# D7.3

# CHARM-EU Hybrid Classroom Model

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# CHARM-EIGHT∞ (CHARM-EU EXPANSION, INTER-INSTITUTIONAL CAMPUS, GOVERNANCE, HIGHER EDUCATION, TRANSFORMATION)

DELIVERABLE D7.3 – CHARM-EU: HYBRID CLASSROOM MODEL

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| July 26th, 2024 | 1 | WP lead (UU) and task lead (UM) | Model document as prepared by the task group 7.4. - Approved by Executive Board without changes. |
| Sept 23, 2024 | 2 | WP lead (UU) | Last layout corrections |
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## EXECUTIVE SUMMARY: CHARM-EU HYBRID CLASSROOM MODEL

Task group 7.4 composed a document that describes an easy-to-replicate Hybrid Classroom at each partner university. The model document starts by explaining the **context** and the central position that the hybrid classrooms have for the education that we are providing in the CHARM Master's programmes. It describes the **two sorts** of hybrid classrooms that we are working with: a '**standard'** hybrid classroom and a **hybrid active learning** classroom, which is equipped with pods and facilitates group work. We **describe five** existing CHARM-EU hybrid classrooms in more detail: Trinity College Dublin, Åbo Akademi University, University of Barcelona, University of Montpellier and Utrecht University. There is also an **interactive 3D-model** depicting a CHARM-EU hybrid active learning classrooms. The next chapter is devoted to the list of **minimum requirements** of the CHARM-EU hybrid classrooms; this has been discussed separately in the Academic Council and the Programme Board of the Master's, especially with regard to the inclusion of pods. The minimum requirements list makes a distinction between essential features and (very) desirable features of CHARM-EU hybrid classrooms, thus providing guidance to new partner institutions that may still need to set up their hybrid classrooms for usage in CHARM-EU.
A chapter on **support** zooms in on administrative aspects of running the hybrid classrooms, and a chapter on **costs** gives some very rough guidance on the financial picture one can expect when setting up a new room. The actual **process of implementing** a new hybrid classroom is described on the basis of four case studies: Utrecht University, Åbo Akademi University, Julius-Maximilian-University Würzburg and Hochschule Ruhr West. A chapter on the **teaching modalities** describes two scenarios of how the hybrid classrooms can be used. The Hungarian partners have collected a lot of experiences with adding **art**, **cozy corners** and other elements that support well-being to the hybrid classrooms, which they are presenting in a separate chapter. **Inclusion** and **diversity** are a key requirement in CHARM-EU, and another chapter describes the physical accessibility requirements that apply to a hybrid classroom.
In the next section, the document looks at the **Institutional responsibilities** for providing the classrooms: the CHARM managers, educationalists and facilities departments all have different roles. Once the classrooms are equipped and actively used, the **local procedures will apply** to how they can be booked, how users are onboarded and how the rooms are maintained. The document provides a mapping of this operationalization across the alliances. A significant challenge can be seen in the **harmonization of academic calendars**: the classrooms needs to be used simultaneously in institutions that follow different national calendars. A dedicated chapter describes how the Joint Virtual Administrative Office strives to set up a joint calendar for the purposes of CHARM Master's education.
Next, there is an extensive section on **Quality assurance**: leveraging the Learning Space Rating System by Educause, CHARM has set up a periodic review of the hybrid classrooms before each new phase. The minimum requirements have proven to be a very useful tool, as is explained by one of the partner institutions in the next section, **Applying the minimum requirements in practice**.
With the goals of transferring achieve knowledge as widely as possible, CHARM set up a **micro-credentials course** about how to work successfully with hybrid classroom in an international setting. Results are described in the section about Knowledge Sharing. In an **annotated bibliography**, we discuss further resources for recommended reading.
Finally, the annexes: Guidelines for a **teacher handbook** about hybrid active learning classrooms, a description of what happens in a **typical CHARM-EU class**, an example of a **booking** plan, the results of the first quality audit procedure featuring classrooms in Utrecht, Würzburg, Dublin and Budapest, and a **list of contributors**.

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proudly presents:

# CHARM-EU Hybrid Classroom Model

## Learnings from CHARM-EU hybrid environments

# Table of contents

# 1. INTRODUCTION
## Hybrid Classrooms in CHARM-EU

CHARM-EU is an early adopter of the concept of **teaching and learning in hybrid classrooms**. The CHARM-EU Master Programme 'Global Challenges in Sustainability' started in September 2021 and is taking place in the five participating institutions:
Eötvös Loránd University Budapest, Universitat de Barcelona, Université de Montpellier, Universiteit Utrecht, Trinity College Dublin

Each of these institutions set up at least one hybrid classroom which is suitable for joint teaching and learning in the CHARM Master Programme.
This approach aligns with the ten educational principles of CHARM-EU:


*The pedagogical principles of CHARM-EU are reflected in the organisation and structure of the room.*

By September 2023, three cohorts of students have taken part in the joint Master programme, this is a total of ca. 210 students. Their experiences provide valuable insights on what works well and what can be improved in future learning journeys that make use of the hybrid classrooms. Students and teaching staff who participated in the program gave their feedback in the project team's evaluation of the hybrid classrooms.
This document introduces the CHARM-EU Hybrid Classroom model and gives an **overview of the current set-up**. It serves to share **the lessons learnt** by CHARM-EU with regard to teaching and learning in hybrid classrooms. Four new partners have recently joined the alliance, and they are now preparing their active participation in the programme, including **setting up new hybrid classrooms** or designating existing ones that will be suitable for use in this programme:

- Åbo Akademi University
- Hochschule Ruhr-West
- Julius-Maximilians-Universität Würzburg
- Universitetet i Bergen

Hybrid education has gained significant momentum in the European higher education community. It is a very **tangible manifestation** of the spirit of **European University alliances that connect universities across Europe, overcoming borders and distances**. Numerous institutions are actively enhancing their systems and infrastructure as well as testing new solutions to facilitate this innovative learning model. Let's go on this journey together and share our knowledge.

*The Hybrid Active Learning Classroom team of CHARM-EU*

# 2.DESCRIPTION and EQUIPMENT of hybrid classrooms and hybrid active learning classrooms

Hybrid classrooms are the flagship of the alliance's teaching space. The key aspect of these classrooms is the ability to connect students and teachers across different physical locations. This allows for the unification of the student body, teaching a truly joint programme in several different countries simultaneously.

We can distinguish two types of classrooms useful for synchronous and on-site teaching:

## Standard hybrid classrooms

Here, the equipment is classical, and technologies are sufficient to allow classrooms to connect and see each other. It facilitates the **delivery of education to a mixed group** of on-campus students and online participants but does not facilitate group work of the participants.

The setup of these rooms is usually characterized by a large screen, an audio system with speakers and microphones, and a camera that allows the teacher to be seen. The furniture is conventional, with the arrangement typically placing the teacher at the front and students facing towards the teacher. These classrooms can potentially accommodate a large number of students, depending on the size of the room.

## Hybrid active learning classrooms

This is a more advanced model, termed hybrid active learning classroom.

This variant is specifically equipped to facilitate hybrid group work among the participants. It is equipped with pods (=work stations) which all have separate screens and audio system (mic and speakers), making it possible to create break-out rooms that allow students to work in groups and independently, with a mixed participation of online and on-site participants. This setup helps to respond to the pedagogical principle of Challenge Based Learning and Student Centred *Teaching and Learning*.

The technological equipment typically includes **a main screen, connected** with the individual pod screens. A set of ambient microphones and a handheld microphone are also provided as well as at least one PTZ camera that can frame both the teachers or the students. The classroom set can be modified if necessary, by creating workstations, depending on the activities planned in the course. The arrangement of the furniture can be changed so that the teacher can choose the ideal settings for the activity. The room's furniture has wheels (tables, chairs) and sometimes acoustic dividers are provided to help creating confidential spaces.

In this setting, the teacher may not have a dedicated place in the room; they walk through the pods and actively participate in student discussions.

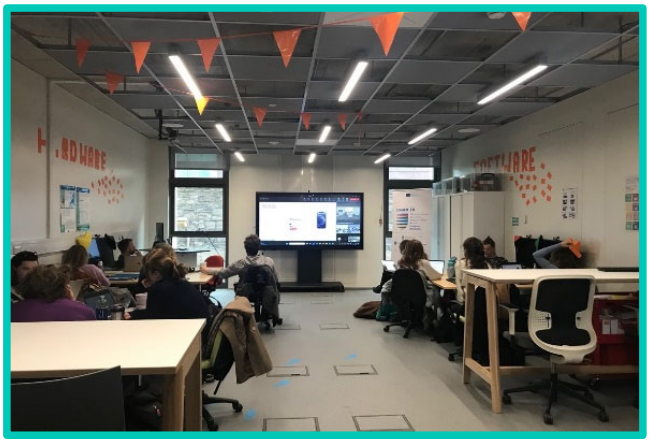
*The 5 pods are equipped with a screen, a sound system and a camera.*

*It is possible to split the space into "stations" in teams of 2-5 students. Tables, dividers and chairs are equipped with wheels*

# Examples of CHARM-EU hybrid classrooms

## Trinity College Dublin

The CHARM-EU hybrid classroom at Trinity College Dublin (TCD) is designed to accommodate approximately **20 students and additional teaching staff**.



***Furniture***:

The current set up has 15-16 low desk spaces and four standing desk spaces. The low desks are arranged in clusters of 5 desk spaces and chairs with a laptop (with in-built microphone), screen, and camera at each of these 'pods'.
There is also desk space for the teaching assistant or other teaching staff present in the classroom.

***Video:***

There is a large screen at both the front and back of the classroom which are connected to the laptops (one for each screen) used to join online lectures (via Teams). This allows for a clear view of the lectures regardless of the orientation that students are sitting, facing the front or the back of the classroom.

There are two main camera options available to stream to the other hybrid classrooms. One camera is located on top of the large screen at the front of the room, and it faces the students in the room. The other camera (Logitech) is on the ceiling and faces the large screen at the front of the room (faces towards lecturers when presenting in the classroom). This camera can be adjusted with a remote to face the exact position at the front of the room that suits the lecturer best.

***Audio:***

There are two in-built microphones (Sennheiser) in two locations on the classroom ceiling, one towards the front and the other towards the back of the room.
There is also an option of a portable, handheld microphone (Sennheiser) that can be used by teaching staff and students as required.
There are 4 in-built speakers (Extron) also in the ceiling, evenly distributed throughout the room.

***Support**:*

Any necessary support or maintenance of the technical equipment in the TCD hybrid classroom is provided by a company called *Meritec*.

***Usage of the room:***

This hybrid classroom is used for all CHARM-EU lectures/sessions in TCD (apart from in the case of timetable clashes where an alternative room is used).
During Phase 1 & 2 this equates to three days a week and Phase 3 uses the room for 1 afternoon a week. Phase 1 and 3 run simultaneously meaning the classroom is in use 4 days per week during term time.

The activities carried out in the hybrid classroom include lectures, workshops, tutorials, local groupwork sessions, local debates etc. The classroom is occasionally used for TCD CHARM-EU staff meetings.

This room is also used by another department in TCD (Tangent) for evening classes which do not interfere with CHARM-EU teaching.

"The CHARM classroom at TCD is an effective hybrid set-up. It allows for lectures to be easily followed. The 'pod' set-up also encourages local, in-person group discussion, debate, and general interaction."

*Aoife Quinn – TCD CHARM-EU Teaching and Research Assistant*

## Åbo Akademi University

ÅAU is one of the newly acceded partner institutions in the CHARM Alliance and is currently preparing to take part in the joint Master. It has its campuses in two cities, Åbo (Turku in Finnish) and Vasa (Vaasa) with some 340 km distance in between. Therefore, ÅAU has needed tools for distance education for quite some time already. This started with ATM and later IP based videoconference setups in a few classrooms in 1990-ties. Today, ÅAU divides all classrooms into two categories, large (100-350 seats) and small (30-100 seats). You can arrange hybrid teaching in every classroom, at least to some extent.

ÅAU's definition of the minimum viable configuration of a hybrid classroom is to make it possible for the teacher to share the computer screen (typically with powerpoint slides) and video and sound using Zoom or Teams with the AV equipment installed.

**Large classrooms** or auditoriums are equipped with cameras (1-3 pcs) and microphones (1-5 pcs) and projectors (1-4 pcs). Teachers may plug in their laptop, but it is more preferred to use the stationary pc in auditoriums with Zoom and Teams installed and regularly updated. The furniture is typically solid, the chairs are bolted to the floor. The teaching is typically conducted in lecture mode, one-to-many, with only some interaction with students using poll tools both locally and online. All dissertations take place in large classrooms

with the possibility to stream and record. Here is an example of what a large auditorium looks like at ÅAU: https://www.thinglink.com/media/1486995120782835713

**Small classrooms** have more flexibility in furniture and have more equipment, but they are not classified as active learning classrooms, because their furniture is not rearranged for different teaching methods. The main difference between a small classroom and a large classroom is that you can have more discussions and interaction between students on site and online using the microphone system mounted on the ceiling. Below a link to show what a small classroom can look like (two Sennheiser microphones on the ceiling catches everybody's voice): https://www.thinglink.com/media/1494675321876643843

Picture: screenshot taken from *https://www.thinglink.com/media/1494675321876643843*

***Support:***

ÅAU's hybrid classrooms are supported by hands-on coaching on-site, before a course starts and with first level support also on-site during office hours if problems occur. There is a ticketing system in use for extensive problems (second level support) and a team of system specialists to plan and procure AV for new auditoriums.

" Teaching in a hybrid classroom is demanding and even fun since you as a teacher need to think in new ways together with the students and be prepared for all possible interruptions due to the distance-technique."

*Ann-Sofie Smeds-Nylund - University Lecturer, Åbo Akademi University*

## University of Barcelona

University of Barcelona has recently increased its capacity of hybrid active learning classrooms. One of their newest hybrid active learning classrooms is described below, which is in the Faculty of Information and Media Studies.

***Furniture***:

This hybrid room has 6 working groups stations with their correspondent pad. It has capacity for 48 students in groups of 8. Each group station has mobile tables and chairs.

***Audio and video:***

The room features HDMI and remote connection to a screen and a set of microphones and speakers. There are two additional screens connected to the teachers' computer, that can be seen from different perspectives in the room.

***Usage of the room:***

The BA and MSc in the Faculty of Information and Media Studies are increasingly incorporating the methodologies Challenge-based learning and Project-based learning combined, following a global teaching strategy in the Faculty. That combination is highly facilitated in teaching environments such as this hybrid classroom. In this room, courses such as Multimedia Language and Technology, Audiovisual Project or Experimental Narratives take place. Those courses are strongly based on teamwork and connections with external stakeholders, which are facilitated by the technology in class.

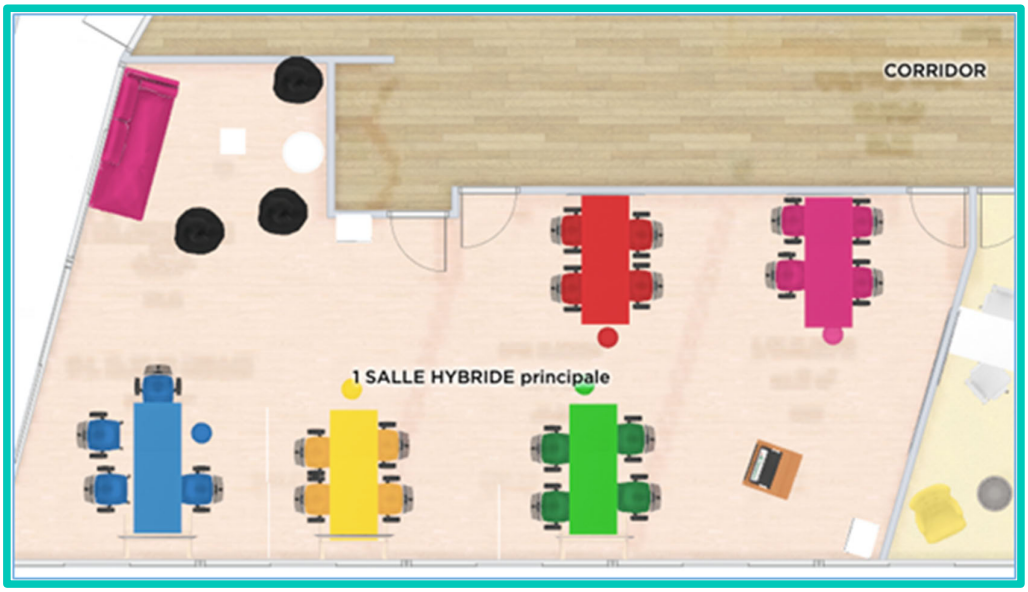
"Teaching in the Hybrid Classroom has made me develop new teaching skills and methods that have improved a lot the way I teach and how I understand my job."

*Sergio Villanueva Baselga, Rector's Delegate for CHARM-EU, Universitat de Barcelona*

## University of Montpellier

The University of Montpellier has invested in creating two hybrid active learning classrooms. These are expected to be operational from September 2024 onwards.

The first classroom is set for 25 students and is 75 square meters; it contains 5 pods equipped with camera and screen that can be used by students and that can be shared on the main screen. A cozy corner completes the room.




The main classroom is equipped as follows:

***Furniture:***

- 10 small folding tables with adjustable height and wheels
- 25 chairs, 5 stools
- 5 mobile acoustic panels for creating private spaces in the room
- 1 podium desk with wheels
- 2 closed shelves with wheels
- 1 sofa (cosy corner)
- 4 armchair poufs (cosy corner)
- 1 coffee table (cosy corner)
- 1 designer shelf (cosy corner)

***Audio and Video:***

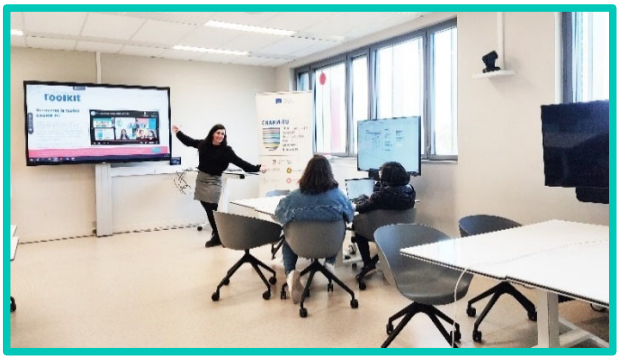
- Room sound system (speakers connected to the main screen)
- 1 large main screen with integrated wifi technology and Windows/Android
- 1 support arm for the main screen
- 1 web conferencing system connected to the main screen (AVER bar)
- 5 screens with integrated wifi technology and Windows/Android
- 3 screen stands
- Sharing system to connect 6 screens with different devices
- 3 wall boxes with HDMI, on/off screen switch
- 3 integrated screen stand boxes

*The Montpellier classrooms have the following additional features:*

- *Cozy corner: addressing the need for private spaces, they include a well-equipped cozy corner with a modular sofa and a set of tables and chairs.*
- *Shareable screen: The audio-video system can be easily shared using a tablet that identifies individual screens and allows duplicating the content from one screen to others.*
- *Transforming tables: the room has flip and height-adjustable tables that can be used as whiteboards: it is possible to write directly on the table or flip it and use it vertically as a whiteboard.*

"CHARM-EU's Active Learning Hybrid Classrooms are an essential piece of the alliance: the technology enhanced principle and the modularity of the furniture represent the flexibility and network-enhancing European university we want to build!"

*Vanessa Viganò – University of Montpellier*




## Utrecht University

The Hybrid Active Learning Classroom is a unique (seminar) space, aimed at interactive and autonomous project work, active learning and hybrid collaboration.

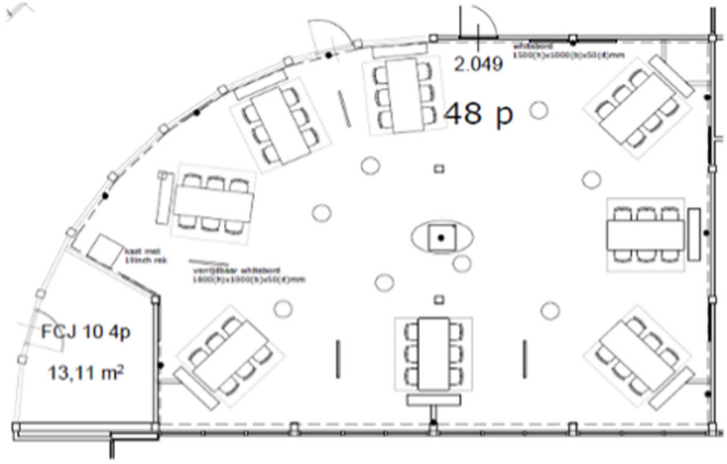
***Furniture:***

The space offers clear overview in the progress of all project groups, due to the circular layout of the room. For the teacher it is easier to interact with all of the groups, because of the space in the middle that allows freedom of movement. The room fits 48 students and includes 8 pods for 6 persons each. It has a movable teacher-desk with control panel, 5 fixed whiteboards on the wall and 4 moveable whiteboards.

***Audio and video:***

- 4 soundboxes on the ceiling
- Central microphone and camera
- 1 main screen
- Microphone + camera per pod
- Two screens per pod

- ‘Push to talk’ button (to make yourself audible to the whole group, when in breakout rooms)




*Floorplan Hybrid Active Classroom Utrecht University, Bolognalaan*
*360° picture: [https://theta360.com/s/l3nCO77P3sIeSBdpRM2CEJCvw](https://theta360.com/s/l3nCO77P3sIeSBdpRM2CEJCvw)*

*Utrecht University's Hybrid Active Learning Classroom, Bolognalaan*
*Photos: Carilijne Pieters*

*Pods in Utrecht University's Hybrid Active Learning Classroom*
*Photos: Carilijne Piete*

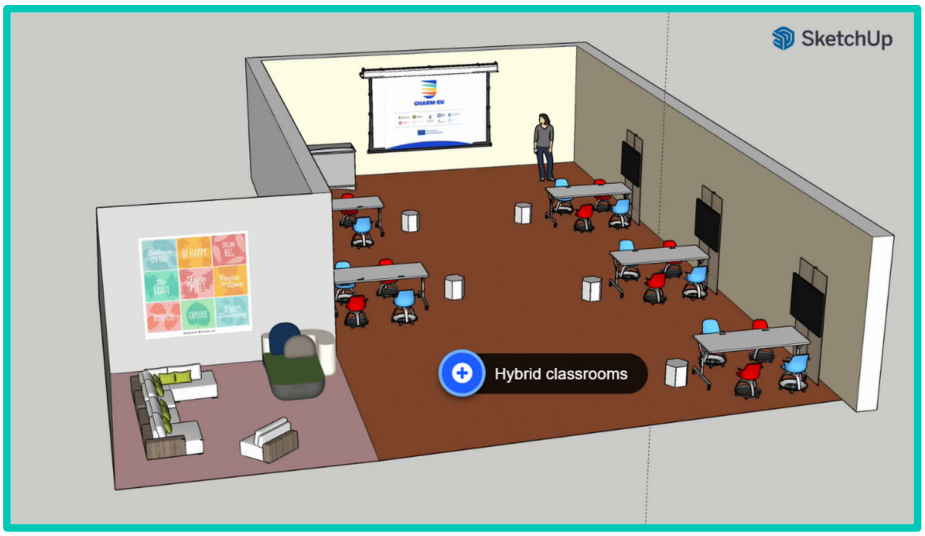
Utrecht University invests heavily in future learning spaces and has a dedicated project team working on this topic. It extensively evaluated the experiences (of CHARM and others). One of the conclusions was that device availability should be optimized; students were looking for different sorts of adaptors for students’ devices, and/or each pod could be equipped with its own computer. Also the practical use of the pods could be improved, the ‘push to talk’ could be made more visible and students missed what we have termed a ‘cosy corner’.

The Future Learning Spaces team used the learnings of the first hybrid active learning classroom to create a second, improved hybrid active learning classroom. See interview with Jasper van Winden, below.

”The Hybrid Classrooms provide possibilities for a lot of different teaching and learning formats. But are the teachers and the students aware of all those possibilities? I wonder how we could support this.”

*Photo: Esther Meyer, Teaching Assistant CHARM-EU Utrecht University*

See also the 3D depicting a CHARM hybrid active learning classroom: *https://www.lirmm.fr/~rodrigue/charm/Hybrid-classroom-H5P.html*




*Interactive model by Nancy Rodriguez – University of Montpellier*

# 3.MINIMUM REQUIREMENTS of CHARM-EU hybrid classrooms

Hybrid classrooms facilitate 'hybrid learning'. In this type of learning part of the students follow their class on-campus and other students follow this same class in real time online - either from another campus or at home. This way, on-site and remote students engage in education at the same time.

The hybrid classrooms used for the CHARM Joint Master should all adhere to a certain minimum set-up. Students should all feel as one joint community, taking part in the same program. Large (quality) differences in the equipment of the classrooms should be avoided. Also, all classrooms used in CHARM need to be equipped to support the educational principles of CHARM, as described above. This includes meeting requirements of diversity and inclusion principles.

CHARM-EU has set the following requirements for the hybrid classrooms used in our joint program:

| | ESSENTIAL FEATURE | (VERY) DESIRABLE FEATURE |
|---|---|---|
| **ROOM AND FURNITURE**<br><br>CHARM hybrid classrooms should be set up in a modular, flexible way to accommodate various configurations:<br>• central teaching,<br>• smaller (hybrid or on-site) workings groups, and<br>• independent work<br><br>The room should be perceived as a welcoming, safe and accessible space where student participation is encouraged, and the teacher serves as a facilitator. | • The room should have **capacity** for at least **25** students.<br>• Furniture should be flexible and **movable** (on wheels; if possible also variable in height).<br>• The room should contain several **whiteboards** (or similar tools for brainstorming / collective writing).<br>• The room should give the opportunity to students to **charge** their devices (e.g. sufficient electricity sockets, power banks, etc.) .<br>• The room should meet the requirements for **physical accessibility** as stated in the table on page 24/25.<br>• The room should have **windows** that can be opened or **air circulation facilities**. Climate control should at least be capable of maintaining a healthy climate (air circulation, temperature, humidity) for the amount of students expected in the room. | • The room should have **daylight** and shading facilities.<br>• If the room is used exclusively by one group of students: a space for **showcases** for work/achievements should be present, for example: a wall where students can post their productions, etc.<br>• **Swivel chairs**, so that students at location can easily change their viewing direction. |
| **COZY CORNER**<br><br>The CHARM-EU Hybrid classrooms are inviting and comfortable spaces. The 'cozy corner' space should be set inside the classroom if | • The room should contain a cozy corner made of **comfortable** (upholstered) **seating** (e.g. sofa and armchair, benches, pillows, etc., but keep fire regulations in mind), that can welcome at least 4 students. | • Classroom should reflect **transdisciplinarity** and promote **inclusivity**, fundamental values of the alliance.<br>• The presence of **artwork** is recommended to contribute to a creative atmosphere.<br>• Perhaps decorate with objects that are related to **sustainability** (e.g. a |

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| possible, or in a connected space in the vicinity. | | poster with the SDG) or other CHARM principles.<br>• **Objects** that support informal conversations could be present in the room (e.g. small sculptures, books, ...) and plants, if possible |
| **AUDIO**<br><br>Because students spend long hours in hybrid sessions, very good quality audio is a crucial feature of the classrooms, as student feedback has shown. Monitor and review this regularly. | • Built-in (ceiling) **microphones** and **speakers** of **high quality** should be available to pick up the sound of on-location interaction.<br>• A **central** microphone for the teacher should be available. If the teacher is present, it is important that their voice is equally clear and audible throughout the room.<br>• Provisions for generating **live text captions/subtitles** should be made (e.g. in Teams), for the benefit of all students, including those with special needs | • **All** participating **students** (remote and at location) should be able to **hear** each other when required; possibly with a 'push to talk' button at the pods, or through a portable, **handheld microphone** or a **catchbox Microphone.**<br>• Technical settings should allow students to **choose the sound input** (room speaker or their private headphones). |
| **VIDEO**<br><br>The visual connection between the hybrid classrooms conveys the feeling of a joint classroom. | • **Starting** a session from teacher's **own laptop** needs to be possible.<br>• A **large main screen** (or projector) should be available so that the teacher and the digital content are visible to all participants, remote and at location.<br>• A **central camera** to capture the teacher should be available.<br>• Additional screen for the teacher to see the participants at **other locations** should be available.<br>• Provisions for **course recording** should be made. (But be mindful of GDPR regulations: no recording of students without their explicit consent!)<br>• The facilities should allow the teacher to **switch** easily and multiple times between group work and plenary teaching and vice versa. | • The **teacher** should be able to see how he/she is **being viewed**.<br>• When instruction is given, remote participants don't need to see the other participants (remote and at location). However, this is important when **interaction** takes place, so a **screen** should be available for this.<br>• It should be visible for remote participants with which locations they are connecting. |
| **PODS**<br><br>'Pods' are work stations for groups of 5-6 students that allow group work around a table fitted with a screen and a camera. | • At least 5 tables should be available to seat 5-6 students for work in small groups.<br>• **A screens** or projectors for student use to support them working in local **groups and attending the plenary session**.<br>• Each student should be able to connect their computers to the pod's screen. | • Each group of students (consisting of remote participants and participants at location) can **see** and **hear** each other and **share content**, **without** causing or experiencing **nuisance** for/of other groups. |

| | | |
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| | • The teacher can have a closer view from remote of the students' teams thanks to the pod's camera | |
| **SUPPORT**<br><br>The technology installed in these rooms requires suitable on-boarding. | • At least one staff member should be **physically present** in any teaching session (-> teacher or teaching assistant).<br>• Hands-on **coaching on-site** to teachers as onboarding before a course starts.<br>• Quick first level **support** on-site during office hours should be available.<br>• **Stickers** with short information or **QR-codes** leading to **instructions** about how to turn on/use the technology. | |
| **BOOKING**<br><br>The classroom is essential to CHARM's teaching programme, so availability needs to be ensured. | • **International Level**: The teaching **schedule** needs to be ready as **early** as necessary to make the room bookings at all locations. (-> make inventory of timelines)<br>• **Local level**: Reservations by the CHARM team should have **priority** (if they adhere to internal regulations and deadlines). | |

# 4.ADMINISTRATION/SUPPORT ASPECTS

Hybrid classrooms differ from other classrooms by the technology that is incorporated. This may need more intensive support, especially on-boarding of first-time users.
Each university makes their own choices in how to arrange that, of course, and often the Facilities Department has a strong role in this.

## Availability of rooms

The first aspect of this is the actual booking of the classroom. Teaching facilities are generally in high demand at the institutions, and the hybrid classrooms are not reserved for the use of CHARM only. Each partner has their own system for assigning rooms to educational programs. For the CHARM Master, the complication exists that we are really dependent on being booked into the hybrid classroom, as only this type of classroom allows simultaneous teaching to groups of students that are placed in different locations.

This shortage of teaching facilities also plays an important role when trying to find a location for a new hybrid classroom. Usually, the space was already in use, as a regular classroom. The number of seats in a hybrid classroom will usually be smaller than the number of seats in the regular classroom which it replaces. This leads to a decrease in total available seats, which may be difficult to get approval for.

## Onboarding

The hybrid classrooms have a crucial position in the CHARM Master program, with students attending the class simultaneously in different locations. Therefore, we try to familiarize the teaching staff of CHARM with the hybrid classrooms before they first need to make use of the classroom in their program. The task group that works on Professionalization and Onboarding organizes regular workshops on different professionalization topics and tries to let these workshops take place in the hybrid classroom whenever possible. This is an indirect way of providing training to the teaching staff, rather than organizing a dedicated hybrid classroom training as such.

## Teaching Assistants

A very important feature of the CHARM Master program is the participation of teaching assistants. Each participating university has a teaching assistant dedicated to supporting the students and teachers of CHARM. They are present in the classroom whenever the teaching is provided from a different location and thus serve as local ‘anchor’ and contact point for the student. In addition to providing technical support to the students and to the lecturer in the room, they are also a facilitator, making sure requests from local and remote students are brought to the attention of the lecturer and students (even if the lecturer is remote).

This is a significant cost factor, but several institutions have indicated that they would not want to operate the hybrid classrooms without the presence of any university staff member.

## Feedback from evaluation

Recent evaluations conducted within CHARM provided the following feedback. On-site instructions for teaching staff are seen as very helpful. One-pagers on the requirements for teaching in the hybrid classroom and a

checklist for teaching staff as well as quick tips are needed in the classrooms to support the interaction. They should contain clear instruction e.g. on the physical position of the teacher in the room. The teacher's ability to see and make contact with all groups of students is very important.

# 5. COST ASPECTS

We have concluded that hybrid classrooms are, unfortunately, a little costly to equip and to run successfully. Exact costs are obviously different in all countries, and it's difficult to name hard figures . But in general, we can conclude:

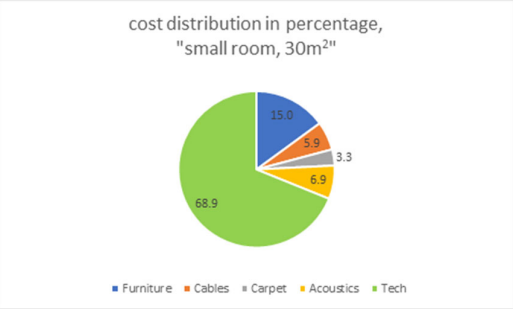
- Costs for technology and equipment have generally gone up in recent years. Also, delivery times have risen.
- You can expect to encounter more and different costs categories than you may have expected at first.

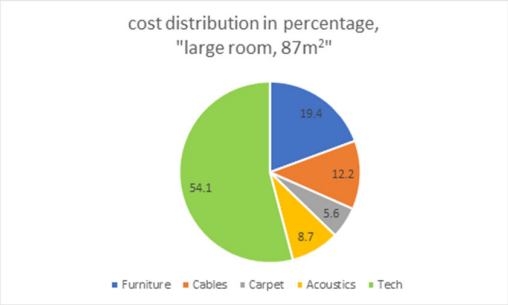
## It is not only about buying technical equipment…

While constructing hybrid active learning classrooms at Åbo Akademi University (ÅAU) we found that much planning and costs are allocated to other than technical equipment. We have categorized the cost post to five parts:

- **Cabling**, which includes planning, installation, and the cables themselves for both electricity and signal transmission (AV over IP).
- The **carpet**, which is needed to ensure that there is no loud noise when switching to different teaching modes and also as a supplement to the acoustic treatment
- **Acoustics** include acoustic measurement and acoustic planning, as well as the materials for acoustic treatment and their installation.
- The **furniture** needs to be solid, but easy to move.
- The **technology** itself, with screens, microphones, loudspeakers, and cameras.

As you can see in our two examples in the pie charts below (from Åbo Akademi University), the cost distribution varies depending on the size of the rooms.




In other words: in a larger classroom, the non-technology related costs take up a higher percentage of the total equipment costs.

## Costs example of two similar rooms

One of our CHARM partner universities shares an overview of costs from a recent programme in which two different rooms have been equipped. They chose two variants in terms of technologies, each with a different cost structure.

The best-equipped room cost circa 100k:

- Furniture 30k (with 5 pods with 2 tables each, a cozy corner with 3 sofas and enough flexible chairs for 30 people)
- Technology 70k (for a room with 5 pods and a main screen, audio video system.
  In this room we have 2 microphones and the possibility of sharing the pods screens on main screens)

The more simply equipped room cost circa 60k:

- Furniture 17k (to have 4 pods tables on wheels and seats for 20 students)
- Technology 40k (for a room with 4 pods and a main screen with simple audio-video system)

When planning and installing a Hybrid ALC classroom, generally expect a cost ranging from € 30k to € 100k depending on the size of the room, the number of seats for students and the technical equipment.

## Staffing costs

It has been said in several sections of this document: hybrid classrooms require a staff member (often a teaching assistant) on location to run effectively. Also, they require onboarding of teaching staff who use the hybrid classroom for the first time, and if possible, the services of an educationalist who helps to balance the pedagogical design of online- and on-site activities.

These different sorts of manpower costs contribute to significant operational costs of the hybrid classrooms, after the initial installation has been completed.

# 6. HOW TO IMPLEMENT A HYBRID CLASSROOM: CASE STUDIES

Setting up a new hybrid classroom is no easy task. A lot of stakeholders are involved. Educationalists will give input on the kind of teaching that the classrooms are needed for. The locations for the rooms need to be found, you need to sort out what equipment to buy, and there may be procurement procedures to follow. You'll also want to make sure you have collected all the input or feedback from teachers and students.

Several CHARM institutions have just completed this process. Let's look at their learnings.

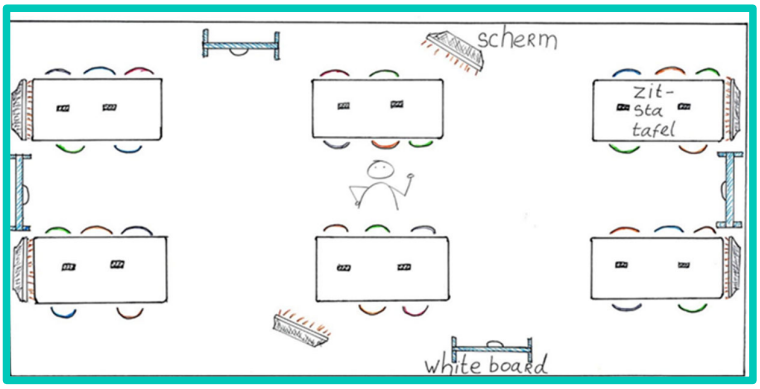
## How did Utrecht University (UU) implement a new hybrid classroom?

*Interview with Jasper van Winden, project manager Future Learning Spaces at UU.*

Within Utrecht University, the development of the hybrid active learning classroom consisted of two phases.

***First phase: Active Learning Classroom (ALC)***

In 2016 Jasper van Winden started experimenting with the concept of an active learning classroom. The "Teaching and Learning Lab" was launched within the UU, which is a place where teachers are free to experiment with new ways of learning and teaching. Based on existing research about active learning and the model of Minnesota University, Jasper designed a concept for a room that fitted his vision. The teacher was in the middle of the room, while students were seated in groups around the room. Each group had their own screen and whiteboard.




*Drawing of the ALC concept.*

The concept was piloted in the Teaching and Learning Lab. The evaluations showed better interaction between teacher and student, better interaction between students and their peers and students experienced better engagement. Based on this pilot a learning space was equipped with a fixed Active Learning Classroom set up. This classroom would become the current facility for CHARM EU.

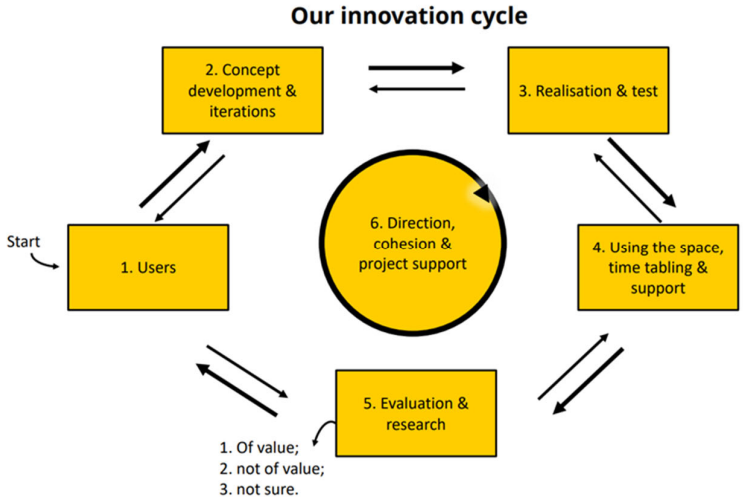
*Pilot in the Teaching and Learning Lab.*

***Second phase: Hybrid Active Learning Classroom (HALC)***

In the second phase, the ALC got a hybrid component. This facilitated not only interaction with students on location, but also with students online.

A test plan was set up to make sure all the requirements were met. This included business requirements, functional requirements (for teacher, student on location, student online and guest speaker), and system requirements.

This process was a collaboration of multiple departments within UU: the Centre for Academic Teaching and Learning, Educational consultancy, teaching staff and students, the facility service centre, estate & campus, audio visual and media productions, the information technology services and the time tabling department. This co-creation and a cycle of concept development, testing, user evaluation and iterations made it possible to come to the current model now used by CHARM-EU.




*The innovation cycle as maintained within UU.*

# How did Åbo Akademi University (ÅAU) implement a new hybrid classroom?

*Jonas Mastosalo, AV Lead / Project manager, Åbo Akademi University*

At Åbo Akademi University, each economically or strategically important project is carried out according to a given project model, with some mandatory documents and clear phases. Projects also need to have a clearly structured organization with a couple of specific roles, where the two most central ones are the project owner and the project manager. Every project is assisted by the PMO, because a project manager often needs some help with defining and describing the aims and scope and why a certain project is needed.

This project about building seven hybrid ALCs has four distinct phases:

1. Need
2. AV Planning
3. Procurement and Installation
4. Testing

The first phase “Need” involved teachers and students who by surveys and workshops gave lots of information of their expectations. We also did some online research and studied how some other universities had built their Hybrid ALCs. With some 3D modelling (here is one example: https://p3d.in/ygxhX) we could visualize the plan for each room to get feedback from our end users, mainly teachers. This phase also included planning of the furniture.

In the second, more technical phase, an AV consultant was hired to help specify the technical solution and the equipment and to make a blueprint for AV for each chosen classroom. An acoustical consultant was also hired to measure the current acoustic conditions of the rooms and to plan the acoustic treatment suitable for hybrid teaching. The amount of treatment needed differs from room to room.

We chose not to procure and build all seven rooms at once. We start by building only two and test them extensively before installing the equipment in the other five rooms.

We have a mandatory risk assessment in our project model, and we also have a term in the agreement stating that we are allowed to pull out from procurement if technical problems in the installation occur.

At the time of writing (April 2024), a demo system has been installed for testing at the equipment supplier's premises. The next step is installing the equipment in the first two rooms at campuses in Turku and Vaasa in May 2024.

# How is Julius-Maximilians-Universität Würzburg (JMU) working on the implementation of a new hybrid classroom?

*Interviews with Martin Kufferath-Sieberin (CHARM-EU-Manager at JMU) and Katrin Niewalda (CHARM-EU-Support manager at JMU).*


Würzburg's Julius-Maximilians-Universität (JMU) is one of the new partner institutions who have recently joined CHARM-EU. They are currently working on setting up at least 2 hybrid active learning classrooms.

JMU already has several facilities that address hybrid teaching and learning. However, most of these facilities originated from other endeavors and do not cover the high requirements of hybrid active learning classrooms as referred to in this document. Even though a large part of these facilities is in high demand, they often lack the flexibility and media didactic expertise to serve broader needs.

Key objective of the efforts therefore is to identify, merge and develop all utilization scenarios as well as configuration (equipment) of future hybrid active learning classrooms at JMU.

As part of an organizational development process three main questions need to be answered:

1. Financial and spatial issues: Rooms are scarce at JMU, so it's a challenge anyway to find free rooms without taking them away from someone. This issue is getting worse considering the high costs of equipping a room according to the needs; both the initial equipment and ongoing needs.
2. Concepts and use: In terms of a holistic pedagogy, where learning objectives, didactical methods and (digital) tools are mutually shaped, it is needed to intensify the work on how-to-use these rooms. Who will actually use them in the end? How can we work towards emphasising the added value of hybrid teaching and digital learning scenarios not only to CHARM-EU target audiences but beyond?
3. Who cares? This, on the one hand, is about the actual question of competence and agency (responsibility). On the other hand it is literally about 'who cares' - experiences show that it is most profitable to have someone who, as a dedicated champion, pushes the question towards its response.

As learning environments don't work on their own (they never did) and need to be moderated and facilitated, the next steps must carefully answer these questions in order to convince relevant stakeholders such as teachers and students, but of course including different levels of university administration. The best instrument to do so, in our opinion, is a project plan in form of a room-utilization-concept.

# How is Hochschule Ruhr-West (HRW) working on the implementation of a new hybrid classroom?

*Interview with Ines Müller-Vogt (CHARM-EU-Manager at HRW).*

Hochschule Ruhr-West (HRW) is also one of the new partner institutions who have recently joined CHARM-EU. They are currently setting up two hybrid active learning classrooms, which can already be tested but are still in the development stage.

In recent years, HRW has invested significantly in redesigning its learning environments to literally give more space to educational innovation. Thanks to a major university-wide learning space project which brought together educationalists, IT specialists, facility management and idea-generators from the teaching staff and student body, we have been able to gain considerable knowledge and experience in the development of future-fit classrooms in general and the design of hybrid spaces in particular. However, every new room presents new challenges and sparks new ideas.

Our very first Hybrid Active Learning Classroom was planned without any prior knowledge of CHARM's educational principles. But when we were asked to create additional hybrid classrooms for our recently opened fourth campus, we knew that we were going to play a more active role in CHARM-EU and therefore gladly incorporated many of the suggestions and requirements that are now part of this handbook into our design.

Our credo for the new HALCs was that the technology we implemented should be an enabler, not a barrier. So, to help teachers and students fully focus on classroom interaction and learning, we opted for a minimalist design with very simple technical components: We set up two adjoining rooms with a total of five groupwork tables and added a smart digital whiteboard on a mobile stand to each table. The whiteboards provide an all-in-one solution that enables video conferencing without additional equipment. In non-hybrid scenarios, they can be used for presentations and digital collaboration. This configuration makes our HALCs suitable and attractive for a wide variety of classes, not only and exclusively those within the CHARM-EU Master's program. By choosing the same products that we already use in conference rooms across the university, we have ensured that maintenance efforts will remain low and that the rooms can be easily integrated into our centralized service concept.

Although both classrooms are currently in use and being tested with great enthusiasm, we do not yet consider them to be fully completed. With the technological components in place, we are now concentrating on improving the acoustics and overall atmosphere of the rooms to further enhance the learning experience. Advice and inspiration for this task comes from our partners within the alliance and our peers in the international learning space community.

*Group table in one of the new HALCs at HRW*

# Conclusions from the three case studies

Looking at these stories from different institutions, the following conclusions can be drawn:

You can either start from …

- modelling and experimenting or
- a thoroughly thought-out plan.

Both are possible and may match different cultures' approach to innovation.

To drive the project, you need a clear **project sponsor** (which can be the CHARM Manager) and **project manager** for building the hybrid classroom.

In any case, a **list of needs and requirements** will have to be made. It is not only about buying technical equipment but also furniture, acoustics etc. needs to be considered. The different sorts of requirements need to be defined by different stakeholders:

- **Pedagogical requirements** involve teachers, students, academic boards, educational consultants.

- **Technological requirements** involve IT services, AV-specialists, and procurement specialists. Much knowledge in technical details is needed, make sure you have this in your university. If not, then use technical consultants.

- **Room constrictions** involve facilities experts, perhaps time-tabling experts. The faculties will probably expect the number of seats for students not to decrease, but this **is** likely to occur. Communicate clearly with the management about which rooms are planned to be remade to hybrid active learning classrooms. You may run into challenges with cost effective installation of acoustic treatment in rooms not originally built for the purpose; fire sprinklers, ceiling lights etc.

You will probably not 'get it right' in one go. Plan on having **test phases** and **iteration** possibilities. Be ready to get **feedback** from students and teachers and leave room to consider this. Don't build many hybrid classrooms at once, start with one or two.

# 7. TEACHING MODALITIES IN THE CLASSROOMS

The hybrid classrooms need to be suitable for enabling synchronous activities among the alliance's institutions. To determine the requirements, we analyzed different teaching and learning settings, based on the locations of various actors involved in the activity: teachers, students, and teaching assistants.

We present here the scenarios actually used in our pilot master programme. Further scenarios have been discussed in the past, especially scenarios that would allow students to attend the teaching activities without any teaching staff present in the classroom. However, those settings proved unfeasible, due to security requirements in connection with the room's unique technological equipment.

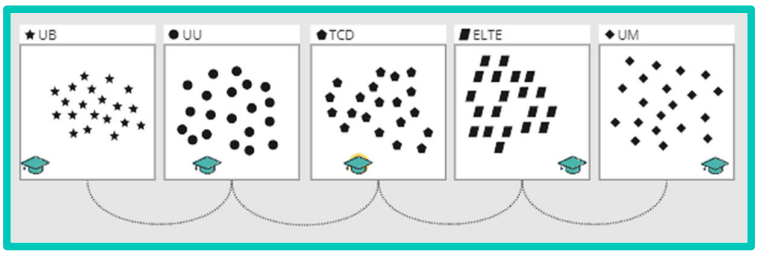
The most frequently used scenarios during the CHARM Master's program for in-class activities are the following.

## One main classroom scenario, teacher and students in class with teaching assistant

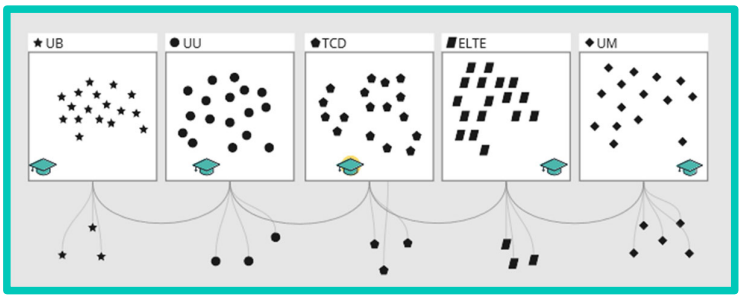
In this scenario, one teacher is situated in one of the Hybrid Classrooms (HC), while all students are physically present in their local classroom.

All the Hybrid Classrooms are used synchronously, with teaching assistants available in the HCs to assist teachers, students, address any technical needs and act as local facilitator mirroring hte teacher.

It is possible to run also local activities. The teacher's role can then be mirrored by the teaching assistants.



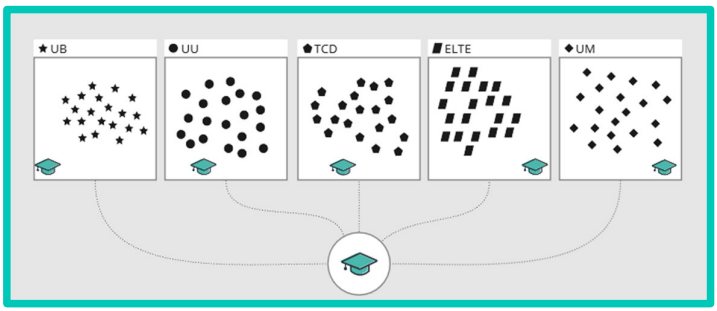

A variation to this scenario occurs where some students are not physically present in the Hybrid Classroom but join the activity online, for example due to illness:



## One main classroom scenario, teacher online, student in class with teaching assistant

In this scenario, one teacher is connected to the classroom online, while all students are physically present in the classroom together with the teaching assistant.

This scenario is often used for traditional lectures or online workshops but is indeed recommended for hosting local activities that can be conducted by teaching assistants.



# 8.COZY CORNER, WELL-BEING, ART AND HUMAN INTERACTION in the classrooms

The CHARM-EU students spend a lot of time in the hybrid classroom. The Utrecht-based Teaching Assistant quoted a student who had complained about the grey walls and relatively small windows of the Utrecht hybrid classroom: "*At the end of the day, I'm happy I am done in that room.*" The concept of Inclusivity extends to creating an environment where the room is perceived as welcoming and safe, encouraging active participation from both students and teachers. Emotions have a significant role in the learning process. It becomes imperative to design and furnish spaces in a way that the impact is a positive one.

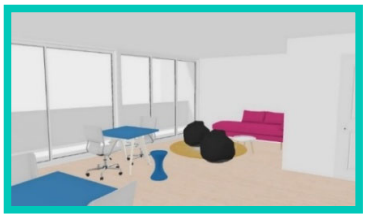
Spaces can be equipped and decorated to evoke a sense of comfort, inspiration, and engagement. By strategically incorporating elements that promote relaxation, such as sofas, table games, plants or artwork, educators can create an atmosphere conducive to effective teaching and learning.

In alignment with these principles, a specific area known as the cozy corner has been designated, even if not yet implemented everywhere. This is intended as a comfortable, relaxed, and welcoming space, situated between workstations. It serves as a versatile area for various activities, enhancing the friendly and collaborative aspects of the learning environment.

Such spaces demonstrate a commitment to catering to diverse learning needs, acknowledging that some students may benefit from periodic quiet time or a change in environment to process information effectively. Cozy corners can be used for various educational purposes like individual work, one-on-one instruction, or small group discussions, thus adding to the classroom's functionality. These corners can also be spaces of creativity where students feel comfortable to think, daydream, or engage in quiet, creative activities that may not fit into the standard curriculum. Incorporating such a space into a classroom recognizes that effective learning is not just about academic instruction but also about caring for the whole child, including their emotional and mental health.

Whether utilized for group work or moments of relaxation, the cozy corner contributes to the overall inclusivity and positive emotional experience within the educational setting. It provides a retreat for stress reduction and "self-place".

The question whether a virtual cozy corner (such as https://www.flow.is or http://mibo.nl) could have a similar function has been raised but has not yet been experimented with.



*The Cosy Corner can also be used for training sessions.*

*"Kuckó", that is "HALC-Hut'*
*https://www.thinglink.com/video/1584151621498044417*

# My own experience with the cozy corner

*Márta Turcsányi-Szabó, Faculty of Informatics, ELTE University*

"Our educational strategy at the Faculty of Informatics at ELTE University does not only place importance on on-site education. We moved forward to a hybrid environment for all classes, right after the covid era. We also put great emphasis on attracting students (and especially girls) towards Informatics from a very early age and have lots of events that address children to enjoy dealing with gadgets and computational thinking. Our department called Media- and Educational Technologies takes the biggest part in designing such activities. Thus, we collected many gadgets that needed a fixed space to store and work with, where classes and open events could also be held. This movement led to the emergence of our "Kuckó" in the very beginning of 2016. "Kuckó", that is "HALC-Hut": http://tet.inf.elte.hu/tetkucko/

We immediately noticed that the informality of the "Hut" attracted students, allowing them to feel more at home than in a regular classroom. In the informal setting, students felt they were having fun rather than studying, even though they learned a lot from the "fun" activities. Bean-bags were the call of the time; this helped to shift the look-and-feel of classrooms towards the feel of informal spaces. We made sure that our set-up provided a safe space to relax and stimulate creative work. This feeling is strengthened by decoration with craftworks created during activities.

Under normal university conditions, we currently use the „Hut" for two types of technology-rich classes:

- in classes for program designers, who create educational environments, and technology can be easily chosen as it is ubiquitous in the „Hut",
- in classes for teacher training, who develop methodologies using the designed educational environments, readily usable in the „Hut",
- in classes for testing the developed technology and methodology on the spot, for which we invite classes from public education and consult with teachers on results.

The costs of the HALC-Hut are quite high. To justify this, we strive to use it for many different purposes and target groups, including evening activities. An example for this a Family day; see this video."

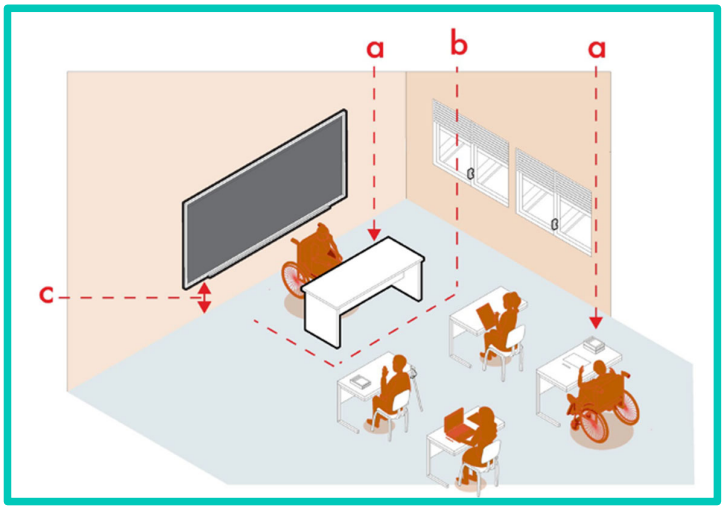
# 9. INCLUSION & DIVERSITY

The principles of inclusiveness are part of the core values of the European Union and CHARM. To create an inclusive teaching and learning environment, we must consider the various needs of students in the hybrid classroom. Academic staff can invite students to let them know in confidence (privately) about their access and participation needs. This helps to reassure students that it is ok to express their needs and that their needs are not a burden.

What should you do to ensure that your hybrid classroom is accessible to and inclusive for all students? In this publication, we will focus on the accessibility of the classroom as a physical space. The accessibility of teaching materials is equally relevant but will be discussed in another publication.

## Physical accessibility

The Toolkit on Accessibility from UNICEF provides a set of accessibility checklists, including one on classroom accessibility. Indeed, lack of physical accessibility is one of the barriers to inclusion. The checklists serve as a reference to be complemented by local accessibility standards.  The toolkit states that:




Classrooms, meeting rooms and offices must have places for everyone to sit at a desk, including people using a wheelchair **(a)**, or sufficient room to transfer from a wheelchair to a standard chair.

Adequate circulation space between the desks must be ensured **(b)**, as well as ideal light and sound conditions, to allow people with hearing or visual impairments to follow the lesson or participate in the meeting on an equal basis with others.

Learning or working materials, such as blackboards, must be usable by persons of short stature or persons using a wheelchair **(c)**, and be visible by persons with low vision.

Naturally, all the rooms and spaces in the building should also comply with basic recommendations as the accessibility of doors, the position and characteristics of electrical fittings, etc, as stated in the following table:

| IMPORTANT | ELEMENT<br>(for each element, check if local standards include additional or different recommendations) |
|---|---|
| 1-Entry door | Do the room's **entry doors** comply with specific prescriptions? |
| 2-Electrical fittings | Do the electrical **fittings**, windows and other typical elements comply with recommendations? |
| 3-Movable furniture | Are some **desks or tables** movable (25 per cent or more is recommended) to ensure flexibility in the room and improve circulation, including for people using a wheelchair? |
| 4-Circulation space | Are the **rows** between the tables/desks at least 1,200 mm wide? |
| 5-Front space | Is there at least 1,200 mm of **space** between the first row of tables and the blackboard to allow people using a wheelchair to maneuver? |
| 6-Adjustable height | Is the **table height** adjustable or at least between 740 mm and 800 mm for adults/ adolescents and between 660 mm and 760 mm for children? |
| 7-Knee space | Is the **under-desk** knee space 700 mm deep, 700 mm high and 800 mm wide for adults/ adolescents and 600 mm deep, 610–680 mm high and 800 mm wide for children? |

## Ensuring accessibility to students with disabilities

Year by year, more individuals with a variety of backgrounds and access needs apply and are successfully admitted to the CHARM-EU Masters. In recent years, approximately 10% of the student cohort (of ca 70 students in total) have requested needs assessment and received needs reports. This allows them to benefit from inclusivity measures of the classroom. Collecting the history of Needs Reports between CHARM-EU Master edition 2021 and edition 2024:

- In 2021 there were 2 Needs reports,
- In 2022 there were 7 Needs Reports,
- In 2023 there was 1 Needs Report,
- In 2024 there were 7 Needs Reports.

In total 17 students had Needs Reports and 16 students who had Needs Reports have successfully obtained their Master' degree. Note that Needs Report can refer to a variety of Needs, not necessarily connected to the Hybrid Classroom only.

Elsewhere in this document, we describe how a HALC needs to be equipped to make sure it is suitable for students with disabilities. Adhering to this advice is part of the minimum requirements that we defined. The inventory in the next chapter includes questions on how each CHARM institution operationalizes this requirement.

In general, Universal Design for Learning is the new approach, meaning that everyone benefits from an inclusive classroom, not only those with a needs report. The HALC evaluation tool described further down in this document (the LSRS tool) includes elements that ensure accessibility: evaluation criterion number 7.1 is physical inclusion and universal design.

Further information on Inclusivity is available in the article: Fazekas, Á. S. (2021). Inclusive Education. In: Haarhuis, J., & van Vugt, S. Pedagogical Guidelines (Deliverable D4.1, CHARM-EU). CHARM-EU. https://www.charm-eu.eu/wp-content/uploads/2024/09/D4.1-Pedagogical-Guidelines.pdf

## Additional resources on diversity, equity and inclusion

The Diversity, Equity and Inclusion (DEI) working group has generated in the past years a set of documents and guidelines to mainstream and favour inclusion and diversity in the CHARM-EU hybrid classroom. These documents include:

- CHARM-EU Inclusivity Plan: https://www.charm-eu.eu/toolkit/charm-eu-inclusivity-plan
- Inclusivity tips for CHARM-EU Educators: https://www.charm-eu.eu/toolkit/inclusivity-tips-charm-eu-educators
- Inclusivity statement in the CHARM-EU Master's Module descriptors: https://www.charm-eu.eu/toolkit/inclusivity-statement-charm-eu-masters-module-descriptors
- Creating an inclusive and warm welcome in your CHARM-EU module: https://www.charm-eu.eu/toolkit/creating-inclusive-and-warm-welcome-your-charm-eu-module

# 10. INSTITUTIONAL RESPONSIBILITIES

The availability of hybrid active learning classrooms is essential for the smooth running of the educational programme in CHARM-EU's Master. In preparation for participation in the CHARM Master's programme, we made sure that all partner institutions were provisioned with a suitable room to perform the hybrid teaching, as defined and agreed upon. Some partner universities already had a suitable classroom, such as Åbo Akademi and University in Bergen. Other partners had to specifically find and equip a suitable room, as described in the chapter about implementation of classrooms. The minimum requirements to be met are described in this deliverable.

What institutional responsibilities have been defined:

- In CHARM specifically,
- in the participating universities, more in general?

## Specific institutional responsibilities in CHARM towards HALCs

The programme cannot take place without a suitable classroom. The institutional responsibility therefore is, first and foremost, to ensure that suitable classrooms are or become available at each institution by the time that this institution physically hosts a group of CHARM-EU Master students.

When acceding to the CHARM Master's programme, the partner universities commit to fulfilling the needed requirements for running the Master's programme. That includes the availability of a suitable HALC. The requirements and availability of suitable classrooms have been specifically discussed in the latest enlargement round of the alliance. Also, the budget of the Master's programme contains a line for the ongoing maintenance of the HALCs.

On a more granular level, different people carry responsibility:

- The **CHARM-EU manager** is in charge of making arrangements for this within the institution. This typically includes arrangements about the financial aspects and about the availability of the classrooms to CHARM.
- The university's **Facilities department** will most likely be in charge of the practical work of furnishing, equipping and maintaining the rooms.
- **Educationalists** are involved in providing training about the didactic application of hybrid teaching and learning. (The 'Start to Teach' Course consisting of 3 sessions is running currently for the second time.)
- The **Joint Virtual Administrative Office** oversees making the bookings for the hybrid classrooms, either from a central booking office or from a specific office that deals with specially furnished rooms.

## General institutional responsibilities for maintaining classrooms

While hybrid active learning classrooms are specifically equipped, they are also 'just' classrooms and usually are administered and maintained within the regular classroom maintenance cycle of the university's facilities. Maintenance tasks may include:

- **Technology maintenance:** regular inspection and updating of screens, microphones, speakers, cameras and power outlets.

- **Software updates:** ensuring classroom computers and software (e.g. Microsoft Teams) are functioning.
- **Network and connectivity checks**: testing Wi-Fi access points, wired connections, and bandwidth to support both in-person and remote participants.
- **Furniture adjustments**: repairing or rearranging desks and chairs.

Please note: specific requirements for e.g., replacing furniture or updating software may depend on institution-specific arrangements. These can include contracts with different suppliers, or different requirements may apply regarding sustainability or privacy policy.

# 11. OPERATIONALIZATION ACROSS THE ALLIANCE

As described above, we are striving for harmonization in processes and procedures. That said, the local procedures for operationalizing the hybrid active learning classrooms can differ quite widely. Once the classrooms are equipped and actively used, the local procedures will apply to how they can be booked, how users are onboarded and how the rooms are maintained. We have made a mapping of this operationalization.

| | 1. How many hybrid active learning classrooms suitable for CHARM teaching do you have at your institution? (according to the minimum requirements) | 2. Are these rooms used exclusively by CHARM or also by other users? |
|---|---|---|
| **AAU** | 4 (+2 later on 2025) | No, not exclusive |
| **ELTE** | 1 | Yes, exclusively used by CHARM |
| **HRW** | 3 | No – most of them were planned in advance of HRW's participation in the alliance |
| **JMU** | 1 (fully functional in November 25, for 25 students) | Also open for other users when not occupied by CHARM. |
| **UB** | 10 | 1 room is exclusively for CHARM-EU, the others are managed by Faculties |
| **UiB** | 1 classroom prepared for CHARM (20 students) - UiB has more, but they will not be used for CHARM purposes | For CHARM students only, when they are on campus. Otherwise, open for others (limited) |
| **UM** | 2 classrooms "CHARM branded",<br>1 more that we can borrow for CHARM as well. | Principally for CHARM but open to host other courses / activities |
| **UU** | 2 classrooms (25 students / 20 students) | In use by the whole University |
| **TCD** | 1 classroom (25 students) | Currently in use by CHARM-EU and one other School. |

| | Who administers the bookings of these classrooms? | Does CHARM get priority for the usage of these rooms? |
|---|---|---|
| **AAU** | It is part of the ordinary scheduling of rooms. | Yes, CHARM will have a dedicated room. |
| **ELTE** | There is no booking process, the room is exclusively used by CHARM and is always available | Yes, it's a dedicated CHARM room. |
| **HRW** | Central booking via semester management | No. We generally prioritize classes that use the rooms for what they were built for, meaning genuine synchronous hybrid teaching and learning. Many classes that fall into |

| | | |
|---|---|---|
| | | this category are CHARM-EU classes, so there is an indirect CHARM-EU prioritization. |
| **JMU** | Internal booking system | Yes, it is built according to CHARM´s hybrid classroom model and therefore not exclusively, but mainly for CHARM. |
| **UB** | The CHARM-EU hybrid classroom is booked directly by the CHARM-EU team. The 10 hybrid rooms in Faculties, are booked through the Faculties. | Only for the CHARM-EU hybrid classroom |
| **UiB** | CHARM-EU team, but added to central booking system with access for some faculty staff | Yes |
| **UM** | CHARM-EU team (Local JVAO) | yes |
| **UU** | JVAO > Room booking at the faculty & central level > Facility services | Yes, if we apply on time, before everyone else. |
| **TCD** | CHARM-EU Team | Yes |

| | 3. **What is the procedure for making a booking?** | 4. **In which period in time does the information become available whether the rooms have been allocated as requested?** |
|---|---|---|
| **AAU** | It is part of the ordinary scheduling of rooms at AAU. | It is part of the ordinary scheduling, usually in May the previous academic year. |
| **ELTE** | There is no booking process, the room is exclusively used by CHARM and is always available | It's always available. |
| **HRW** | Central query in advance of every semester & internal booking process | Teachers will be notified at least 3 weeks before the start of the semester. |
| **JMU** | Internal platform | One day |
| **UB** | For CHARM-EU hybrid classroom, it is booked by default for CHARM-EU activities. If someone outside of CHARM-EU needs to book it, they must contact CHARM-EU office. For the other rooms, through the Faculty internal procedures (sometimes with economic cost). | CHARM-EU hybrid room is permanently available for CHARM-EU activities |
| **UiB** | For now: A limited number of faculty staff can book the room in the central booking system. Other users must contact the CHARM team. When we have CHARM students, the room will be blocked for other users. | Always available if not planned otherwise |
| **UM** | Not defined yet. | May |

| | | |
|---|---|---|
| **UU** | It is quite a lengthy procedure with multiple stakeholders involved.<br><br>The process starts 1 semester (February) before the start of the teaching (September-January). | May-June |
| **TCD** | Contacting CHARM-EU team | Depends on the year and the room we get. Usually May-June |

| | **What back-up is available if the HALC cannot be used at any one point in time?** | **How do you ensure that the room is suitable for students with inclusivity needs?** |
|---|---|---|
| **AAU** | There are some other rooms with some of the hybrid functionalities which we sometimes can use. | All our rooms are suitable for students with physical disabilities. |
| **ELTE** | There's a separate hybrid classroom in the same building. | The room is accessible via elevators and has flexible furniture |
| **HRW** | There's a total of 3 hybrid rooms and several others that are "hybrid-ready" (i.e. rooms with large smartboards) | The room is accessible via elevators and has flexible furniture |
| **JMU** | There are other hybrid rooms | The room is accessible via elevators. |
| **UB** | IT services of each Faculty. In the case of CHARM-EU hybrid classroom, as it is located in the Historical Building (also named Central Building), it is managed by the Central IT Services. | The room is accessible to students with special needs and has flexible furniture. |
| **UiB** | Depends on the time (frame). There are other hybrid rooms, but they may be occupied. For shorter time slots, we could use meeting rooms in the central administrative building. | Elevators and flexible furniture. Located in the central student centre also hosting the International centre for students, student cantina, welfare services, sports services etc. |
| **UM** | There are 2 rooms (so back up is easier). If both are not available then the local library (same building of the HALC) has similar spaces often available. | The entire building fulfils French accessibility rules and regulation. The HALC are new (opening in 2025) and also fulfill the same regulation. There is also a specific protocol for fire-evacuation and people with disabilities that is recalled / explained once a year to all the staff accessing the floor where the HALC are situated. |
| **UU** | There are some other rooms with some of the hybrid functionalities which we sometimes can use. | Accessibility is part of the outfitting and requirements. Both for the rooms and the building.<br><br>Also, the HALCS have a 'quiet' place where students can withdraw for a while if there are too many triggers. |
| **TCD** | None quickly, but we could source one with similar but not ideal functionality in a few days. | We have a policy on universal access and physical access information. |

| | What local resources or contact persons are available to assist students with disabilities in their usage of the classrooms? | What support is available to teaching staff on the spot if problems arise? |
|---|---|---|
| **AAU** | The study advisors make a plan together with students with disabilities to make sure that their needs are accommodated. | It is part of the ordinary AV-support. |
| **ELTE** | Depending on the needs, it could be ELTE studen't services, or for actual in-room help, there's always a TA present, | TA is always present in the room, and IT support is a phonecall away. |
| **HRW** | Central service point for students with inclusivity needs | Online tutorials and troubleshooting guide accessible via QR code, general IT-service hotline |
| **JMU** | JMU´s CHARM-EU-office is the first contact point and will support | TA is on site and can contact IT services for help. |
| **UB** | Students' Attention Service | IT services from the Central Services |
| **UiB** | Depends on the actual need, could be UiBs central learning support team or the faculty contact person for individual adaptation. Or the Student Welfare Organisation. The CHARM team or TA can be the first contact point if easier. | TA is there. Faculty IT support is also available. |
| **UM** | The TA and the staff on the floor is in charge of it.<br><br>Further spaces are also available for those students that need quiet moments during the day. | TA is there, IT support is also available in the building. |
| **UU** | The TAs will help and there is back-up IT support if needed. | IT support are very quick to help out. |
| **TCD** | We have a policy on universal access and physical access information. | TA is present. IT is available via telephone. |

| | What onboarding tools are available to first-time users of these rooms? | How and by whom are these rooms (periodically) maintained? |
|---|---|---|
| **AAU** | The educationalist keeps training and digimentor can give hands-on individual or group instructions. | It is part of the regular AV-support. |
| **ELTE** | Manual introduction to the room, and a training session on both the technical facilities and teaching methods are available before the usage of the room. On-site support provided by the TA. | ELTE IT Directorate |

| | | |
|---|---|---|
| **HRW** | Guided tours & on-site trainings, virtual 3D tour, online tutorials | IT services, facility management, library staff |
| **JMU** | TAs will help as well as JMU´s CHARM-EU-office staff | JMU´s technical services |
| **UB** | A training session on both technicalities and teaching methods provided by the CHARM-EU director and coordinator of MGCS | IT services from the Central Services |
| **UiB** | Manual introduction to the room. Maybe we can make a virtual introduction as well. | At the moment by the CHARM-team, but the Faculty of Humanities "owns" the room and will maintain this. |
| **UM** | Manual and TA sort introduction to the use of HALC. | At the moment by the CHARM EU team mainly but a more detailed protocol should be prepared in the upcoming months. |
| **UU** | Instruction manual | Department of Future Learning Spaces and Department of 'Onderwijsruimten' |
| **TCD** | Manual and TA. Module Coordinators and TAs are given in-person technical onboarding. | CHARM-EU Team maintains |

| | **Is there a protocol according to which the rooms are maintained?** |
|---|---|
| **AAU** | It is part of the regular AV- maintenance. |
| **ELTE** | Part of the Directorate's regular maintenance plan, but the specifics are work in progress |
| **HRW** | Work in progress |
| **JMU** | Not yet. |
| **UB** | Annual revision mandatory |
| **UiB** | Not yet / will be part of the faculty`s regular maintenance plan |
| **UM** | Not yet. |
| **UU** | The room is part of the regular maintenance cycle of the department 'management of educational spaces' |
| **TCD** | No |

# Conclusions and Insights about operationalization

- Most institutions have **1–2 Hybrid Active Learning Classrooms (HALCs)**. **UB** and **ÅAU** are exceptions, with **ten** and **six** rooms respectively. While the rooms are not exclusively dedicated to CHARM-EU activities, CHARM-EU is typically given **priority in scheduling and use**.
- At institutions where HALCs are **not fully dedicated to CHARM-EU**, **centralized scheduling systems and processes** are generally used for room allocation.
- **Some institutions**, but not all, have a **local CHARM-EU team** or a **Joint Virtual Administrative Office (JVAO)** responsible for tasks such as **room bookings and coordination**.
- **All institutions have contingency plans** in place in case their designated HALC becomes temporarily unavailable.
- **All HALCs within the CHARM-EU alliance are accessible to students with disabilities**, and predefined support roles exist to assist when needed—most commonly in the form of a **Teaching Assistant (TA)**.
- **Not all institutions mention TAs**, indicating variation in support structures.
- **All institutions have onboarding processes** in place to **train new users and support teaching staff** in the use of HALCs.
- Each institution has an **assigned team responsible for maintaining the HALCs**, although **some lack formalized maintenance protocols**.

### Local differences remain

Differences in institutional settings, organizational structures, internal regulations, and national laws meant that the implementation of HALC followed different timelines across the partner universities. Nevertheless, the CHARM-EU Alliance successfully developed these learning spaces, and by the 2025/2026 academic year, all institutions had established the minimum viable settings. Some classrooms were funded through the CHARM-EU budget, while others were financed by local institutional resources. CHARM staff acts as a central coordinating body, helping to align diverse administrative structures and maintenance strategies. Throughout the design process, inclusion and accessibility have remained key priorities, reflecting the alliance's strong commitment to its founding value of inclusivity.

By contrast, the harmonization of academic calendars proved far more challenging and was deemed unfeasible from the outset. Each institution operates on its own calendar, shaped by factors such as national holidays, policy priorities, and even climatic conditions. These differences make full alignment impossible at an institutional level. However, the alliance found a creative solution to offer a shared learning experience for the MSc in Global Challenges for Sustainability: the development of a dedicated academic calendar designed to navigate these constraints. While effective for this joint program, such a calendar cannot currently be extended to other local courses, as individual institutions—and, in many cases, national education authorities—are not yet prepared to accommodate such significant changes.

# 12. HARMONIZATION OF ACADEMIC CALENDARS in relation to CHARM-EU hybrid classrooms

In the CHARM-EU Master's Programme "Global Challenges for Sustainability", the hybrid classrooms are the most essential tool to give shape to the educational programme.

The CHARM Joint Virtual Administrative Office of CHARM-EU is responsible for organizing this in practice. In this chapter, we will describe how that works, in an operational sense.

Meet Femke ten Bloemendal, Senior Joint Virtual Administrative Officer at Utrecht University. She has been involved in the organization of the CHARM-EU Master programme for several years and knows the challenges very well that go with organizing inter-institutional education.

**FEMKE TEN BLOEMENDAL**
**SENIOR JOINT VIRTUAL ADMINISTRATIVE OFFICER**

**Femke ten Bloemendal** has been the senior JVAO (Joint Virtual Administrative Officer) Utrecht University for the past two years. She has worked in the higher education sector for 20 years, mostly in the field of international exchange, admissions, study support and services for (international) students.

Her main tasks within the JVAO include Assessment/education, administrative procedures and policies.

She has a BA and a MA in Social sciences with a focus on youth, law and inclusivity.

Q: Femke, can you tell us in which period the JVAO starts to organize the academic programme for the next year? Which steps need to be taken to plan the educational programme?

A: We start around January by making a joint academic calendar. This determines the days available for teaching, the holidays, reading weeks, etc.

After the academic calendar is approved, we can start with hybrid classroom reservations and the planning of the teaching days and hours for each module. This is done in close cooperation with the teaching staff and the local organization responsible for the hybrid facilities. We also take into account the advice of the DEI office with regards to students with special needs, since all the hybrid classrooms meet the inclusivity requirements. This is not a big problem, but we check, nonetheless.

This process takes 2- 4 months. It takes a lot of coordination between the locations to ensure we have the required number of teaching hours, observe the correct holidays, and time zones. Our goal is to make the timetable available at least a month before the start of the teaching. The timetable is made available through Moodle, which enables students and teachers to synchronize it with their agendas.

Q: How does the academic programme and the availability of the HALCs interact? Do you first agree on the dates and then the institutional coordinators secure the needed classrooms? Or the other way around?

A: In general, our viewpoint is that teaching comes first. The teaching determines logistics. In reality, it is more a give and take. Which means that in some cases the room reservations are made without knowing the exact content of the teaching. Also, in some cases room bookings are cancelled when the final timetable is finished. This is another reason to aim for the timetable to be completed as soon as possible, so more people can use the HALCs and they are not left standing empty.

Q: In Finland, the new academic year starts in late August, in Germany it starts in mid-October. How does this affect the planning of the CHARM programme, specifically with regards to the HALCs?

A: From the beginning of the CHARM-EU alliance it was determined that the Master programme runs from September to July. This is rather long for some locations, but it did not cause major problems. With the TOL courses, the local academic calendar and teaching days are observed, and students can fit this in their schedule as they want. Sometimes they may want to take a course at another university while their own university is closed for holidays.

It does cause some confusion sometimes if students are not aware that these differences exist throughout Europe.

Q: The different countries in CHARM have different public holidays. How do you deal with this in the educational programme of CHARM?

A: In the academic calendar we combine all the bank, national and regional holidays observed in the CHARM-EU locations, but we do not adhere to all of them, otherwise there would hardly be any teaching days left. The rule is that we observe the public holidays of the locations where the teaching takes place. Some courses are taught in 5 locations at the same time, so we take into account the public holidays of those 5 locations. For other courses it may be just two locations, which makes it a lot easier.

This is most logical for the students, even though it sometimes asks for more flexibility from the teachers, for example when a teacher from Utrecht is teaching in the Water track and this track is not located in Utrecht but for example taught at Barcelona and Montpellier.

With the time differences between the partner institutions, we do the same thing. The activities that involve all the nine locations we ensure that these take place between 10 CET and 16 CET to ensure it is in the working hours of both Ireland and Finland.

Q: Do the different governance bodies of CHARM discuss ways in which we could harmonize our academic calendars? What responsibility would you see for this at the local level, at CHARM level, at national level and at European level?

A: In order to harmonize, we first need to be aware of the differences, and this is the point we are at now. For now, harmonizing is done on an operational level by the administrative staff, by reaching consensus on the most viable option for the students.

# 13. QUALITY ASSURANCE, EVALUATION, FEEDBACK

## Initial inventory

At the beginning of the work in WP7, in spring 2023, the hybrid classroom team performed a thorough inventory of the existing and planned hybrid active learning classrooms in CHARM. We collected feedback from the previous phases and discussed how the feedback could be incorporated into adjustments. The integral results were discussed in the team and led to the generic insights described elsewhere in this deliverable.

## Phase reviews as continuous evaluation and feedback

The CHARM-EU Quality Office, coordinated at Trinity College Dublin, has an important role in the feedback cycle. They perform a semi-annual survey among students and staff of the CHARM Master's programme in which a large number of feedback indicators are gathered, including a number of questions on the HALCs.

From past surveys, results that were relevant for the HALC included issues with audio quality at specific location, the lack of fresh air at another institution, etcetera. Results of these phase reviews are provided to the hybrid classroom team and from there are forwarded to the local responsible who can take charge of solving problems that may have arisen.

## Quality assurance protocol for CHARM-EU Hybrid Active Learning Classrooms

In this deliverable, we have agreed on a set of minimum requirements for our CHARM-EU HALCs. This required an updated inventory to map whether our existing classrooms meet those requirements and/or to find out where improvements are needed.

### Educause tool 'Learning Spaces Rating System'

For this purpose, we are making use to an international self-evaluation tool that has already proven its value in similar contexts: the Learning Space Rating System developed by Educause. This means that before each phase of the MSc, each hybrid classroom that is listed for active use in the upcoming phase, should be audited using this tool.

We performed a mapping of this international tool to our own minimum requirements, and we found the following discrepancies:

### Mapping CHARM requirements against LSRS

| CHARM minimum requirements not covered by Learning Space Rating System |
|---|
| Classroom should reflect transdisciplinarity and promote inclusivity |
| Starting a session from teacher's own laptop needs to be possible. (Essential) |
| The teacher should be able to see how he/she is being viewed. |
| It should be visible for remote participants with which locations they are connecting. |

| |
|---|
| Learning Space Rating System points that could be relevant to us but are not covered by CHARM minimum requirements |
| Unobstructed views to see one another and the content |
| Network Connectivity; ensuring adequate network performance and access for all participants |

# CHARM-EU score sheet HALC quality audit

On the basis of these insights, we made our own scoresheet for CHARM-EU HALC quality assurance. This is very largely based on Educause's Learning Space Rating System, but it lists an extra section of CHARM-EU specific criteria. The score sheet can be found in the annex.

**CHARM-EU HALC quality audit policy**

To explain the usage of this tool, we put together a draft policy, explaining why, how, by whom, and how often this review will be performed. A key statement is that the audit should have a formative character, not a punitive one. The draft policy can be found in the annex.

**Results first HALC quality audit**

As an initial application, we ran this audit with respect to the HALC classrooms in:

- Utrecht
- Budapest
- Wurzburg
- Dublin

This got us the insights as presented in the Annex.
**-> See the Annex for the integral quality assurance procedure for HALCs in CHARM-EU.**

# 14. APPLYING THE MINIMUM REQUIREMENTS IN PRACTICE

The team of Julius-Maximilians-Universität Würzburg (JMU) was the first team who built up a hybrid active learning classroom from scratch, with the list of minimum requirements in hand.

Meet Martin Kufferath-Sieberin, CHARM-EU Manager at JMU, and let's hear from him how he experienced the process of working with the minimum requirements. JMU will be hosting students from the CHARM-EU Master's programme in september 2025 for the first time.

**MARTIN KUFFERATH-SIEBERIN**
**HEAD OF INTERNATIONAL NETWORKING AND CHARM-EU MANAGER AT JULIUS-MAXIMILIAN UNIVERSITY OF WÜRZBURG, GERMANY**

Martin Kufferath-Sieberin is CHARM-EU Manager at Julius-Maximilian University of Würzburg, Germany, and serves as head for the department International Networking.

He is also actively engaged in strategic European higher education collaboration, contributing to the advancement of transnational university alliances. In his dual role, he is responsible for overseeing the implementation of the CHARM-EU Alliance at the institutional level, fostering cross-border academic partnerships, and strengthening the university's global engagement.

Q: Martin, you have just completed the process of arranging and equipping a hybrid active learning classroom at JMU. How would you describe the process as a whole?

A: At JMU the process was very challenging. While we have numerous hybridly equipped rooms in our university, the number of hybridly held seminars has significantly decreased since the end of the COVID pandemic. That posed a challenge in communicating the demands which the specific setup of the CHARM-EU Hybrid Active Classroom creates. It was very helpful to have the supporting documents and models for orientation because they gave us very specific outlines for our internal process.

Q: Did the list of requirements help you to organize what you needed? How exactly did you use it?

A: The list of requirements was especially helpful, because it helped significantly identify the potential equipment for the HALC when communicating with our external service providers. It also helped create a realistic budget for internal communication at the university. It also made it easier to justify request for specific tools that are not usual in other hybrid rooms at our university.

Q: Did you encounter any elements in the minimum requirements that were especially hard to arrange? How did you deal with this?

A: Interestingly enough, the non-technical aspect of the classroom raised the most questions – especially the cozy corner. “Lounge elements” are not only uncommon in seminar rooms at our university and are also strongly regulated (i.e. fire and safety regulations, sitting positions). The CHARM-EU guidelines helped argue for implementation, but this is also where the most adaptations had to happen.

Q: What recommendations would you make to anyone who may now be facing the same process?

A: I strongly recommend using the HALC model and the minimum requirements to communicate to the relevant services at each institution. CHARM-EU and the specific technological requirements that go along with CHARM-EU teaching are not always easy to grasp. The clearly outlined and very well justified minimum requirements helped us a lot to get the idea of the HALC across and translate it to our own JMU circumstances.

# 15. SHARING KNOWLEDGE IN MICRO-CREDENTIAL COURSE

CHARM-EU is one of the alliances with the most in-depth experiences in working with hybrid active learning classrooms in inter-institutional education. We are committed to sharing the insights from our pioneering work with others. To this end, we have set up and ran a micro-credentials course for professional teachers both within and external to the Alliance “Innovative Teaching in Inter-Institutional Hybrid Classrooms”. This was done in a broad collaboration within the CHARM project team, mainly coordinated by WP3 and WP11.

## Mapping of interest and setting up the course

To understand how far other alliances or other stakeholders would be interested in our lessons learnt about hybrid active learning classrooms, we first ran market research. This included setting up a survey and spreading it broadly to other alliances and other potentially interested parties in April 2024. A total of 44 responses from Academic, Research, and Administrative staff members, and members of other Alliances were received.

The conclusions from the market research were that there was interest in the topic, as long as it was packaged in a small, stand-alone learning unit with a maximum duration of 1-25 hours and a hybrid format. Topics including learning strategies and curriculum design, communication strategies, and didactical support showed most interest from the results.

We discussed these results with the CHARM-EU Academic Council and Executive Board in November 2024 where it was approved and we decided to proceed with the setting up of this course. The course was quality reviewed both by CHARM-EU Academic Council, and Abo Akademi University as the accrediting university for the micro-credential.

An international team was put together to prepare the course from Utrecht University, Trinity College Dublin, Åbo Akademi University, and Julius-Maximilians-University Würzburg, sourced from pedagogical experts in WP3, WP11, WP7 and teachers from the MSc in Global Challenges for Sustainability. The team included representatives with different backgrounds: academics from the CHARM team, educationalists, instructional designers, and experts in hybrid classroom implementation.

## Execution of the course

The course ran from 12.05.2025 to 19.06.2025 and there were 12 participants from multiple institutions and diverse backgrounds. Participants sought to improve the implementation of hybrid classrooms, learn how to teach and facilitate in these spaces, and prepare for a future where these classrooms may be more commonplace.

The course was centered around key learning objectives identified by the initial market analysis and internal discussions with the teaching team

- Design and apply inter-institutional hybrid classroom curricula, learning activities, assessments, and best practices.
- Develop role descriptions and responsibilities for inter-institutional hybrid classroom participants.
- Explain and compare pedagogical theories that apply to inter-institutional hybrid classrooms.
- Establish positive communication practices for an inter-institutional hybrid classroom.
- Describe the basic technological requirements for an inter-institutional hybrid classroom.

Over the six-week period, three synchronous and three asynchronous sessions were held with the students culminating in a project presentation session. In this session, the participants presented their plans for teaching in a hybrid classroom.

The course was evaluated by participants using a Miro Board and an anonymous survey. All respondents felt that it helped them rethink teaching their practices and prepared them for teaching in a hybrid classroom. No participants reported a negative experience.

These results suggest that this course has had an impact on teachers preparing to teach in a hybrid classroom giving them confidence, best practices, and resources to support them.

### Future

Based on the experiences of this first edition of the micro-credential on hybrid classrooms, we are expecting to offer another version of the course in 2026.

# 16. ANNOTATED BIBLIOGRAPHY

The following Research-based publications are recommended reading, and relevant to the design, development and implementation of a hybrid classroom.
Many of these present best practices and guidelines for implementing and teaching in a hybrid classroom.

**Ahmad, S.B.B.S., Zakaria, S.N.A.B.S. (2024). Hybrid on a Budget: An Autoethnographic Study. In: Badioze Zaman, H., et al. Advances in Visual Informatics. IVIC 2023. Lecture Notes in Computer Science, vol 14322. Springer, Singapore. https://doi.org/10.1007/978-981-99-7339-2_17**

Personal experiences from two hybrid classroom practitioners are presented in this autoethnographic study. Some interesting best practices and perspectives on implementing a low-cost hybrid classroom are described.

**Caulfield, J. (2012) How to Design and Teach a Hybrid Course: Achieving Student-Centered Learning through Blended Classroom, Online and Experiential Activities; Stylus Publishing, LLC.: Sterling, VA, USA,**

This is a practical handbook for designing and teaching hybrid or blended courses and focuses on outcomes-based practice. It offers criteria for determining the appropriate mix of face-to-face, online, and experiential components for a course, and guidance on creating social presence online. The section on designing and teaching in the hybrid environment describes promoting and managing discussion, using small groups, creating opportunities for student feedback, and ensuring that students' learning expectations are met.

**Dolfing, R., & Dijstelbloem, L. (2022). Knowledge development and teacher professionalisation in Future Learning Spaces [Brochure]. Centre for Academic Teaching and Learning, Utrecht University. Heidelberglaan 3, 3584 CS Utrecht, The Netherlands.**
**https://www.uu.nl/sites/default/files/FLS%20evaluation%20report_EN_0.pdf**

This evaluation report describes the Utrecht University Future Learning Spaces (FLS) project and describes how the layout of teaching spaces can contribute to the design of interactive and activating teaching. It provides some strong recommendations for designing interactive learning activities in a FLS including hybrid learning environments.

**Graves, J. L., Hasan, E., & Varao-Sousa, T. L. (2024). Understanding the hybrid classroom in economics: A case study. International Review of Economics Education, 45, 100282.**
**https://www.sciencedirect.com/science/article/pii/S1477388023000233?via%3Dihub**

Experiences from an Economics course using a hybrid classroom in a Canadian university are presented in this research. Student experiences and recommendations for hybrid design are explored and best practices shared.

**Griffin D, Gallagher S, Vigano V, Mousa D, Van Vugt S, Lodder A, Byrne JR. Best Practices for Sustainable Inter-Institutional Hybrid Learning at CHARM European University. *Education Sciences*. 2022; 12(11):797.**
**https://doi.org/10.3390/educsci12110797**

This publication describes the experiences of CHARM-EU staff with their development of the CHARM-EU hybrid classroom. Perspectives from a technical expert on virtual learning environments, an educationalist who supports teaching staff, and a classroom-based teaching assistant are presented. Integrating educational principles and module learning outcomes, aligning physical build specifications, testing hardware and software, identifying pedagogical needs, facilitating professional development, and ensuring adequate time for testing is crucial for successful hybrid classroom delivery.

**Feubli, P., MacKevett, D., & Schwarz, J. (2023). Hybrid teaching and learning: A conjoint analysis of student preferences in online and onsite scenarios. Journal of Computer Assisted Learning.**
https://onlinelibrary.wiley.com/doi/10.1111/jcal.12913

This research from Lucerne University focuses on assisting policymakers in making informed decisions on the implementation of hybrid teaching across degree programs. It includes recommendations for conditions for

student attendance in an online or in-person format based on their preferences. For example, where the content is perceived as more difficult, students had a preference to study in person.

**Fuchs, I., Dolfing, R., Dijstelbloem, L., & Frijns, T. (2024). Designing Active Learning Spaces: What to Consider? [Brochure]. The Centre for Academic Teaching and Learning, Utrecht University.**

This literature review explores the design and layout of active learning spaces in higher education. It describes key aspects including the importance of connectedness through visibility, the significance of connectedness through mobility, and the connectedness through learning tools. Recommendations and insights are provided for practitioners to create effective hybrid learning environments.

**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, 103682.**
**https://www.sciencedirect.com/science/article/pii/S0360131519302350**

This study explores student engagement in a hybrid classroom and focuses on remote student engagement and motivation in this environment. It found that quizzes are positively related to all students' motivation, and they could be used to improve student experience.

**Raes, A., Detienne, L., Windey, I. et al. A systematic literature review on synchronous hybrid learning: gaps identified. Learning Environ Res 23, 269–290 (2020). https://doi.org/10.1007/s10984-019-09303-z**

This research presents a literature review of synchronous hybrid learning, and it synthesizes its benefits and challenges. It describes design guidelines to address challenges and explores implications for policy and practice.

**Raes, A. (2022). Exploring student and teacher experiences in hybrid learning environments: Does presence matter?. *Postdigital Science and Education*, *4*(1), 138-159.**
**https://link.springer.com/article/10.1007/s42438-021-00274-0**

This study describes experiences within the KU Leuven hybrid classroom, and explores student engagement, levels of presence, and teacher engagement within this space. Different hybrid learning designs and practices through the lens of the activity-centred analysis and design (ACAD) framework are presented and analysed. The research did not find any significant differences between the levels of presence (i.e. physical and remote presence) in terms of student conceptual understanding, yet significant differences were found regarding affective engagement, including intrinsic motivation, relatedness, experienced pressure, cognitive absorption, autotelic experience, sense of presence and sense of belonging.

**SURF. (2021). Hybrid Classrooms: A Practical Guide. Retrieved from https://www.surf.nl/files/2021-09/surf-hybrid-classrooms.pdf**

This infographic provides key statistics, technical components, example setups, and practical activities from a Dutch perspective on hybrid classrooms.

**Triyason, T., Tassanaviboon, A., & Kanthamanon, P. (2020, July). Hybrid classroom: Designing for the new normal after COVID-19 pandemic. In *Proceedings of the 11th International Conference on Advances in Information Technology* (pp. 1-8). https://dl.acm.org/doi/pdf/10.1145/3406601.3406635**

This research, based in the King Mongkut's University of Technology Thonburi, Thailand, presents useful guidelines for a hybrid classroom in terms of planning and implementation.

**Ulla, M. B., & Perales, W. F. (2022, June). Hybrid teaching: Conceptualization through practice for the post COVID19 pandemic education. In *Frontiers in Education* (Vol. 7, p. 924594). Frontiers Media SA.**
**https://www.frontiersin.org/articles/10.3389/feduc.2022.924594/full**

Brief perspectives and teaching practices of teachers in a Thai hybrid classroom are presented in this paper during the COVID-19 pandemic. Some sample activities are described.

**Verdecchia, R., & Lago, P. (2022). Tales of Hybrid Teaching in Software Engineering: Lessons Learned and Guidelines. IEEE Transactions on Education.** https://ieeexplore.ieee.org/document/9961157

This study explores how the experiences of students within a hybrid classroom can be improved, and the differences between online and hybrid student attendance and interaction in Dutch Software Engineering teaching. Results found that online attendance enables flexibility, while in-person attendance provides better interaction and focus. A range of interesting guidelines for hybrid classroom practitioners are presented.

# 17. ANNEX 1: TEACHER HANDBOOK

## Practical tips to manage your session

### Preparing for a hybrid scenario

- When planning your lessons, take a "remote first" approach and try to design all classroom activities from the perspective of the online participants.
- In your **didactic set-up**, use **interactive** tools like polls, quizzes (e.g., Wooclap, Mentimeter), and collaborative platforms (e.g., Google Docs, Padlet) to engage all students. Incorporate methods such as think-pair-share, peer instruction, and buzzgroups to stimulate active participation.
- Make use of the fact that you have students in different locations. For instance, form **local** working groups and then **compare** or **debate** the standpoints between the local groups in the hybrid plenary. Try to put **ownership** for elements of your class with the students themselves.
- Avoid **hybrid parallel sessions**. The noise will be distracting.
- Prepare some activities that can be used as a **fallback** in case there are connection problems. Let students know ahead of time what your activities are for the session and where they can be found. If something goes wrong, then you know that they can continue while you reconnect.
- Is there a **Teaching Assistant** at the remote locations? Use them as your co-teacher, to help facilitate the class at the remote locations.
- Think of integrating possibilities for informal exchange and teambuilding exercises from the beginning of your course.

### Teaching in a hybrid environment

- Arrive **early** to ensure the correct devices and software are ready for your session and connection is established.
- Make sure that the **cameras** of the pods are **turned on**, so you can see students from more up close.
- Say hello to all classrooms when you start the class. Name the remote classrooms, to **establish a connection** with the remote students.
- **Clarify** what students should do when they want to **speak up**. Raise their physical or their digital hand? Pass their question to the Teaching Assistant or put in the chat? Try to use the same method of participation in all classrooms so that all students have the same conditions.
- Make sure to **include** the **remote students** in the interactive part of your class. Call on students at remote locations just like on students at your own location.
- Having local breakout groups? **Time management** is crucial. Put a countdown clock on the screen with an alarm, so that all breakout groups are aware when they are expected back.
- Consider turning on the automatic **audio transcription ("Live Caption")**, if working in Teams.
- Maintain **eye contact** with the camera as much as possible. It may help you to look at students on screen from time to time but remember that when you do this, they see you looking away from the camera.
- You will be able to **move around** during a lecture but remember that doing so may change the **visibility** for remote students.
- Be careful **not** to leave email or **personal information visible** on screen. Only share a specific application on screen rather than your entire desktop.
- Beware of screen fatigue. Take frequent **breaks**, such as every 45 minutes – they are so important! Try to activate students during breaks (like stretching, walking around, looking out of the window...).

# 18. ANNEX 2: A TYPICAL CLASS IN A CHARM-EU HYBRID CLASSROOM

Here is an example from Utrecht University's classroom, describes how a typical class looks.

Always at the beginning:

- Teaching Assistant (TA) enters the classroom and starts up all systems.
- TA logs in to Teams and makes contact with UB, UM, TCD (I've omitted ELTE here, this is an example of Phase 1).
- 16 students join the classroom in Utrecht, 1 student dials in online and 1 student has informed the TA, JVAO and teacher that she is ill.
- In each classroom, the audio transcription is on. In the lecturer's classroom, the camera is on the lecturer, in the other classrooms the cameras are on the students.
- The lecturer is in TCD and welcomes the students.
- The TAs in UB, UM, TCD and UU make sure the students have stopped talking and are actively listening.

Example 1: Lecture

- The lecturer opens a PowerPoint presentation and starts the lecture.
- One of the TAs clicks 'record' to record the lecture.
- A student in Utrecht has a question, and lets the local TA know. The TA raises a virtual hand.
- The lecturer, or the TA, in TCD sees this hand and says that Utrecht can ask the question.
- The student in Utrecht uses the 'push to talk' button and asks the question, to which the teacher answers the question.
- After 45 minutes, the lecturer indicates it is time for a break and tells them what time they should be back, he gives a 10-minute break.
- The teacher, or the TA, in TCD makes sure their microphone is on mute. The cameras, however, remain on.
- The students in Utrecht get coffee, go to the toilet, chat and possibly ask questions to the TA.
- After 10 minutes, the lecturer, or the TA, in TCD unmutes the microphone again and continues the lecture.
- At the end of the lecture, the lecturer gives space for questions.
- Several students in different classrooms have a question. The students indicate this to their TA by raising their hand, or saying they have a question.
- TAs in different locations raise their virtual hand. The order of who gets to ask a question is displayed on Teams (based on who raised their hand first).
- The questions are asked, with TAs in most classrooms unmuting/muting the microphone.
- The teacher thanks the students for their attention and indicates that there will be a break before the next class.

Example 2: Guest lecture

- The guest speaker is present in Utrecht
- The TA in Utrecht receives the guest speaker and gives her a microphone. The TA asks if the guest speaker wants questions during the lecture, or only afterwards. To this, the guest speaker indicates that she would like to answer questions during the lecture already.
- The TA asks the guest speaker whether she wants to keep track of these questions herself (online and offline), or whether the TA can help. The guest speaker replies that she would like help from the TA.

- The TA in Utrecht helps the guest speaker to share the PowerPoint.
- One of the TAs starts the recording.
- The lecturer present in TCD welcomes the guest speaker and gives an introduction of the guest speaker.
- The guest speaker starts the lecture.
- A student in UB has a question, the TA raises the virtual hand.
- The TA in Utrecht sees this and makes sure the guest speaker knows about it.
- The guest speaker says Barcelona can ask the question.
- The TA in Barcelona unmutes the microphone and the student asks the question.
- The guest speaker answers the question.
- The student thanks the guest speaker and the TA in Barcelona mutes the microphone again
- The guest speaker continues the lecture.
- After an hour, the guest speaker finishes and thanks the students for their attention.
- The teacher in TCD thanks the guest speaker and indicates that the students can start their lunch break.
- One of the TAs stops the recording.
- The microphones and cameras go off during the break, but everyone remains in the Teams call.
- The TA in Utrecht thanks the guest speaker again and they have a chat.

Example 3: Groupwork

- The lecturer in TCD indicates that this session is for working with their international groups.
- The lecturer informs them that they have an hour to work with their group, and that they can ask questions of the lecturer if needed.
- The microphone in TCD goes on mute, but all the cameras in each classroom remain on.
- The students in Utrecht spread out around the classroom and put on their headphones.
- The students use their laptops to call their group spread across the different locations.
- One of the students in Utrecht has a question for the teacher in TCD. He asks the local TA if he can ask this question.
- The TA unmutes the microphone and the student can ask the question, to which the lecturer in TCD answers the question.
- Through the chat function, the TA in TCD indicates that the students have 5 minutes left before they have to hang up.
- After 5 minutes, the teacher in TCD unmutes, indicating that they can finish.
- The students hang up and walk back to where they were sitting before.
- The lecturer indicates that they can take a break.

Always at the end:

- TAs leave the Teams call and turn off the screens.
- Students linger in the room for a while and chat.
- The TAs chat with students and answer any questions.
- Students and TAs make sure the classrooms are tidy.

Problem! (This can happen at any time)

*Fire alarm*

- The fire alarm goes off in TCD. They are on mute, so the rest of the classrooms do not realise this.

- The TA in TCD lets the other TAs and the teacher know in the Whatsapp group chat that the fire alarm has gone off, and that they need to get off the call for a while.
- Depending on the moment, the teacher makes the decision whether they wait for TCD to return and then continue, or whether they can continue what they were doing.
- The TA in TCD continues to keep the TAs and teacher informed in the Whatsapp group.
- It was a false alarm, the students in TCD can return to the classroom after 10 minutes and join the Teams call again.

*Microphone*

- Barcelona hosts a guest lecturer.
- The guest speaker starts talking, whereupon the other classrooms find out that the microphone is not working properly, so the guest lecture cannot be heard properly.
- Depending on how bad the sound is, the TAs either let the Barcelona TA know via Whatsapp (if it is still reasonably audible but a small adjustment needs to be made), or they unmute themselves and let it be known via the general call that the guest lecturer is not audible.
- The TA in Barcelona makes the adjustments needed.
- The guest speaker can continue.

# 19. ANNEX 3: EXAMPLE OF BOOKING PLAN

HALCs are quite expensive classrooms. Once they are set up, what is their degree of use?
Here's an example of Utrecht University's HALC in the academic year 2022/2023.

**Use of HALC at UU**

**Week 2-8 (period 1), Acad. Year 2022/2023**

| Timeslot | BETA | GEO | SOC | LAW/EC | **Total** | Norm for usage | Percentage of norm |
|---|---|---|---|---|---|---|---|
| During day (9-17) | 27 | 130 | 23 | 7 | **186** | 172 | 109% |
| evening (17-19) | 0 | 2 | | 2 | **4** | 34 | 10% |

**Week 11-20 (period 2), Acad. Year 2022/2023**

| Timeslot | BETA | GEO | SOC | LAW/EC | **Total** | Norm for usage | Percentage of norm |
|---|---|---|---|---|---|---|---|
| During day (9-17) | 18 | 184 | 35 | | **237** | 196 | 121% |
| evening (17-19) | 0 | 0 | 0 | 0 | **0** | 39 | 0% |

CHARM-EU education is included in the figures for use by GEO department.

These figures show that the HALC of Utrecht University is **used very intensively** during the day. The norm level for classroom usage at Utrecht University is set at 70% of the total available hours. The HALC usage is clearly above that norm, with percentages of 109% of the norm in period 1 and 121% of the norm in period 2, effectively saying that the room is almost always in use during the day.

The evening hours, by contrast, still have a lot of availability. This opens up possibilities of using the HALC for other purposes than regular BA/MA education. See the example of ELTE, described by Márta Túrcsanyi-Szabó.

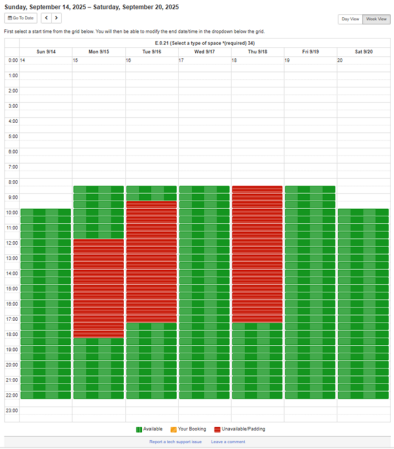
The figures also show that the GEO faculty, which houses CHARM-EU education, is the most substantial user. But the usage is certainly not limited to CHARM, also other faculties make use of the HALC facility for their education.

### Examples of booking density of a HALC at Utrecht University

The HALCs at Utrecht University are not reserved for exclusive use of CHARM-EU. They are shared by the whole university. CHARM-EU's Master's programme has to make arrangements each year with the booking office to ensure we have the necessary access to the rooms we need.

Here's an example of the booking intensity of our HALC in the city center of Utrecht.


Sunday, September 7, 2025 – Saturday, September 13, 2025
Go To Date
Day View
Week View
First select a start time from the grid below. You will then be able to modify the end date/time in the dropdown below the grid.
E.0.21 (Select a type of space *(required) 34)
Sun 9/7
Mon 9/8
Tue 9/9
Wed 9/10
Thu 9/11
Fri 9/12
Sat 9/13
Available
Your Booking
Unavailable/Padding
Report a tech support issue
Leave a comment


Sunday, September 14, 2025 – Saturday, September 20, 2025
Go To Date
Day View
Week View
First select a start time from the grid below. You will then be able to modify the end date/time in the dropdown below the grid.
E.0.21 (Select a type of space *(required) 34)
Sun 9/14
Mon 9/15
Tue 9/16
Wed 9/17
Thu 9/18
Fri 9/19
Sat 9/20
Available
Your Booking
Unavailable/Padding
Report a tech support issue
Leave a comment


Sunday, September 21, 2025 – Saturday, September 27, 2025
Go To Date
Day View
Week View
First select a start time from the grid below. You will then be able to modify the end date/time in the dropdown below the grid.
E.0.21 (Select a type of space *(required) 34)
Sun 9/21
Mon 9/22
Tue 9/23
Wed 9/24
Thu 9/25
Fri 9/26
Sat 9/27
Available
Your Booking
Unavailable/Padding
Report a tech support issue
Leave a comment


Sunday, September 28, 2025 – Saturday, October 4, 2025
Go To Date
Day View
Week View
First select a start time from the grid below. You will then be able to modify the end date/time in the dropdown below the grid.
E.0.21 (Select a type of space *(required) 34)
Sun 9/28
Mon 9/29
Tue 9/30
Wed 10/1
Thu 10/2
Fri 10/3
Sat 10/4
Available
Your Booking
Unavailable/Padding
Report a tech support issue
Leave a comment

# 20. ANNEX 4: QUALITY AUDIT PROCEDURE

## 1. Context

The CHARM-EU Hybrid Classroom model is a core component of CHARM-EU' s inter-institutional learning delivery. As these spaces form the foundation for hybrid and inter-institutional learning, it is essential that they maintain high quality in terms of pedagogy, technology, inclusivity, and accessibility. The Learning Space Rating System (LSRS)[1], in addition to student phase review surveys, will be used as a shared benchmarking framework to evaluate and enhance the quality of each HC environment before each phase or CHARM-EU activities where relevant.

## 2. Purpose

The purpose of this procedure is to establish a systematic, repeatable, and collaborative process for auditing hybrid classrooms within the CHARM-EU alliance using an internationally recognized tool such as the LSRS, in combination with CHARM-specific student phase review surveys. It aims to support continuous improvement in hybrid teaching and learning environments through consistent data collection, peer benchmarking, and institution-specific recommendations.

## 3. Benefits

3.1. Establishes a common quality standard for hybrid classrooms across all CHARM-EU institutions.
3.2. Enables targeted improvements by identifying strengths and weaknesses within individual classrooms.
3.3. Fosters shared learning and transparency between institutions to support innovation and mutual enhancement of hybrid learning infrastructure.

## 4. Scope

4.1. Applies to all hybrid classrooms used in CHARM-EU hybrid educational delivery, including, but not limited to the CHARM-EU MSc in Global Challenges for Sustainability.

4.2. Involves technical, pedagogical, and operational aspects of hybrid classrooms as assessed via the LSRS categories and student phase review surveys.
4.3. Includes participation from the CHARM-EU Quality Office, JVITO, Hybrid Classroom Managers, and students via the phase review surveys.

## 5. Principles

5.1. Transparency: All results and recommendations are shared openly across partner institutions.
5.2. Improvement-Oriented: The procedure is formative, not punitive, aiming to support enhancement rather than strict compliance.
5.3. Equity: Each institution is assessed using the same framework, respecting institutional diversity while aiming for equity in student learning experiences.

## 6. Definitions

6.1. Learning Space Rating System (LSRS): A structured framework developed to assess the effectiveness of learning spaces across multiple dimensions, including environmental quality, technology and tools, and inclusion. Developed by Educause and available for use through a Creative Commons License.

6.2 Phase Review Survey: An evaluation survey shared with students in the MSc in Global Challenges for Sustainability after each phase.

## 7. Procedure

7.1. Audit Initiation: Prior to the beginning of each MSc phase, the JVITO notifies all institutional Hybrid Classroom representatives of the upcoming LSRS audit. Notification is issued at least four weeks before the start of the phase.

7.2. Distribution of LSRS Tool: The JVITO sends out the LSRS template to each institution's hybrid classroom representative. Guidance is provided, including definitions, examples, and scoring criteria to ensure consistency in interpretation.

7.3. Local Completion of Audit: Each institution completes the LSRS for all hybrid classrooms intended for use during the upcoming phase. The audit should be conducted collaboratively, ideally involving teaching and technical staff. The completed LSRS is returned to the JVITO and Quality Officer within two weeks of receipt.

7.4. Central Compilation and Comparison

The Quality Office analyses the LSRS scores and classrooms are benchmarked against one another using the LSRS categories. Additional student specific evaluations of the hybrid classroom are provided via the Phase Review survey. Strengths and gaps are identified, with attention to consistency across institutions.

7.5. Feedback and Recommendations: A brief feedback report is prepared for all institutions, including key findings from their LSRS results, comparison with CHARM-EU aggregate scores, specific recommendations for improvement and feedback from phase review surveys. Reports are shared with hybrid classroom representatives for review and local action.

7.6. Institutional Response and Improvement Tracking: Institutions are asked to review the recommendations and provide a brief summary of improvement actions planned or already taken to the Quality Office. This may include equipment upgrades, room layout changes, pedagogical supports, or scheduling adjustments. Responses are submitted within two weeks of receiving the feedback report.

7.7. Final Reporting and Record-Keeping: All results, responses, and actions taken are compiled into a CHARM-EU Hybrid Classroom Quality Audit Report. The report is shared with the JVITO and Programme Board and stored centrally for quality monitoring and continuous improvement tracking.

## 8. Responsibility

8.1 The responsibility for disseminating the LSRS to institutions is with the JVITO.

8.2 The responsibility for analysing the LSRS scores is with the Quality Office.

8.3 The responsibility for providing recommendations is with the Quality Office with input from the JVITO.

8.4 The responsibility for reporting on improvement actions is with the Hybrid Classroom representative from each institution.

8.5 The responsibility for writing and disseminating the final Hybrid Classroom Quality Audit Report is with the Quality Office.

## Learning Space Rating System (LSRS) | Version 3 Scoresheet

| | Instructions |
|---|---|
| 1 | To ensure the quality of the CHARM-EU Hybrid Classrooms, and support continuous improvement of these spaces, we are using sections of a internationally recognized tool for auditing our classrooms (LSRS).<br><br>This means that before each phase of the MSc, each hybrid classroom that is listed for active use in the upcoming phase, should be audited using this tool. Each credit in the tool has been mapped to CHARM-EU minimum requirements. Our focus is on improving these spaces. |
| 2 | The LSRS includes **sections** (e.g. Section 4 Environmental Quality) and **credits** (e.g. 4.1 Daylight). For each section you should review your hybrid classroom, and allocate a credit if you reach the criteria. Section 8 (CHARM-EU specific) is not within this tool and the criteria are described in the sheet itself. |
| 3 | To start your evaluation of your hybrid classroom,<br>- Open this PDF in a separate tab, and<br>- Navigate to the first section (i.e. 4.1 page 36) for an explanation of the criteria.<br>- Open the correct tab in this excel sheet (i.e. the one for your institution.) |
| 4 | Read the criteria in the PDF, and allocate a point in the credits in the excel if you reach this criterium.<br><br>For example 4.1 Daylight "Provide a source for direct access (e.g. windows) or indirect access (e.g. skylights or clerestory windows) to daylight into the room and, if required, the means to control it with veiling screens, blinds, or blackout screens"<br><br>If there are windows and blinds in your classroom, you can allocate one point to this section. Add in any notes where needed in the 'Notes on Evidence for Credit'. |
| 5 | Continue examining each credit, and allocating points in the excel where you reach the criteria. |
| 6 | When you have completed this tool, please email the Quality Office (Silvia Gallagher, gallags6@tcd.ie) to let her know that you have completed this. |
| 7 | You will then be provided a feedback report with recommendations to improve your classroom. The aggregated results will be shared with the Quality Officer, the JVITO, and other members of the Hybrid Classroom team across our Alliance. |

# 21. ANNEX 5: RESULTS QUALITY AUDIT 2025

## Background

The CHARM-EU Hybrid Classroom model is a core component of CHARM-EU's inter-institutional learning delivery. As these spaces form the foundation for hybrid and inter-institutional learning, it is essential that they maintain high quality in terms of pedagogy, technology, inclusivity, and accessibility.
The Learning Space Rating System (LSRS) in addition to student phase review surveys, will be used as a shared benchmarking framework to evaluate and enhance the quality of each HC environment before each phase or CHARM-EU activities where relevant.

This report presents the evaluation results of the LSRS for each phase during the 2025 – 2027 MSc in Global Challenges for Sustainability.

**Classrooms in use**
During each phase of the MSc different CHARM-EU institutions are responsible for teaching provision. As such, hybrid classrooms are required to be available for teaching. Table 1 presents the institutions with hybrid classrooms in use during each phase. Hybrid classrooms in use during a particular phase are evaluated at least four weeks before the start of every phase. A full procedure on this process is available here.

**Table 1: Hybrid Classrooms in use during each phase**

| Phase | Institutions with hybrid classrooms in use |
|---|---|
| Phase 1 | • Trinity College Dublin<br>• Utrecht University<br>• Julius-Maximilians-University Würzburg<br>• Eötvös Loránd University Budapest |
| Phase 2 | • University of Barcelona<br>• Eötvös Loránd University Budapest<br>• Julius-Maximilians-University Würzburg<br>• University of Bergen<br>• Ruhr West University of Applied Sciences<br>• Åbo Akademi University |
| Phase 3 | • Not in use, students are on internship |
| Phase 4 | • University of Barcelona<br>• Eötvös Loránd University Budapest<br>• Julius-Maximilians-University Würzburg<br>• University of Bergen<br>• Ruhr West University of Applied Sciences<br>• Åbo Akademi University<br>• Trinity College Dublin<br>• Utrecht University<br>• University of Montpellier |

Four locations with six hybrid classrooms were evaluated in August 2025 (pre-Phase 1), using four LSRS criteria and one CHARM-EU specific criteria.

## Environmental Quality (EQ)

Seven criteria were evaluated: Daylight, Visual Connection to Nature, Interior Visibility, Lighting Quality and Control, Thermal Comfort and Control, Acoustic Quality and Control, and Materials, Patterns and Forms.

- Daylight (4.1, max 1) – All classrooms scored 1/1, showing consistent daylight access.
- Visual Connection to Nature (4.2, max 2) – Three classrooms (UU1, UU3, TCD) scored 0/2, while UU2, ELTE, and JMU scored only 1/2. None achieved the full 2 points, showing this is a common weakness across all sites.
- Interior Visibility (4.3, max 1) – All classrooms scored 1/1, reflecting strong sightlines.
- Lighting Quality and Control (4.4, max 2) – All classrooms except JMU scored 1/2. JMU achieved the full 2/2, indicating superior lighting flexibility and control.
- Thermal Comfort and Control (4.5, max 2) – All institutions scored 1/2, suggesting only partial provision of comfort controls, with no classroom offering full flexibility or supplemental features.
- Acoustic Quality and Control (4.6, max 2) – UU3, TCD, and JMU scored 2/2, while UU1, UU2, and ELTE scored 1/2, showing variation in acoustic performance.
- Materials, Patterns and Forms (4.7, max 1) – UU2, UU3, and JMU scored 1/1, while UU1, TCD, and ELTE scored 0/1, indicating more limited use of natural or biophilic design.

### Overall Performance (max 11 points):

- Highest scoring – JMU (9/11, 81.82%), with strengths in lighting, acoustics, and materials.
- Lowest scoring – UU1 (5/11, 45.45%), mainly due to gaps in nature connection and materials.
- Middle performers – UU2 and UU3 (7/11, 63.64%), TCD and ELTE (6/11, 54.55%).

### Summary:

All classrooms met the minimum standards for daylight and visibility, but most fell short on Visual Connection to Nature, Thermal Comfort, and Acoustic Quality. These were categories where higher scoring potential (2 points) was not fully realized. There were two criteria where no points were scored by some classrooms; Visual Connection to Nature and Materials, Patterns and Forms.

### Recommendations:

- For the classrooms that did not score any points in Visual Connection to Nature (UU1, UU3, TCD), aim to provide some interior plants or a green wall in the classroom.
- For the classrooms that did not score any points on Material Patterns and Forms (UU1, TCD, and ELTE), aim to provide a nature based poster, screensaver, or a nature table in the classroom.

## Layout and Furnishings (LF)

Eleven criteria were evaluated under Layout and Furnishings: Proximities within Space, Movement through Space, Seating Density, Furniture Configuration Flexibility, Work Surfaces, Seating Comfort, Transparency, Access to Adjacent Informal Learning Areas, Writable Surfaces, Physical Storage, and Future Proofing.

- Proximities within Space (5.1, max 1) – All classrooms scored 1/1, showing consistent ability for students to face and interact effectively.
- Movement through Space (5.2, max 1) – All classrooms scored 1/1, reflecting adequate circulation.
- Seating Density (5.3, max 2) – UU2, TCD, and JMU achieved the maximum 2/2, while UU1, UU3, and ELTE scored 1/2, indicating more limited space per student.
- Furniture Configuration Flexibility (5.4, max 4) – The strongest scores were at UU2 (4/4). UU1, UU3, TCD, and JMU scored 3/4, while ELTE scored lowest (2/4).
- Work Surfaces (5.5, max 1) – All classrooms scored 1/1 except JMU (0), showing an absence of adequate work surfaces there.

- Seating Comfort (5.6, max 1) – UU2 and UU3 scored 0/1, indicating low provision for ergonomic or comfortable seating. Others scored 1/1.
- Transparency (5.7, max 2) – UU1, UU2, UU3, and JMU scored 1/2. TCD and ELTE scored 0/2, suggesting reduced visibility or openness.
- Access to Adjacent Informal Learning Areas (5.8, max 1) – UU2, UU3, and TCD scored 1/1. UU1, ELTE, and JMU scored 0/1, highlighting limited connections to informal spaces.
- Writable Surfaces (5.9, max 2) – UU1–TCD all scored 2/2. ELTE and JMU scored lower (1/2), reflecting fewer surfaces for collaborative use.
- Physical Storage (5.10, max 1) – Only UU2 and TCD scored 1/1, all others scored 0/1, showing limited storage provision across most sites.
- Future Proofing (5.11, max 1) – All classrooms scored 1/1, indicating consideration of adaptability for future needs.

### Overall Performance (max 17 points):

- Highest scoring – UU2 (15/17, 88.24%) with strong flexibility, storage, and connectivity.
- Lowest scoring – ELTE (9/17, 52.94%), mainly due to lower seating density, reduced flexibility, no transparency, and lack of informal access.
- Other performers – TCD (14/17, 82.35%), UU1 and UU3 (12/17, 70.59%), JMU (11/17, 64.71%).

### Summary:

Strengths were evident in proximities, circulation, and future proofing, with nearly all classrooms meeting these standards. Shortcomings were most pronounced in seating comfort (UU2, UU3), informal learning access (UU1, ELTE, JMU), and physical storage (all but UU2 and TCD).

### Recommendations:

- For the classrooms that did not score any points for work surfaces (JMU), investigate whether additional surfaces could be put into the classroom (e.g. a large table at the back of the classroom).
- For the classrooms that did not score any points for seating comfort (UU 2 and 3) investigate whether alternative seating could be provided.
- For the classrooms that did not score any points for transparency (TCD and ELTE) consider putting posters or a digital display of student activities or projects outside of the classroom.
- For the classrooms that did not score any points for Access to Adjacent Informal Learning Areas (UU1, ELTE, and JMU) investigate if informal seating could be provided near to the hybrid classroom.
- For the classrooms that did not score any points for Physical Storage (UU1, UU3, JMU and ELTE) investigate whether a bookshelf or locker could be put into the classroom to store supplemental materials.

## Technology and Tools (TT)

Eight criteria were evaluated under Technology and Tools: Electrical Power, Network Connectivity, Visual Displays, Sound Amplification, Audio/Visual Interface and Control, Conferencing and Distributed Interactivity, Session Capture and Access, and Immersive Technologies.

- Electrical Power (6.1, max 1) – All classrooms scored 1/1, indicating reliable provision of power outlets.
- Network Connectivity (6.2, max 1) – All classrooms scored 1/1, showing strong and consistent connectivity.
- Visual Displays (6.3, max 3) – All classrooms except ELTE scored 3/3. ELTE scored 2/3, showing slightly weaker provision of display systems.

- Sound Amplification (6.4, max 2) – TCD and UU1 achieved 2/2, while UU2, UU3, ELTE, and JMU scored 1/2, highlighting uneven quality in amplification systems.
- Audio/Visual Interface and Control (6.5, max 1) – All classrooms scored 1/1, showing consistent provision of AV control interfaces.
- Conferencing and Distributed Interactivity (6.6, max 2) – UU1, UU3, TCD, and ELTE achieved 2/2. UU2 and JMU scored 1/2, reflecting weaker support for distributed participation.
- Session Capture and Access (6.7, max 1) – All classrooms scored 1/1, ensuring consistency in recording and playback capabilities.
- Immersive Technologies (6.8, max 1) – Only JMU scored 1/1. All others scored 0/1, indicating limited adoption of emerging immersive tools.

## Overall Performance (max 12 points):

- Highest scoring – UU1 and TCD (11/12, 91.67%), with strong amplification and conferencing systems.
- Lowest scoring – UU2 and ELTE (9/12, 75.00%), limited by lower conferencing performance and weaker amplification or display systems.
- Other performers – UU3 and JMU (10/12, 83.33%).

## Summary:

Consistency was strongest in power, connectivity, AV interfaces, and session capture, where all classrooms achieved full points. Gaps were most evident in sound amplification, conferencing interactivity, and immersive technologies, with JMU the only site adopting immersive tools.

## Recommendations:

For all classrooms except JMU, consider how immersive technologies to support in-room experiential learning could be implemented. Perhaps this could be something done at a CHARM-EU level. TCD have some examples of this.

## Inclusion (IN)

Three criteria were evaluated under Inclusion: Physical Inclusion and Universal Design, Cognitive Inclusion, and Cultural Inclusion.

- Physical Inclusion and Universal Design (7.1, max 2) – All classrooms except JMU scored 2/2, showing strong compliance with universal design standards. JMU scored slightly lower at 1/2.
- Cognitive Inclusion (7.2, max 3) – UU1, UU2, UU3, and TCD achieved 3/3, demonstrating strong provision for varied learning needs and flexibility. ELTE scored lowest (1/3), while JMU achieved 3/3.
- Cultural Inclusion (7.3, max 2) – All institutions scored 1/2 except ELTE, which scored 0/2, suggesting less attention to cultural inclusivity in that classroom.

## Overall Performance (max 7 points):

- Highest scoring – UU1, UU2, UU3, and TCD (6/7, 85.71%) with consistently high performance across physical, cognitive, and cultural dimensions.
- Lowest scoring – ELTE (3/7, 42.86%), scoring lower in cognitive and cultural inclusion.

- Other performer – JMU (5/7, 71.43%), scoring well on cognitive inclusion but lower on physical inclusion.

## Summary:

Most classrooms demonstrate strong inclusive design features, particularly in universal access and cognitive inclusion strategies. However, improvements could be made at ELTE (low cognitive and cultural inclusion) and JMU (physical inclusion). Cultural inclusion emerged as the most variable criterion, with no classrooms receiving full points.

## Recommendations:

- For ELTE, consider adding signage to the classroom that indicates safety, technology support etc… to address the Cultural Inclusion criteria.

## CHARM-EU Specific (CH)

Four criteria were evaluated under CHARM-specific requirements: alignment with CHARM-EU values (transdisciplinarity and inclusivity), ease of starting sessions from the teacher's laptop, visibility of teacher's own image, and visibility of connected locations for remote participants.

- Reflecting Transdisciplinarity and Inclusivity (8.1, max 1) – All classrooms scored 0/1, except JMU which scored 1/1. This highlights a system-wide shortcoming in embedding CHARM-EU's core values directly into classroom design.
- Teacher Laptop Start-Up (8.2, max 1) – All classrooms scored 1/1, showing universal ease of initiating sessions via personal devices.
- Teacher Self-View (8.3, max 1) – All classrooms scored 1/1, ensuring that instructors can see how they appear to remote participants.
- Visibility of Connected Locations (8.4, max 1) – All classrooms scored 1/1, providing clear visibility of which partner sites are linked into the session.

## Overall Performance (max 4 points):

- Highest scoring – JMU (4/4, 100%), the only classroom meeting all CHARM-specific criteria.
- Other performers – All remaining classrooms scored 3/4 (75%), failing only on the first criterion of visibly reflecting CHARM's values.

Summary: Core technical functions (session start-up, teacher self-view, and visibility of connected sites) are consistently strong across all classrooms. However, the major gap is in embedding CHARM-EU's identity through transdisciplinary and inclusive design, with only JMU achieving the expected standard.

## Recommendations:

- For all classrooms except JMU consider how the core values of CHARM-EU could be integrated into the classroom. This could be a poster with the core values, a Transdisciplinary sharing poster or similar ideas.

# 22. LIST OF CONTRIBUTORS

| | |
|---|---|
| Dan Holm | Åbo Akademi University |
| Mats Lundberg | Åbo Akademi University |
| Jonas Mastosalo | Åbo Akademi University |
| | |
| Márta Turcsányi-Szabó | Eötvös Loránd University Budapest |
| | |
| Ina Thiesies-Cremer | Hochschule Ruhr-West |
| | |
| Katrin Niewalda | Julius-Maximilians-Universität Würzburg |
| Martin Kufferath-Sieberin | Julius-Maximilians-Universität Würzburg |
| | |
| Vanessa Viganó | Université de Montpellier |
| Nancy Rodriguez | Université de Montpellier |
| | |
| Sergio Villanueva Baselga | Universitat de Barcelona |
| | |
| Janina van Hees | Universiteit Utrecht |
| Minke Brinkman | Universiteit Utrecht |
| Jasper van Winden | Universiteit Utrecht |
| Esther Meyer | Universiteit Utrecht |
| | |
| Aiofe Quinn | Trinity College Dublin |
| Silvia Gallagher | Trinity College Dublin |
| Tom Hayes | Trinity College Dublin |