

Shaping Hybrid Education in the 1.5 m University

Ciano Aydin (BMS - Chair), Jan Evers (LISA) Stephan van Gils (EEMCS), Lisa Gommer (ET), Katja Haijkens (TNW), Marloes Letteboer (SP), Irene van der Ploeg-Heesbeen (MC), Hans Punt (CES), Arend Rensink (EEMCS), Pieter Rotteveel (CES), Karen Slotman (CES), Marie-Jose Verkroost (ITC), Lisette Woud-van der Graaf (SP)

In March 2020, the 'online education' working group formulated guidelines for organising education until August 31, 2020. The core condition for that period was that all education could only take place online, apart from limited space for graduation and lab-related practicals. From August 31, 2020, the situation is different and more complex: different because the government's guidelines permit a combination of online and physical education; more complex because the right combination requires consideration of various factors that influence each other mutually and whose effects cannot be fully estimated. We emphasize that this situation not only imposes limitations but also creates opportunities and invites developing structural new and innovative forms of education, as part of the UT Shaping 2030 vision. It is also important to stress that this document provides predominantly qualitative and not quantitative guidelines. In order to be able to formulate and justify guidelines against the background of this complex but also promising situation, it is necessary to make preconditions more explicit. These preconditions express what we can and cannot do and what we do and do not want. We distinguish three types of preconditions: 1) government guidelines, 2) building and environment-specific factors and 3) educational frameworks to which the UT commits itself. We limit ourselves to formulating the most important and most relevant preconditions.

PRECONDITIONS

1. Government guidelines

It is difficult to predict which measures will still be in force from September 2020. Now relevant measures are, for example:

- Keep a 1.5-meter distance.
- Wash your hands often.
- Stay at home if you have particular symptoms.
- See for a more comprehensive list of measures:
<https://www.rijksoverheid.nl/onderwerpen/coronavirus-covid-19/nederlandse-maatregelen-tegen-het-coronavirus/gezondheidsadviezen>;
<https://www.rijksoverheid.nl/onderwerpen/coronavirus-covid-19/ouders-scholieren-en-studenten-kinderopvang-en-onderwijs/hogescholen-en-universiteiten-hoger-onderwijs>.

2. Building and environment specific factors

The working group '1.5m university' is developing guidelines for environmental factors, most of them expected to be available by the end of June; this includes guidelines for scheduling, capacity of buildings (also regarding lectures and testing) and public transportation, as well as safety measures. Crucial factors for education are highlighted here:

- The number and capacity of available teachers is a given. This implies that, on the one hand, we ask teachers to be enthusiastic and innovative in combining face-to-face education with distance learning but, on the other hand, recognize their limits and do not ask the impossible from them.
- All measures must be aimed at ensuring that the number of students/teachers/others present in rooms at the same time complies with the 1.5-meter rule.
- The 1.5-meter rule limits the number of persons that can be in a room/ building at the same time.

3. Educational frameworks

The UT aspires to be a lively organisation in which students, lecturers and academic staff learn with each other and from each other. We find it important that students and staff feel seen and known and that contact between students and staff is barrier-free. In addition, an important factor for study success is that students feel connected to the study programme. Therefore:

- Also in corona time the UT adheres its educational vision and method: TOM, small-scale and interactive education, Interaction with society & industry, challenged-based learning, etc. remain of key importance (see also Shaping 2030: <https://www.utwente.nl/en/organisation/about/shaping2030/>).
- Education must provide for the realisation of at least three objectives: qualification, socialisation and subjectification (Biesta 2012):¹
 - Qualification is concerned with students acquiring the knowledge, skills and competences needed to participate in society and function in future working life.
 - In the domain of socialisation, students are prepared for their lives as members of a community and are introduced to traditions, forms of behaviour and cultural and professional practices.
 - In the domain of subjectification, the formation of the person and the development of his/her own identity and uniqueness, his/her autonomy and responsibility and the discovery of his/her motives and passions are central.

Besides these preconditions, an extensive inventory has been made with help from programme directors. Based on the preconditions and the inventory, we have formulated 4 general guiding principles and several specific guidelines for starting up education.

RECOMMENDATIONS FOR EDUCATION IN THE 1.5M UNIVERSITY

General guiding principles for starting up education

1. We provide blended and hybrid online and offline education

We strive for a balance in education: synchronous and a-synchronous, face-to-face and online, individually and in interaction with each other and with the teacher. Given the educational vision of the UT, education is organized in such a way that students do not study only online and do not study only all alone by themselves. Regular opportunity for online and offline interaction with other students, teachers and the campus are crucial for education. The campus will also be used as much as possible for community building, especially for 1st year bachelors and 1st year master students.

¹ Biesta, G., & Pols, W. (2012). *Goed onderwijs en de cultuur van het meten*. Amsterdam: Boom Lemma.

2. What must take place on campus is given priority

We strive for making optimal use of the available on-campus space and time, but we're also prepared for a new lock-down situation. We prioritize the following activities:

Dependent on organisation on-campus	Activity
High	Exams
	Thesis projects
	Practicals
	Projects
	Tutorials
Low	Lectures

This does not mean that high-priority activities *must* all take place on campus, but that good organisation of certain forms of these activities is more dependent on a physical setting. Testing, for example, has a high priority because certain types of testing cannot be done or cannot be done well online, but at the same time programs are asked to test online if possible and to keep searching for creative forms of (online) testing. Socialization and community building on (and outside) the campus, especially for new students, are of integral importance for all activities and will receive a lot of attention.

3. Flexibility in scaling up and scaling down in campus activities

Flexibility is key because we don't know how the Covid-19 virus develops with what effect on society. National guidelines continue to have an effect on the level of activity on campus. So we need to be able to scale up and down quickly with activities on campus. As a result, we are more prepared for a new lock-down situation. Although offering all our education online is sub-optimal, this cannot be excluded in exceptional (crisis) situations. The health and safety of staff and students is and remains main priority.

4. Tailor-made solutions for students who cannot come or who come to the UT after August 31

Students who are able to be at the campus are expected to be at the campus from August 31. For students who are not able to be on campus due to Covid-19 related circumstances, a tailor-made alternative will be facilitated as long as those circumstances apply, to the best of the ability of the programme and its staff members.

Specific guidelines for teaching activities and target groups

1. Lectures and tutorials

Question

How to transfer knowledge and develop skills among students that contribute to the achievement of the learning objectives of a unit of study when classrooms can only handle 30% of students?

Guidelines

Since offering everything online is not desired and offering everything physically is not feasible, offering a hybrid assembly is recommended. In addition, lectures and tutorials have not only as goal qualification but they are also opportunities for students to socialize and develop individual competences and skills. Therefore, sufficient physical interaction between students, as well as between students and lecturer, are of key importance. The fact that new students do not yet have any 'campus experience', 1st year bachelors and 1st year master students are given priority regarding opportunities to physically interact. More specifically:

- For the time being, lectures take place online. Therefore, it is of paramount importance that students also have sufficient on-campus interaction through tutorials and other means.
- Enable piloting innovative small-scale hybrid interactions to take place on-campus and have a different group of students attending them on campus every session. Simultaneously, stream and record these interactions so that the other students can follow them online and create opportunities for the students that follow these sessions online to interact.
- It's impracticable for students to watch two times of 45-minute taped lectures. Therefore, make use of short video lectures ('microlectures') that include the necessary elements of what needs to be transferred and/or cut the video in pieces in which themes are explained one at the time.
- Form changing small groups that receive online and on-campus tutorials and are supervised by a sufficient number of tutors. This will also contribute to socialization.

2. Final projects and internships

Question

How to facilitate final projects and internships knowing that labs have limited capacity and organizations offering internships must comply with the 1.5m measure?

Guidelines

- Investigate whether final qualifications offer room for adapting the learning objectives of the internship or graduation project so that more flexibility and other options can be offered to the student.
- Investigate whether the internship or graduation project can be replaced by an internal (research, modelling or simulation) project.
- In the case of a suspended internship or graduation thesis assignment, award credits for the work/part and research already done if the remainder can be filled in in another way.
- Change the order of internship and graduation project so that the student may be able to find a place at an internship provider more easily later on. Then the student can now carry out the thesis within the UT.

- In case of critical or urgent research file a request via the “leerstoelhouder” for the use of lab space.

3. Projects and practicals

Guidelines for project group meetings and tutoring

Question

How to support team building and set up a project organisation in the 1.5-metre classroom with (very) limited opportunities to physically come together on campus in order to complete a project successfully?

Guidelines

- Wherever possible, project groups will be composed of students who already know each other from the introduction period (for first-year students).
- 1st year students have at least 3 moments spread over the duration of the project, when they physically meet with their project group. This is preferably done under the supervision of a tutor.
- For 2nd and 3rd year students there is at least 1 moment when they physically meet with their project group (and tutor if necessary).
- Other collaboration and project support take place online
- Plenary kick-off meetings of the project are done online
- Tutor meetings (coordination with project supervisors) and other meetings with the module team are done online.
- Central closing meetings of projects without demonstrations of end products of a project take place online.
- Central closing meetings at which demonstrations of end products are given, take place (for safety reasons) as much as possible on the campus site (considering RIVM guidelines).
- Excursions at companies that are part of the project will be replaced as much as possible by videos and assignments.

Prerequisites

- Relevant tools and guidelines will be made available by CELT/TELT to support students and tutors in realizing teambuilding and project organization in (largely) online collaboration.
- Spaces will be made available where groups of up to 10 people can hold a group meeting within the 1.5m. limit.

Suggestions related to the mentioned prerequisites

- Pay explicit attention to team building and project organization in the skills education of quartile 1 of the 1st and 2nd year.
- Especially during the start-up phase of the project, tutors should play an active role in supporting the project group with teambuilding and properly setting up their project organisation.
- For (largely) online cooperation, consider project groups that are no larger than 6 to 8 people.

Guidelines for project work and practicals

Question

For the acquisition of practical learning goals, education in workshops/labs is of great importance to students. How can we maintain this in a situation where the use of these spaces is limited by the 1.5m distance measure?

Guidelines

- For workshop practicals, prototype construction and lab work, consider alternatives with minimal use (20-30%) of the facilities. What can be done outside labs while preserving the learning goals as much as possible, should be done outside labs.
- In the case of practicals that do have to take place in the workshop or lab, it will be investigated whether it is possible to maintain 1.5m. when using adjacent equipment or set-ups. If not, a solution with a partition wall will be considered or part of the equipment will not be used (more information will be provided by the working group 1.5m university).
- If, for safety or didactical reasons, it is not possible to maintain a 1.5m. distance, the student and workshop supervisor or lab assistant will work with face shields and/or mouth guards (more information about these safety measures will be provided by the working group 1.5m university).
- When scheduling workshop time, the 1st year students have priority.
- When scheduling lab work it is up to the research group itself (in consultation with the programme director) to determine which priorities are used about access to the research labs by different target groups.
- It is not desirable to move the labs to later on in the programme (post-corona) because of the high occupancy rate of the labs. Note: it is unclear when 'post corona' will be.
- Practicals that prepare students for, and are a prerequisite for, working safely in the lab should be accessible to all students. Where possible, parts can be replaced by online instructions or videos.

Further suggestions

When thinking about alternatives for the current practicals, the questions below can be considered:

- Are there practicals that can be omitted this academic year without directly compromising the learning objectives of the project or module?
- Are there practicals that can take place in other rooms?
- Are there practicals that students can carry out at home with materials available there?
- Are there practicals that can (partly) be replaced by modelling or simulations?
- Are there possibilities to let students 'specialize' in a certain practical part (not every student follows every practical part, groups share the acquired knowledge with each other)?
- Are there possibilities to have a part of the students physically at a lab and to let the rest watch online instructions (rotation system)?
- Can parts of the practical work be outsourced (e.g. laser cutting)?
- Are there possibilities to let experiments take place remotely under certain conditions? (these are not simulations; access to reality must be maintained).
- Are there possibilities to set up labs in such a way that students are obliged to prepare all experimental work outside the lab room in a controllable way, thus saving valuable lab time?

4. Testing

Question

How to ensure reliable and valid testing in the 1.5-metre campus with restrictions on accommodating large numbers of students in halls?

Here we need to take into account that it is still unclear what exactly the boundary conditions are for testing on campus as of September. The guiding lines below assume that we don't have the same capacity as in normal circumstances.

Guidelines

- The number of on-campus written tests remains limited to the absolute minimum required to assess the students. Other forms of testing are preferred whenever possible.
- Proctoring is currently not allowed. Based on results of tests that are executed by TELT and developments regarding privacy and security issues, we will sharpen our vision on proctoring in the coming months.
- Priority rules: B>M; B1>B2>B3; M1>M2, but during every year, testing on campus will be scheduled.

Prerequisites

- Each study program gets a fair share of testing opportunities.
- Testing on campus in evenings and during the weekends is possible.
- Capacity for testing on campus is enlarged to enable all remaining tests.

Unknowns

- Testing capacity: how many lecture halls with what capacity?
- How many tests are scheduled? What is the backlog of Q3+Q4.
- Changing vision of proctoring.

5. Social cohesion and interaction

Question

How do we ensure sufficient social cohesion and interaction in a situation where the possibilities for students to see each other and the staff in person are limited?

Guidelines

In general: in a situation where the teaching and contact that normally takes place on campus is to a considerable extent replaced by online activities, it is necessary to pay explicit attention to essential characteristics of the Twente vision on education and the Twente educational model (see educational framework). It is important that students know each other, know the programme (and that the programme knows them) and that students feel connected to the UT. We categorise the guidelines in this order.

Students know each other:

- Have study associations organise activities online and offline (taking the RIVM guidelines into account) that strengthen relations.

- Enable sufficient physical interaction in project groups during a module (see proposal projects and practicals).
- Give priority to first-year students.
- Consider making the project groups for first year students equal to the 'do-groups' (keep sufficient attention for students who did not participate in the kick-in).

Students feel connected to the program:

- All students see/meet their instructor at least once a week.
- Even if a course consists entirely of online self-study assignments and recorded video lectures, a contact moment is strongly recommended.
- Tutors contribute to familiarize students with the program (who is who, etc., but also what do we expect from each other)
- Organize (where possible on campus) meetings for first-year students in which they meet the staff of the program.

Students feel connected to the UT:

- Make explicit to students what the purpose and mission of the UT is (in the field of education and perhaps also research).
- Inform students about the organisation of the UT.
- Create opportunities for students to get acquainted with sports and cultural associations on campus, Student Union, student teams, etc.

6. Exchange and international students

Question

How to inform exchange and international students about the way in which the education is organised at the UT due to the corona situation and how to adequately inform students who are unable to come to the UT, or cannot come on time, about the extent to which they are accommodated in online education?

Guidelines

- Communicate as soon as possible to prospective international students who are unable to come to the UT, or cannot come on time, due to the corona situation what they can expect of the programme. Offer tailor-made solutions if possible.
- Some international students are in doubt whether it is worth paying money for an education abroad if most parts of the programme will be online. Communicate to those students that the UT strives for as much contact time on campus as is possible within Covid-19 government guidelines: 'on campus if possible, online because it is possible.'
- Programmes which have the special feature internationalisation might have a problem when international students are missing in a whole cohort of students. This endangers achieving the learning outcomes related to internationalisation. Make an extra effort to make it possible for international students to come here. Also think of alternative means for achieving these learning outcomes when the international students do not come.
- For some programmes, exchange is important while travel is difficult now. Enable exchange students to follow courses online at another university (outgoing exchange) or students following online courses at UT (incoming exchange). Also consider collaboration with ECIU and ISP partners.

7. Post-initial education and Twente Graduate School lectures

The guidelines that apply to all other education also apply to post-initial education and Twente Graduate School lectures.

8. Applications and their capacity and reliability

Question

Which applications are available for online and hybrid forms of education, and which online and hybrid forms need to be further investigated in terms of feasibility and usability?

Guidelines

Applications can be used for various learning activities to facilitate both physical presence on campus and distance learning. There are already many applications used by teachers and students, such as Canvas, BlueJeans, MSTeams, Remindo, PeerGrade (pilot), Buddycheck, etc. The various learning activities are listed below, along with the associated possible facilities/tools. For a number of applications, training courses for instructors will be offered to facilitate the use of the applications.

- **Online lectures**
There are currently several applications for online lectures and recording short lectures. Applications such as MSTeams, Canvas Conferences, BlueJeans, Explain Everything, Camtasia to stream and/or record live lectures are supported by the UT. There are also possibilities to blend courses and make professional microlectures in the studio. Improvement of the quality of streaming and recording and upgrading and upscaling the video-management facilities for sharing and storing is required and will be investigated.
- **Online tutorials**
There are various tools that could improve the learning of students and the organisation of tutorials, for example Horus, TAhelp.me, and Discord. Investigation in these and other relevant tools for teaching and learning will continue.
- **Innovative small-scale hybrid interactions**
In addition to online lectures and tutorials, innovative hybrid small-scale interactions can also be made possible where two groups of students can interact with the lecturer: students on campus and remote students. The hybrid solution means that a sufficient number of lecture halls should be equipped with proper devices so that the interactions can also be followed live via streaming, preferably with the same experience as the students sitting in the hall. This could be made possible by projecting 'remote' students on screens in the lecture hall and by letting these 'remote' students participate actively in interactions. A very important condition here is that operating the equipment and applications does not take extra time for the lecturer. Sufficient support must therefore be available during these hybrid interactions. The recording of these hybrid interactions should be made available without any extra work on the part of the instructor. Further investigation is required and investments for experiments will be made.
- **Online practicals**
Various applications are currently in use for practicals in laboratories. Labster (pilot) and LabBuddy, for example, replace physical labs with online versions.

- **Hybrid practicals**
Students at the UT can collaborate remotely with students outside the UT, for example by having students on campus operate a camera to show an experiment to remote peers and communicate together about a setup and/or assignment and the results of an experiment. Further investigation and investments for experiments will follow.
- **Project work, Graduation**
For project work, graduation consultation or the graduation presentation/defense, tools are available to collaborate and/or to communicate with each other (MSTeams, BlueJeans, Canvas Conference tool). These tools can be used for complete online forms as well as hybrid solutions in situations where the campus is partly available for project work and graduation. Further investigation in relevant tools (e.g. Discord) will follow.
- **Proctoring during tests**
Currently, a pilot project on proctoring is being held. As long as the results of these pilots (as well as other relevant information) are not known, no proctoring tools will be used for online assessment.
- **Remote assessments and grading tests**
Besides tools for summative tests, diagnostic test tools (enabling monitoring ongoing feedback to improve teacher and student learning) are available (partly) for online education. An overview of currently available tests can be found here:
<https://www.utwente.nl/en/telt/online-lectures/remote-assessment/>
Further investigation in new software for the administration and grading of both summative and diagnostic tests will be carried out, especially on how testing and grading can be made more efficient and faster (for example through software such as PeerGrade and Gradescope).