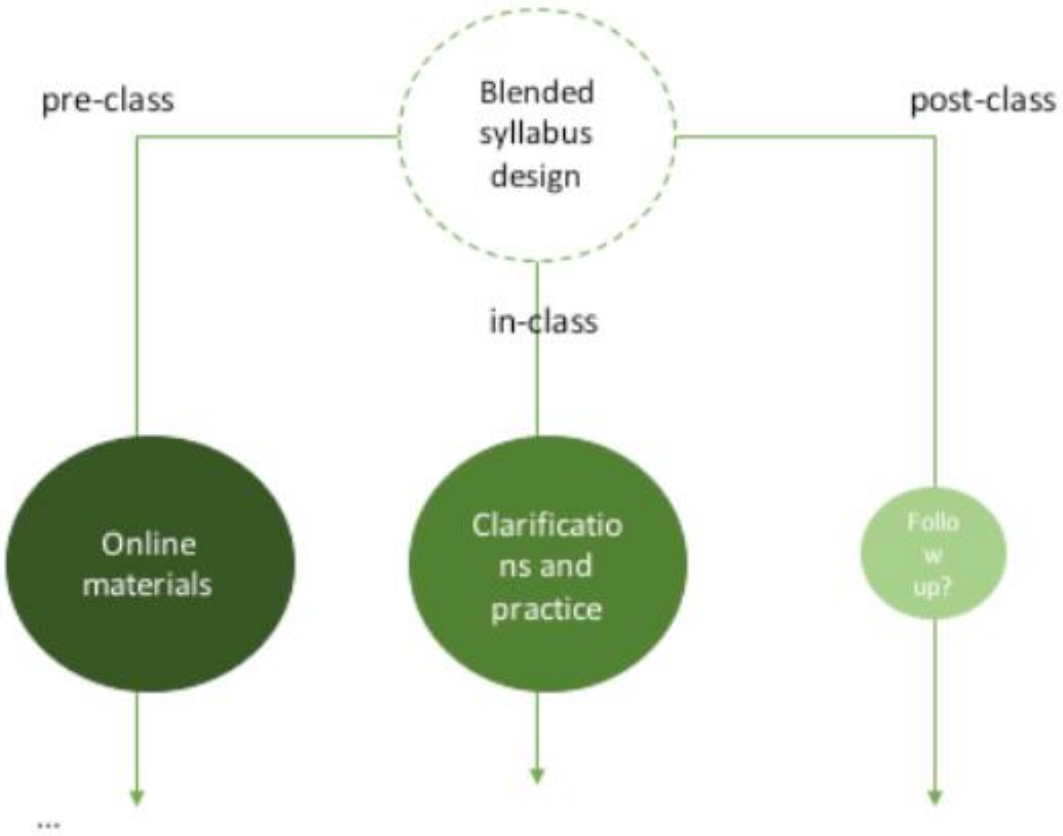
Blending models used (II)

Flipped classroom

Online contents are delivered before the class to the students and then discussed together with them in class.

Session 1

This approach requires minimal setup efforts (it required the availability of the contents on the platform), but requires that the teachers are familiar with the contents, and feel comfortable to follow up on them in class together with the students.



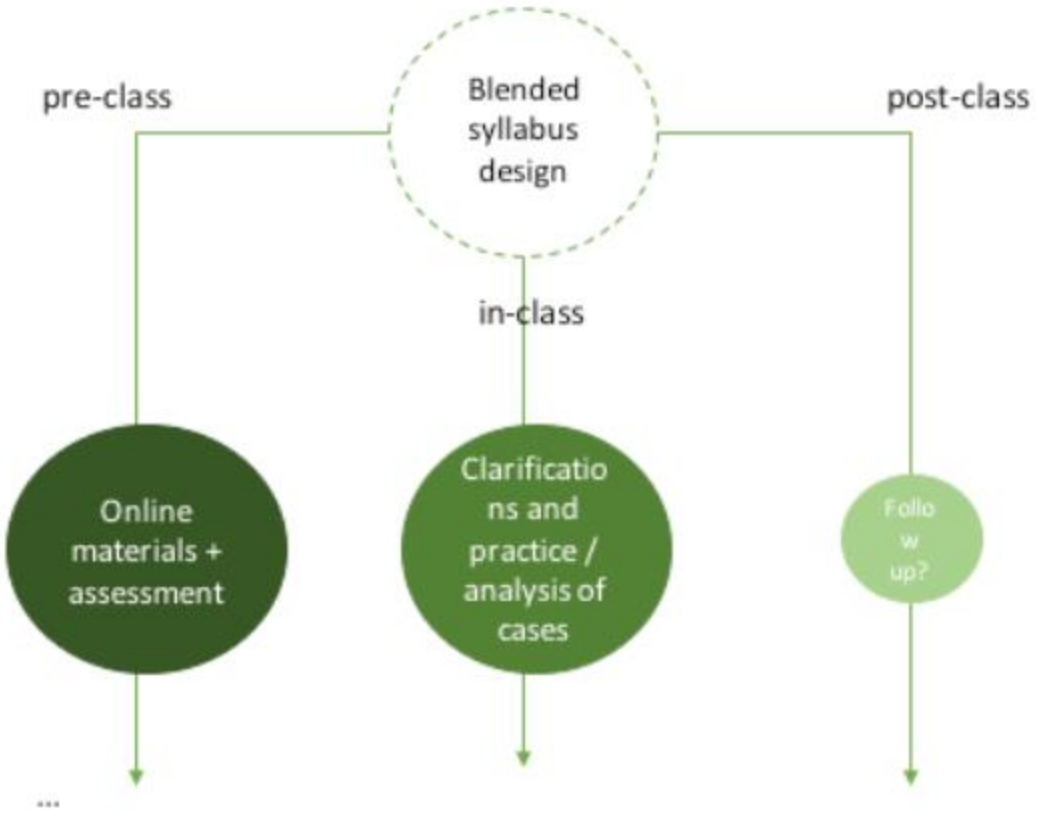
Blending models used (III)

Online blended course

Pre-packaged online contents with assessments are delivered to students before class and, in most of the cases, are associated with supervised sessions on the same topic in class.

Session 1

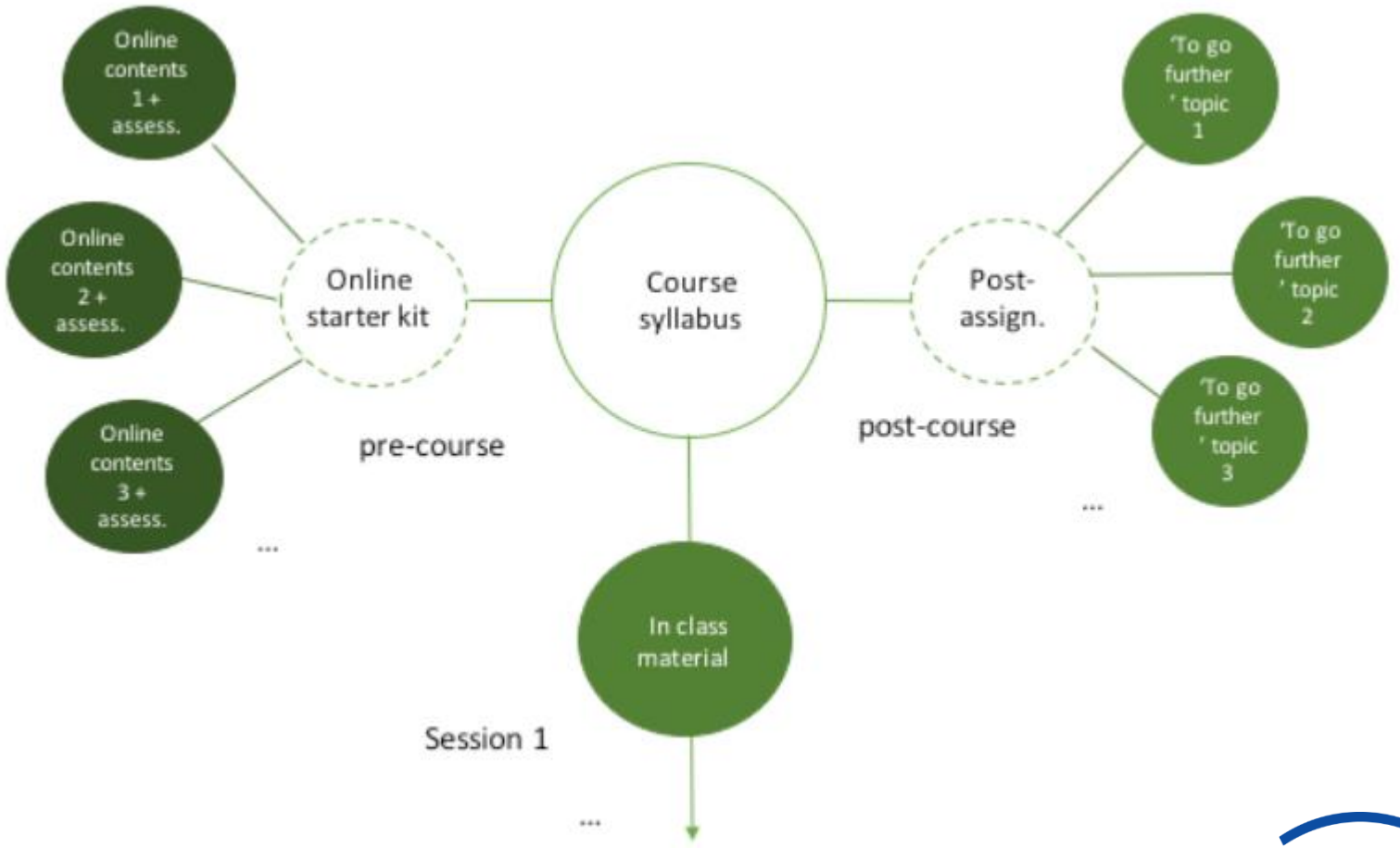
As in the previous model, this meant that the teachers needed to be familiar with the contents, and to follow them up in class.



Blending models used (IV)

Online starter kits

A set of online pre-packaged modules with assessments is delivered to the students before education events, aiming to better prepare the students for the activity, and balance for the differences in knowledge the students might have as a starting point (e.g. Summer Schools).

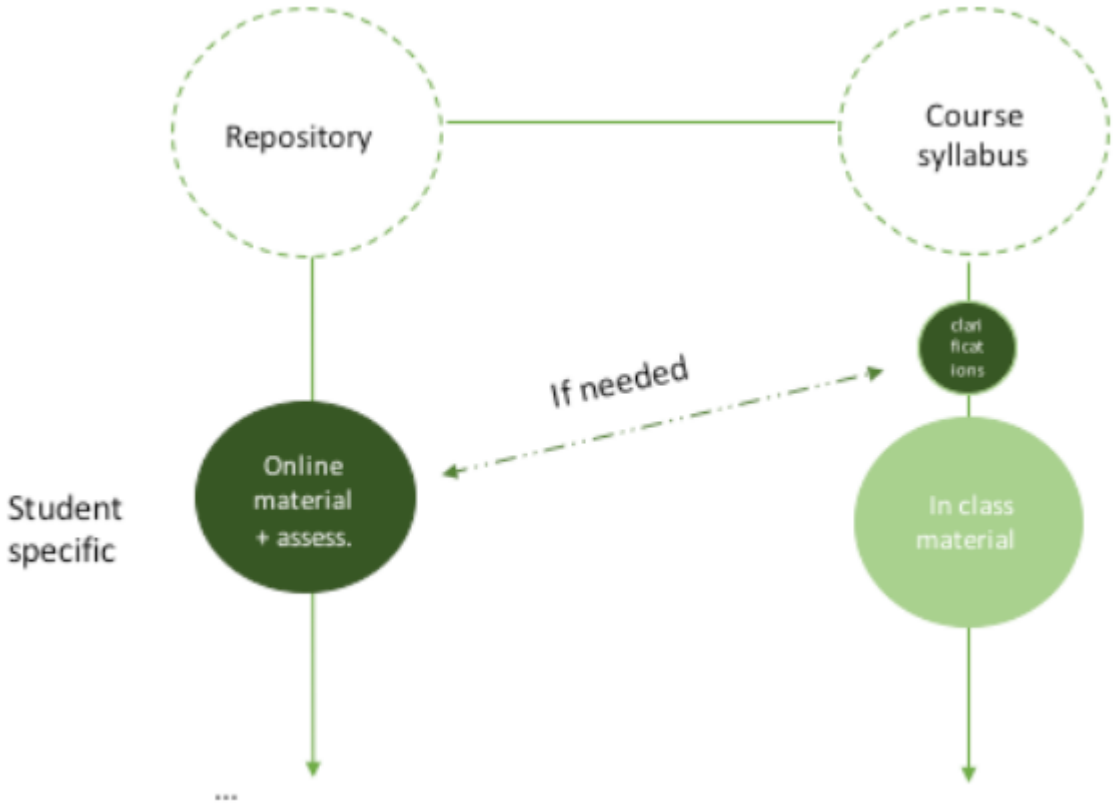


Blending models used (V)

Online repository

Online packages as a way to cover students' specific needs and open the modules as additions for classes they already run.

In this scenario, teachers are trained on all available pre-packages for all of the courses in the I&E minor, and so they learn how to make available to the students only selected subsets, and base their teaching on them.



Towards the standard suite (Red-thread)

Towards the standard suite: Red-thread (I)

One of the main issues we face when a Master program is taught by several different universities **is that students usually finish the Master with different levels of knowledge**, even when they are pursuing the same Master's program.

This fact is much more **important in the case of EIT Digital**, since our students at the end of the first year of the Master must change to another university to study their second and last year of the Master (**two-year journey)**.

Challenge and solution: students reach the second year with different levels of knowledge. To solve this problem, EIT Digital created the **EIT Digital I&E Red Thread suite**.

Towards the standard suite: Red-thread (II)

The I&E Red Thread suite **is a set of online I&E contents packages** in which all universities in our network deliver the same set of online modules across the I&E courses (students finish their master program with the same basic knowledge, regardless of where they receive their training). These contents **cover the main EIT Digital-flavoured topics and priority actions**, introduced in 2017-2018 to all Master School students.

Each online module of the red-thread **is composed of video materials and quizzes and peer-review assignments**, leaving the possibility for each teacher to choose the assessment type of preference, and to better tune the delivery with the students' participants.

Towards the standard suite: Red-thread (III)

BDLab Redthread UPM 2021

- Announcements
- Introduction

Lessons

- Design thinking
- Leadership
- Business ethics and sustainability
- Intellectual Property Strategies
- Commercialization strategies
- Advanced business models
- Digital transformation strategies

Quizzes

- Quiz: Design Thinking
- Quiz: Leadership
- Quiz: Business ethics and sustainability
- Quiz: Intellectual Property Strategies
- Quiz: Commercialization strategies
- Quiz: Advanced Business models
- Quiz: Digital Transformation Strategies

Advanced business models

Introducing Business Models

Eduardo Serra emphasizes the effects of digital transformation on the evolution of business and society

Question 1

Not yet answered

Marked out of 1.00

Flag question

Edit question

According to Eduardo Serra, what are the recent events that mainly have had influence in the evolution of the businesses, but also our society?

Select one:

- A. Technological Revolution and Human Muscle
- B. Industrial revolution and Machinery
- C. Technological Revolution and Globalization
- D. Artificial Intelligence and Blockchain technologies

Jorge Schnura explains the challenges, process and how they have developed the business model in the successful "Tyba" case

Question 2

Not yet answered

Marked out of 1.00

Flag question

Edit question

What is the main technology behind of the TYBA business model?

Select one:

- A. Artificial Intelligence
- B. Digital platforms
- C. Blockchain
- D. All of the above

Blended learning benefits and challenges

Blended learning benefits (I)

Blended education brings “usual benefits” but also “specific benefits”. Main **usual benefits** we got based on our objectives:

- **Increase the pedagogical effectiveness** (increased time teachers spend with students, also providing personalized instruction),

- **Increase the student-centricity** (students engage with the material, participate in the class, and collaborate with each other not only in class but also online),

Blended learning benefits (II)

- **Emphasize teaching methods based on students' activation**: flipped classroom, learning by doing, and reflexive learning,

- **Increase the cost-efficiency and scalability** (in number of students), by allowing a higher level of knowledge/competence transmission for a same face-to-face time.

Blended learning benefits (III)

But we also got other **specific benefits** that are equally important to EIT and the EIT Digital network:

- **Create a 'red-thread' around the I&E Minor**. Reinforce the sense of EIT Digital signature and students' community within the EIT Digital Master School,

- **Virtually bring entrepreneurs in the classroom** (or any other roles in the innovation ecosystem). E.g. through entrepreneurial cases,

Blended learning benefits (IV)

- **Enable pedagogical cooperation within our network of universities**,
- **Ease capacity build-up**: i.e. ease the implementation of EIT Digital-compliant courses by new partner universities,
- **Contribute to the development of universities and EIT Digital I&E Education assets**.

Challenges (I)

Connectivity

It is not a relevant issue in asynchronous activities (recorded classes, assignments to develop out of class, etc.). **Connectivity has an important impact on synchronous activities**, such as in classes through videoconferencing tools (Zoom, Teams, etc.) and more **especially in synchronous evaluation activities** (quizzes, group presentations, etc.).

On the other hand, students' devices capabilities are very relevant. Even if we assume the availability of a smart phone for all students, **contents must be adapted** to some features (e.g. on screen size, bandwidth, camera(s), support to virtual reality, etc.). Based on that, learning method should be also tuned. Experience said that the need to support multi-platform devices introduces difficulties in content generation.

Challenges (II)

Learning monitoring and analysis

For an optimization of the online activities and content used, **monitoring and analysis is necessary to identify which activities and content contribute the most to student learning** and which do not.

When blended activities are synchronous, students tend to use external collaboration tools such as WhatsApp, telegram, etc. for their interaction with other students, not using the chat and forums of the available E-learning platforms. This significantly hinders the monitoring and analysis of their online evolution, which is important for the gradual improvement of established blended activities.

Challenges (III)

Online content storage

Online multimedia content, such as videos, usually **requires a lot of space** for storage. E-learning platforms usually do not have enough storage space for this purpose. In addition to the use of online drives, such as Dropbox, google drive or OneDrive, tools such as Vimeo or YouTube can be of great help.

https://vimeo.com/365220961

Findings when we collaborate with partners

Intellectual Property (IP)

It is necessary to establish **general or multilateral agreements** that allow the use of online content between the different partners and thus avoid IP conflicts. For the use of the contents outside the activities defined within the common agreement, it will also be necessary to establish bilateral agreements between the partners.

Class schedule and calendar alignment

Usually, **schedules are different between university partners**. This can make it difficult to collaborate between partners on blended activities, if not enough time is spent planning the execution of the activities. Approaches like the one mentioned above, the Red-thread online modules, can help in this goal. In terms of evaluation, this is perhaps the biggest problem we face today when working on these approaches in collaboration with other partners. Initiatives such as “micro-credentials” seek to solve these problems.

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