DigiTeL Pro

Professional development in digital teaching and learning

IO 2 – Task A2

A compendium of selected best practice training materials and/or resources for CPD for synchronous hybrid education

Document details

Document title	A compendium of selected best practice training materials and/or resources for CPD for synchronous hybrid education
WP (if applicable)	IO2 – Task A2
Document version	V3 (revised after feedback from advisory board)
Authors	Annelies Raes
Other authors	Marieke Pieters and Frederik Van de plas
Dissemination level	Open Source
Confidentiality Status	Public
Date	15.07.2022
CC License	CC by SA 4.0

Co-funded by the Erasmus+ Programme of the European Union

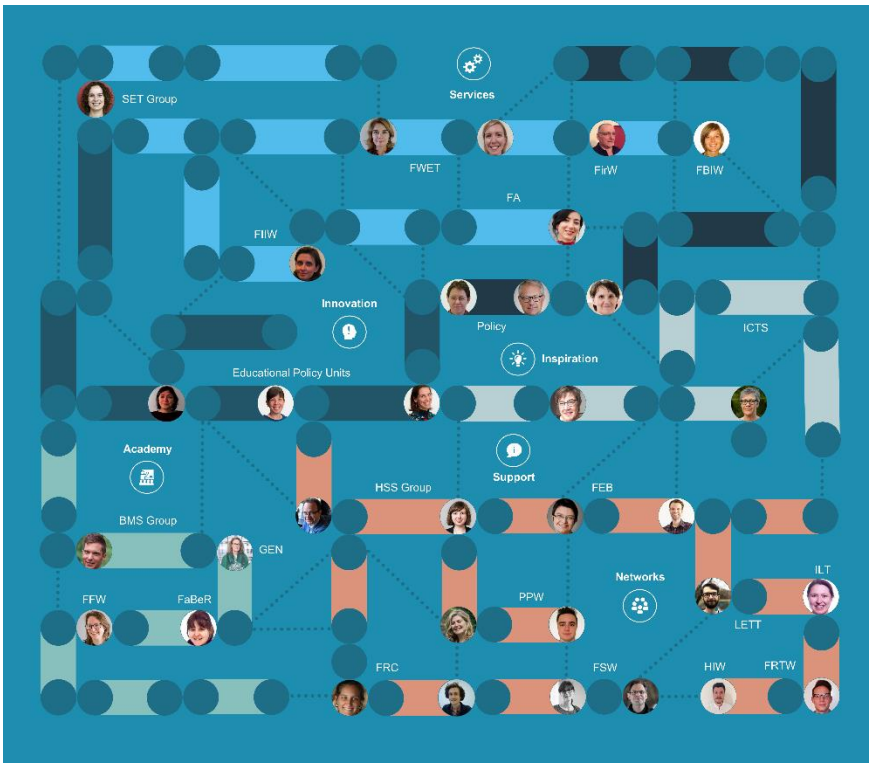
Table of contents

1. Best practices and resources within KU Leuven

1.1 KU Leuven Learning Lab as network for CPD

Within KU Leuven, KU Leuven Learning Lab serves as the institution for (continuous) professional development by uniting educational expertise within faculties and services. By doing so, KU Leuven Learning Lab helps to shape the Future-oriented Education and Going Digital policy priorities.

As made visible in the visualization of KU Leuven Learning Lab, instead of being a unit, KU Leuven Learning Lab is a network tied together by a shared concern for strong education. Driven by the Future-oriented Education and Going Digital policy priorities, the network spreads itself throughout the university.



The networked approach helps our institution merge various practices and distribute the lessons learned throughout its faculties and programmes. It offers a potent setting for different forms of agency in higher education. In testing times (most notably the recent pandemic and the subsequent pivoting in teaching and learning) it provides a much needed context for immediate professional training.

1.2 Training on educational innovation and on learning spaces more specifically

Training in and on learning spaces is offered in faculties, through central learning and development units and innovation centres alike. The network creates the conditions for a distributed approach. Whenever innovations impact the entire institution training is first offered to educational support staff. Next collaborative training is created to fit the needs of the programme or the teaching staff involved.

Moreover, within the framework of the 'Future-Oriented Education' and 'Going Digital' policy domains of the Strategic Plan of KU Leuven, the educational innovation team of the Humanities and Social Sciences Group aims to stimulate the field of technology-enhanced education within its faculties, institutes, and centres.The Humanities and Social Sciences Group takes a pioneering role in the fields of 'Online Feedback and Evaluation' and '**Learning Spaces**'.

In the context of the focus of DigiTel Pro, we only share the focus on Learning Spaces. The aim is to strengthen the network around learning spaces within the university and bridge the gaps between teacher's needs, classroom design, educational technology and support. Special attention is paid to **collaborative learning spaces for multilocation learning**.

1.2.1 Learning Portal for teaching staff

KU Leuven provides teachers and teaching assistants with a portal on blended and future-oriented education.

In order to have a good match between the learning activity and the technological equipment, teaching staff needs to take the class context, the class format and the available infrastructure and software into account. The portal helps teachers and teaching assistants or instructional designers/educational developers with different tools to support educational decision making. Below, some examples are listed. All the tools can be found online:
https://www.kuleuven.be/english/education/leuvenlearninglab/support

- Quick guide to blended course design:

In this quick guide to *blended course design*, you can find some guidelines on how to give your course a blended design. It's a tool for teaching staff, teaching teams and educational developers.

The quick guide consists of three key elements:

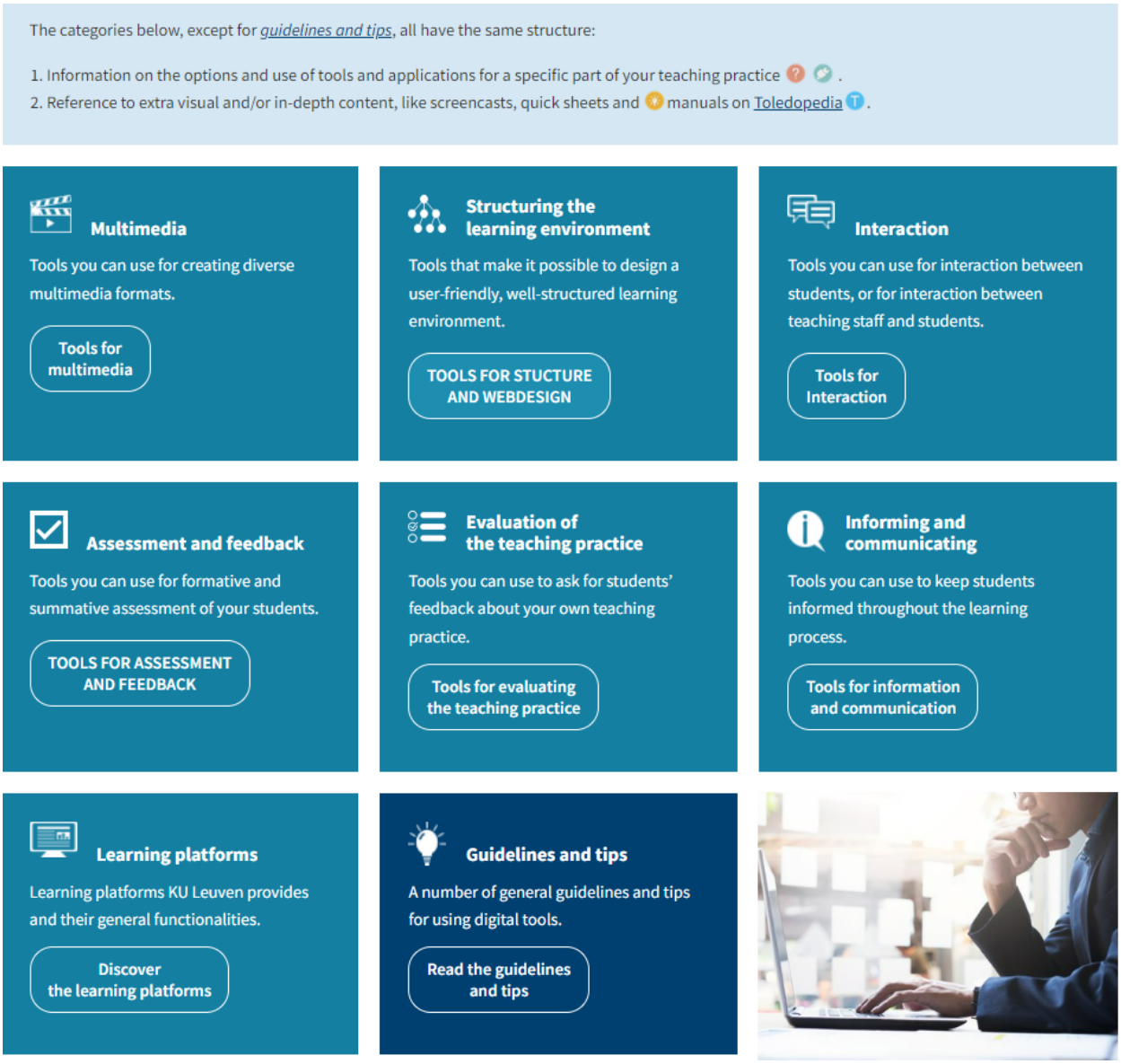
1. analysing your course
2. determining the learning goals and activities
3. the *blended course design* tool

This exercise will take at least 2 hours. After this exercise, you will have your first draft version of your blended course.

- The Classroom Matrix
  In the classroom matrix, teaching and educational staff can find an overview of the different options for each type of infrastructure. Clicking on a particular cell will take someone to a scenario that describes the possibilities and how to prepare, teach and finish the class. Vertically, information is presented per room types. Horizontally, information is presented per class format: class recordings, livestream, and synchronous class. Within the **DigiTel Pro course, we focus on the organization of the Synchronous Class.**

AUDITORIUMS		Class recordings	Livestream	Synchronous class
Auditorium (= pooled room type 3 / 4 / 5 / 6)	***standard***	Kaltura	livestream.kuleuven.be	✗
	+ video-conferencing device	Kaltura	livestream.kuleuven.be	Skype for Business
	+ USB-conferencing device	Kaltura	livestream.kuleuven.be	Collaborate Skype for Business MS Teams
SEMINAR ROOMS		Class recordings	Livestream	Synchronous class
Pooled room with projection options only (= pooled room type 2)		Kaltura Capture	Collaborate Skype for Business MS Teams	Collaborate Skype for Business MS Teams
Smaller room with projection options only		Kaltura Capture	Collaborate Skype for Business MS Teams	Collaborate Skype for Business MS Teams

- Tool-Guide
  The tool guide provides an overview of the tools supported by KU Leuven to shape blended asynchronous and synchronous hybrid education. Part of these tools will be shared during the **DigiTel Pro course**, e.g. the content on Interaction as interaction is crucial in order to achieve engaged and connected learning. Interaction can take place between teaching staff and students, between students, and between the student and the learning environment's interface. For the latter, it is important to structure the learning environment.



- Didactic format guide

The portal also offers an entry based on didactical formats aiding staff to find advice on how to realize it in different modes of delivery. (e.g. https://www.kuleuven.be/english/education/leuvenlearninglab/support/toolguide/all-categories/interaction/online-teaching-session#didactic-formats. The formats are ever-expanding and work-in-progress, though.

DIDACTIC FORMATS

Are you looking for didactic background information? You can use tools for online teaching session for the following didactic formats:

- Demonstration
- Existing content
- Field trip
- Giving examples
- Group work
- Guest lecture
- Peer instruction
- Peer-assisted learning
- Student presentation

1.2.2 Inspiration board from and for teachers

Good practices from colleagues within KU Leuven who organize their courses in a blended or hybrid fashion, have tested an educational tool or have approached their teaching practice in a different innovative way can share this on the website (in Dutch).

We selected the good practices related to synchronous hybrid education with can be shared in a CPD on that topic:

- Collaboration during synchronous hybrid education: https://www.kuleuven.be/onderwijs/learninglab/ondersteuning/inspiratie/thomas-cocolios
- Multitasking during synchronous hybrid education. How to lower cognitive load: https://www.kuleuven.be/onderwijs/learninglab/ondersteuning/inspiratie/multitasking-2-0
- Students become TA's in hybrid classes https://www.kuleuven.be/onderwijs/learninglab/ondersteuning/inspiratie/nicolas-priem

2. Research on synchronous hybrid education within KU Leuven

As comprehensively described in IO2A1, within KU Leuven, strategic basic research has been conducted on the topic of learning spaces more particularly and on synchronous hybrid education:

- https://www.kuleuven-kulak.be/tecol?lang=en

- Raes, A. (2022). Exploring Student and Teacher Experiences in Hybrid Learning Environments: Does Presence Matter? *Postdigital Science and Education*, *4* (1), 138-159. doi: 10.1007/s42438-021-00274-0

- Vanneste, P., Oramas Mogrovejo, J., Verelst, T., Tuytelaars, T., Raes, A., Depaepe, F., Van Den Noortgate, W. (2021). Computer vision and human behaviour, emotion and cognition detection: A use case on student engagement. *Mathematics*, *9* (3), Art.No. 287, 1-20. doi: 10.3390/math9030287 Open Access
- Raes, A., Vanneste, P., Pieters, M., Windey, I., Van Den Noortgate, W., Depaepe, F. (2020). Learning and instruction in the hybrid virtual classroom: An investigation of students' engagement and the effect of quizzes. *Computers & Education*, *143*, Art.No. 103682. doi: 10.1016/j.compedu.2019.103682 Open Access
- Raes, A., Detienne, L., Windey, I., Depaepe, F. (2019). A systematic literature review on synchronous hybrid learning: Gaps identified. *Learning Environments Research*, 1-22. doi: 10.1007/s10984-019-09303-z Open Access

3. Good practice scenarios within KU Leuven

Below we describe two scenarios which have been tested and described in scientific research from KU Leuven (Raes, 2022) and which will be shared in Module 5 of the DigiTel Pro course (See IO2A3). As the ACAD framework (Goodyear et al., 2021) is the framework which is used to structure and guide the overall IO2 course, the scenarios are also described using the same framework, including set design, epistemic design and collaborative design.

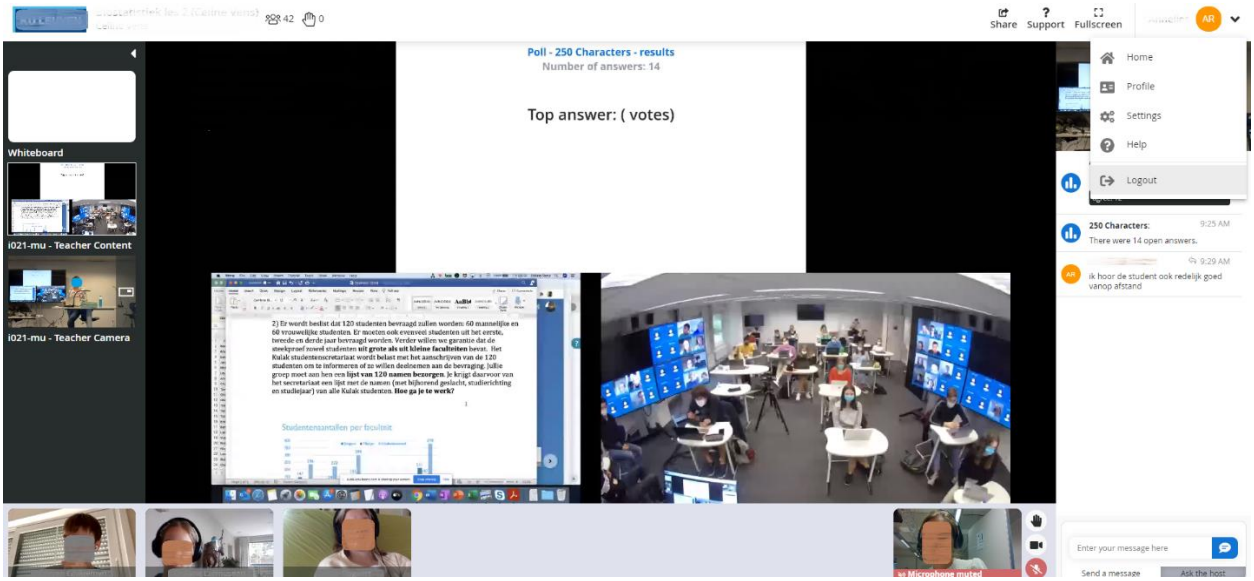
3.1 Scenario 1: Collaborative problem solving (CPS) in a synchronous hybrid classroom

Experience within the course on 'Biostatistics' attended by third-year bachelor students within the Faculty of Medicine. Within this course there are 45 third-year bachelor students. The teacher is a female professor who has been teaching this course for five years. She is open to innovation and has been involved in teacher-researcher collaboration since 2017, within the context of the larger research project. In this case, students were divided over the two conditions (on-site versus remote presence).

- **Epistemic design:** The learning activity organized in the hybrid classroom was built on the theory of delayed instruction or productive failure (Kapur, 2016). The lecture started with a Collaborative Problem Solving (CPS) task which was designed in line with the content of the lecture.
- **Social design:** Group learning was mainly integrated in the first part of the lecture. The remote students formed groups based on the screen on which they were displayed. On-site students formed groups based on their seating. In the second part of the lecture, the teacher interacted with both on-site and remote students by launching several polls. The choice for non-mixed groups is one based on technology. The technical possibilities do not yet allow for efficient group work in mixed groups.
- **Set design:** The hybrid classroom facilitates launching quizzes and polls by using the Wacom tablet. By means of the same Wacom the teacher can start and end breakout-sessions. After launching a quiz or poll, the answers of the remote students become

visible on the screens. Also the names of the remote students are visible on the screens which means that the teacher can easily address to a certain remote student. As a remote participant, it is possible to choose between different sources (e.g. whiteboard, teacher camera, teacher content) and it is possible to ask question in the chat. As a remote student it is possible to raise your hand, to share your content, to mute or unmute yourself and to turn off your camera. Because of a ceiling microphone remote students can easily hear on-site students talking.

CPS in the Hybrid classroom of KU Leuven, campus Kulak Kortrijk



Hybrid classroom from the perspective of the remote participant

Lived experiences (more results can be found in the publication)
Students felt a sense of belonging. The interaction with the teacher, during the groupwork and the instruction following the groupwork made them more engaged and motivated.

> *"I found it useful to work together in small groups online. You feel less alone and there is a good interaction with the professor."*
> *"Even though I was not physically present, I felt connected to the fellow students."*

3.2 Scenario 2: multi-access education in the hybrid lecture hall

In this study, there were 75 first-year bachelor students involved within the course on 'Contract law" and 38 second-year bachelor students within the course on "Family law." The Contract Law course is taught by a male professor and Family Law by a female professor. Both teachers were among the first users of the hybrid lecture hall. The data collection within the hybrid lecture hall was organized in March 2021.

- **Epistemic design:** Both lectures could be described as theoretical sessions focusing on knowledge transmission. Both teachers asked oral questions during the lecture, without using polling software.
- **Social design:** Students had been asked to subscribe in advance and indicate how they would follow the course, choosing between three options: on-site, remote on-screen with interactivity, or through livestream. Places for option 1 and option 2 were restricted because of Covid-19 restrictions. No group work or break-out sessions were integrated in the sessions.
- **Set design:** Up to 60 students can follow the course remotely by being displayed on the screen in front. Students could also choose to follow the course synchronously through livestream. Students who followed the session through livestream could not connect to the on-site students or the remote students visible on the screens. Remote students visible on the screens could easily answer the teacher's questions. Answers of remote students were audible through the boxes. As the hybrid lecture hall does not have a ceiling microphone, when on-site students answered to questions, this was not audible for remote students, unless the teacher passed on his/her microphone.

Hybrid Lecture Hall at KU Leuven, campus Kulak Kortrijk

Lived experiences: The students missed the atmosphere of the auditorium and the interaction with their fellow students. The fact that the lecturer strongly emphasised this interaction was greatly appreciated and seen as an advantage. The fact that there is interaction also motivated them to turn on their camera. (more results can be found in the publication)

To increase interaction, quizzes and polls were used in a subsequent lesson. These ensure increased engagement and attention from the students. Both teacher and student appreciated the quizzes and polls very much. In the next lessons that are not hybrid, the polls will also be used.

Virtual classroom at KU Leuven, campus Kulak Kortrijk

4. Tips & tricks shared to teaching staff related to synchronous hybrid education within KU Leuven

Tip 1: Student as teacher assistant during Hybrid Synchronous lessons

Sometimes it is very difficult for a teacher to take on all the tasks during a hybrid synchronous lesson. The technical side demands a lot and at the same time there is the didactic side.
You have to make sure that your content is visible to the remote participants and in the classroom, you have to make sure that you are visible and audible and you also have to take into account the questions and communication of the remote participants. When all the participants at a distance are visible and audible, it is easier because the communication can then take place verbally and nonverbally. In that case, it is possible to see what someone wants to say or if there is a problem. When the technology does not allow this and when the remote participants can only communicate by chat, it gets a lot more difficult.

Sometimes your microphone is not switched on and you are not aware of it, maybe someone already posted a question in the chat but you did not have time to look at it...

A teacher assistant can be the solution. A student who is present in the class also logs in to the online lesson. He/she is responsible for testing sound and images and keeping an eye on the chat. Make clear appointments with the remote students about the chat. What can be posted and when will the questions be dealt with? If this is clear in advance, the students will be patient.

Tip 2: Call students by name

Even if the students are visible to the teachers and vice versa, it is difficult to see when someone is specifically looking at someone and thus making it clear that he or she has the floor. The camera never shows the frontal view for everyone. For this reason, it is important to mention the name of the student you want to give the floor to.

Tip 3: Address attendance, safety and privacy early on

Hybrid doesn't necessarily equal hyflex. It depends very much on your institution's and course terms, but make this explicit from the start. Appreciate engagement and discuss the use of settings (camera, verbal interventions,…) to create a safe surroundings. Be clear about possible recording and its use. Even if you want it to facilitate, recording can raise questions and inflict on the synchronous class. Be clear and possibly provide an informed consent.

Tip 4: Instigate learner-teacher interaction

Synchronous hybrid teaching always presents you with two groups. You can't negate the divide, but there's no need to enforce this. Depending on the platform you use the tools provided (and you like) to make sure you can address them. The online group is usually the hardest, so design this into your classes and inform learners to provide safety.

Tip 5: Instigate learner-learner interaction

Two groups can drift apart in the course of a few classes. Eighter make them feel one by providing joint activities or (and) divide them even further. Do use breakout groups e.g. and make these activities a centerpiece of that class. Often these are still cumbersome, so use them sparsely but well-thought. Does your room allow for heterogenous groups (online – on campus) do so.

Tip 6: Seamless tools

In order to create learning activities that allow for peer interaction, try to foster tools that can be used in synchronous and asynchronous ways. In case of technical difficulties these can be accessed as well, even if someone needs to resort to a smartphone. Think about persistent chat, polling, brainstorm whiteboard applications,… Furthermore these can grow throughout the course as a living product.

5. Best practices and resources from other institutions

Below we share the resources from others institutions with can be used in the course on synchronous hybrid education (IO2A3)

Institution	Title and Source	Short Description
San Francisco State University	Beatty, B. J. (2019). *Hybrid-Flexible Course Design (1st ed.)*. EdTech Books. https://edtechbooks.org/hyflex	This volume provides readers with methods, case stories, and strategies related to Hybrid-Flexible (HyFlex) course design so that they may make decisions about using it themselves and even begin their own HyFlex course (re)design. The volume describes the fundamental principles of HyFlex design, explains a process for design and development, and discusses implementation factors that instructors have experienced in various higher education institutions. A series of worksheets provides specific guidance that can be used by individuals or teams engaging in HyFlex design projects at their own institution. Case reports from institutions and faculty who have successfully implemented HyFlex-style courses provide a rich set of real-world stories to draw insights for a reader's own design setting.
Honk Kong University (HKU)– Cetl (Centre for the Enhancement of Teaching and Learning) https://www.cetl.hku.hk/dualmode	**Title:** Dual Mode Teaching – **Getting Ready** to Dual Mode Teaching Source: VIDEO https://www.youtube.com/watch?v=kPTrtqMN5fM 6min26sec	What is dual-mode teaching? What are the difficulties and challenges of doing it? These are just some of the questions that we need to tackle as we explore this new teaching approach. And to get started, this video will give you some practical tips for you to use before and during your dual-mode teaching. This

	Made October 16, 2020	video covers large and small classroom arrangements, roles of a class deputy, and tools and equipment you need to ace your teaching.
HKU – Cetl (Centre for the Enhancement of Teaching and Learning) https://www.cetl.hku.hk/dualmode	**Title:** Dual Mode Teaching – How to **Write** Without Using **the Whiteboard**? Source: VIDEO https://www.youtube.com/watch?v=O_KrS-YTPg0 3min5sec Made October 16, 2020	Some teachers found it challenging to present equations or drawings in dual-mode teaching. Projecting from the physical whiteboard may be unclear to students online. This video introduces a simple alternative – a handmade visualiser, which allows you to write using a marker and display your writing synchronously and clearly to ALL students, while all you need is a mirror, adhesive tape and a laptop. Check it out.
HKU – Cetl (Centre for the Enhancement of Teaching and Learning)	**Title:** Dual Mode Teaching – How to Deliver **Interactive** Dual-Mode Classes? Source: VIDEO https://www.youtube.com/watch?v=G8Vjv7VzAr0 7min27sec Made October 16, 2020	Dual-mode teaching provides both online and classroom-based instructions. However, teachers face various challenges as they journey through this form of teaching. This video will introduce to you practical strategies to make your class more interactive, connect with your students better, and help achieve your learning outcomes. It will cover essential tips in managing your class, quick and easy activities to keep them engaged, and some tools you can use to motivate your students.
HKU – Cetl (Centre for the Enhancement of Teaching and Learning)	**Tips and tricks – Checklist** Downloadable at https://www.cetl.hku.hk/dualmode/tips/checklist/	This checklist helps you keep track of a list of items and actions required before, at the beginning of, during, and after class in dual-mode teaching. You

		can download, print, and carry it with you so that it becomes a handy resource especially if it is your first time conducting the dual-mode teaching. Once you become used to it, you might not need to refer to the checklist every time; but it might still be helpful to keep it in a handy place or save it on your mobile phone. Please also feel free to share it with colleagues or your teaching assistants/tutors who might benefit from it.
City University of London	**Capabilities and use-cases for rooms for hybrid Synchronous learning** https://city-uk-ett.libguides.com/staff/inroom-teaching/isla/overview	Guide to teachers to make choices. Do they needs HSL or livestream? There are tips for success, interaction, breakouts,….. And how to build community amongst students. They see the importance of a teacher assistant (co-pilot) during the first sessions.
Harvard University - Harvard Future of Teaching & Learning Task Force	**Report of the Harvard Future of Teaching and Learning Task Force** **Online at:** https://ftltaskforce.harvard.edu/files/future-teaching-learning/files/harvard_ftl_final_3.8.22_2.pdf	In this report Harvard Task Force draw together many lessons and solutions adopted during the height of the pandemic. They start by identifying the infrastructure and expertise that made it possible for Harvard to swiftly and effectively pivot to online instruction. Then they describe key innovations and the considerations of student needs that helped teaching and learning continue, and in some cases flourish, across schools and divisions. They conclude with concrete

		recommendations and a strategic roadmap for Harvard's teaching and learning future and outline key enablers of that vision.
DCU – Future Learn	Online course on https://www.futurelearn.com/courses/teach-online	Explore online teaching with this practical course for educators designed to help you transfer your teaching online.
SURF Community	Webpage on how to start with hybrid education: Online: https://www.surf.nl/aan-de-slag-met-de-hybrid-classroom Downloadable at: https://www.surf.nl/files/2021-09/surf-hybrid-classrooms.pdf	
The University of Edinburgh	In the webinar "Postdigital learning spaces of higher education - a special online conversation" you can witness the conversation on the changing relationship between learning spaces and digital technologies. Link to webinar: https://media.ed.ac.uk/media/1_th87b0az This complex and shifting relationship between space, learning and technology was the subject of a recent Special Issue (2021) of Postdigital Science Education, guest edited by James Lamb, Michael Gallagher and Jeremy Knox from the Centre for Research in Digital Education, working with Lucila Carvalho from Massey University. Building on the experiences and ideas captured across the Special Issue, a webinar was organised on 24th February as an online conversation between several of its authors. An outstanding panel comprising Jos Boys (University College London), Magda Pischetola (IT University of Copenhagen), Peter Goodyear (The University of Sydney), Lesley Gourlay (University College London) and Stephanie Wilson (The University of Sydney) will discuss, among things, the emergence of hybrid learning, the legacy of Covid-19 upon the classroom, how digital resources destabilise campus	

	boundaries, and even more fundamentally, how we might configure space, technology and pedagogy to build the kind of university we desire.
Purdue's Polytechnic Institute and College of Education	Graduate student Lakshmy Mohandas instructs Tech120 students in-person while Nathan Mentzer, an associate professor in Purdue's Polytechnic Institute and College of Education, teaches online through Microsoft Teams at the same time. The blend of both face-to-face and online instruction, also known as a HyFlex model, give students the option to stay home and participate in class in real-time online or physically attend on any given day. See: https://www.purdue.edu/newsroom/releases/2020/Q3/a-look-inside-a-hyflex-classroom-how-blending-remote-and-face-to-face-instruction-helps-students,-instructors-succeed.html
Zaz Woolfitt (InHolland Hogeschool, The Netherlands) about Delivering education in the Hybrid Virtual and Connected Classroom	Blogspot on experiences and findings about hybrid teaching and learning: http://zacwoolfitt.blogspot.com/
Aarhus University	See research output from Rikke Toft Nørgård on Designing Hybrid Learning Spaces in Higher Education https://pure.au.dk/portal/en/persons/rikke-toft-noergaard(7ea51688-948e-4f12-b171-c78e1a649b8c)/publications/designing-hybrid-learning-spaces-in-higher-education(23a4e9c7-497a-4203-9710-ba1c516b96f8).html

6. Integration of the resources within the DigiTel Pro course

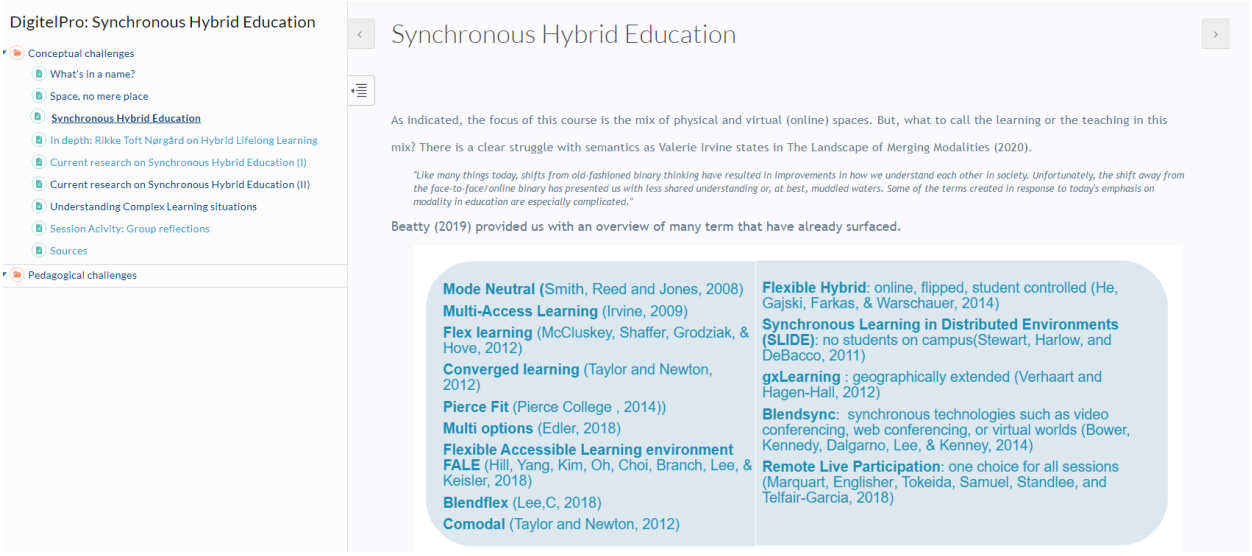
Within the context of the DigiTel Pro project, we are currently developing and testing the first 6-module course on Synchronous Hybrid Education. For that course, additional training resources are being developed but currently kept internally for review, to be used or piloted for internal purposes or to be developed. The design, content of resources which are used in the DigiTel Pro course of KU Leuven will be described in IO2A3.

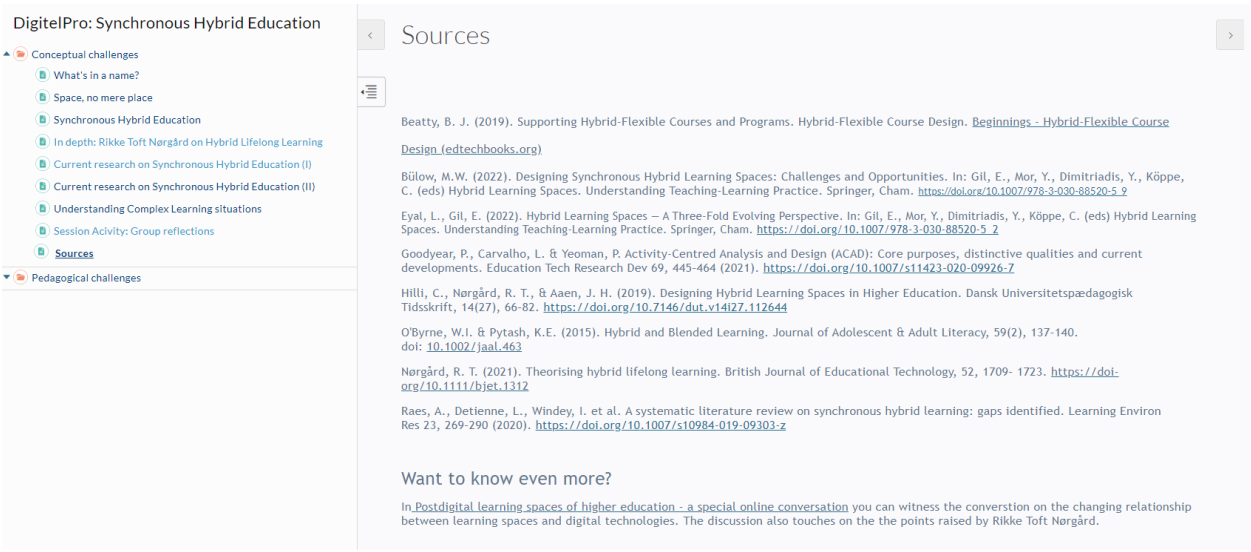
We include an evaluation form in each of the course module to evaluate both the instructional design decisions and the provided content.

Next to the course, we created a LinkedIn group where we share the latest new related to the course on Synchronous hybrid teaching and learning: https://www.linkedin.com/groups/9089974/

6.1 Example of integration of additional training materials and resources integrated in the course (IO2A3)

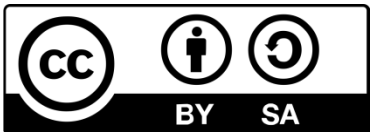
As can be seen in the overview of the first module of the course (i.e. Conceptual challenges), the resources are both integrated in the learning material and are offered separately at the end of the learning path.





7. Input for institutional leaders

KU Leuven is member of U21 (https://universitas21.com) which is the worldwide network delivering educational and research opportunities, solutions and resources. Within the working group on learning spaces we disseminate the findings on synchronous hybrid learning spaces toward the educational leaders.



Co-funded by the
Erasmus+ Programme
of the European Union