

The Transition to Online Education

A Case Study of Wageningen University & Research

Report 2: period 6

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The corona situation has forced a transition to largely online education in many institutions, including Wageningen University & Research (WUR). The 4TU Centre for Engineering Education (4TU.CEE, location WUR), the Education & Student Affairs (ESA) of WUR, and the Education and Learning Sciences (ELS) chair group have joined forces to investigate and evaluate the process and outcomes of this transition at WUR. The aim is to identify how the transition influences course design, teaching and the learning of students. Intermediate results are frequently shared to inform and improve education, and to learn from the interpretations of everyone involved.

In May we shared a [first report](#) about the key results of period 5 (March 5 till May 10). In this second report we share the key results of period 6 (May 11 till July 3) and highlight the changes. The results of this period are based on a teacher survey about online education in Covid19 times (198 responses out of 1097 active teachers in period 6), student course evaluation data from PaCE (3850 responses out of 14.150 students in 207 courses), a student survey about online education (351 responses) and the grades and pass rates (the present year in comparison with previous years). In addition, interviews with a small group of teachers helped to get a more comprehensive understanding of their perspectives, and online student sessions conducted by the Education Experience Team enhanced our understanding of students' perspectives. The results of each of these sources were discussed with relevant actors (e.g. various educational experts/practitioners from Education & Students Affairs) to obtain deeper insights. This report brings together the key findings in a comprehensive overview, to communicate the results within and outside WUR. For more elaborate and detailed findings, please contact the research team.

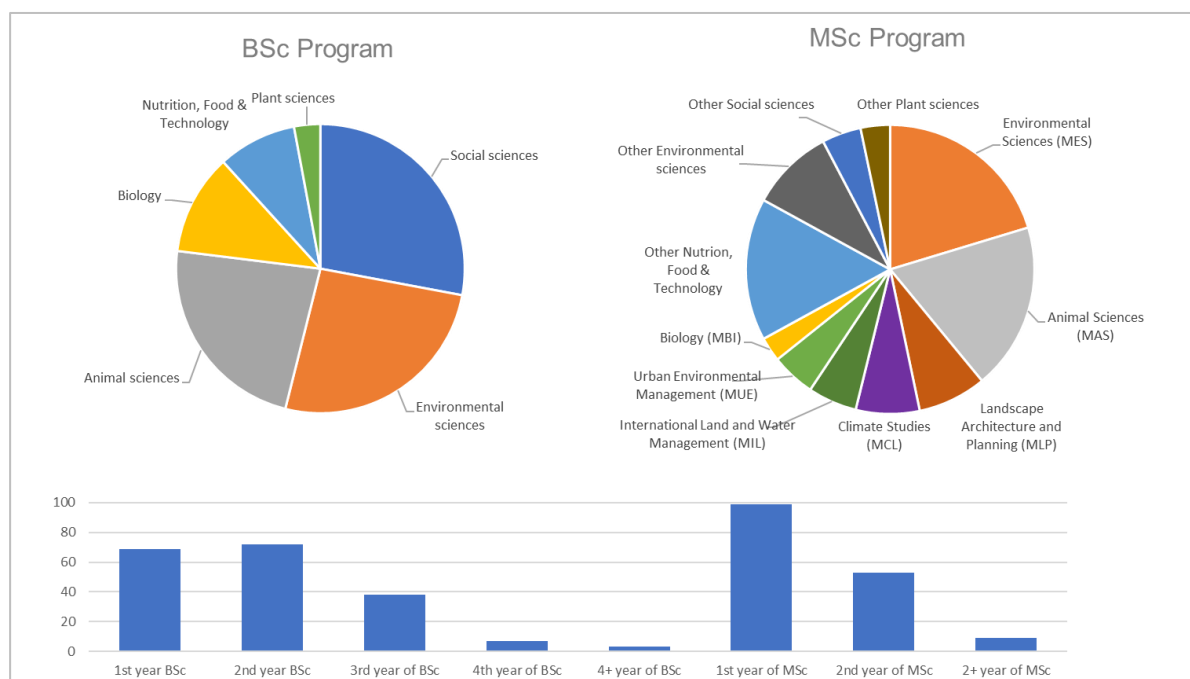


Figure 1. Student survey: The study program and year of study of the 351 respondents

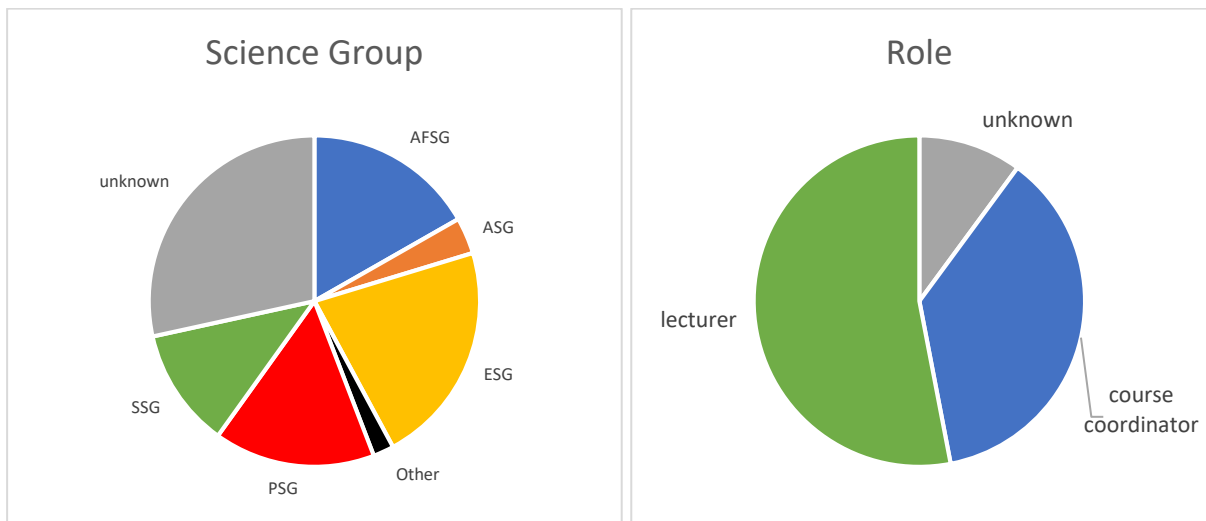


Figure 2. Teacher survey: The science group and the role of the 198 respondents. Note: AFSG (Agrotechnology & Food Sciences Group), ASG (Department of Animal Sciences), ESG (Wageningen Environmental Research), PSG (Plant Sciences Group), SSG (Wageningen School of Social Sciences)

Satisfaction with WUR Support

The support for teachers by ESA and IT services is in continuous development; a range of new tools for online education were implemented, IT tools and services were extended, and several online trainings and webinars were organized. Overall, teachers were satisfied about the various educational services, trainings, and IT tools. They also felt supported by Educational Support, IT services, colleagues and the organisation at large.

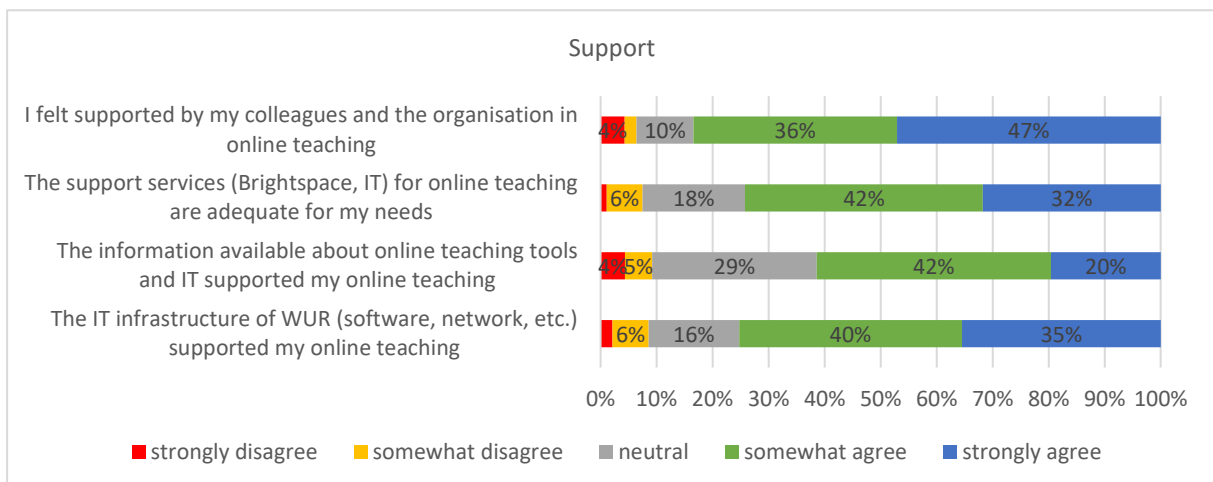


Figure 3. Percentages of teachers with various levels of agreement to statements about support on the 5-points symmetric agree-disagree scale.

In period 6, more teachers followed a training or webinar. This indicates that there was more time for professional development and preparation. The average use of support services did not change, but teachers did make more use of the support for excursions and practicals (partly because courses in period 6 had more excursions and practicals).

Students were also asked about the support that they experienced. The results showed that students felt morally supported by teachers and WUR in the transition to online education, and that they were generally satisfied about student support, the IT facilities and the communication about the transition.

Teachers prefer on-campus education, but are able to teach online

Many teachers experienced stress (66%) and an increased workload (80%) related to online teaching, and about half of the teachers (51%) found it difficult to combine life at home with online teaching. In the interviews and the open comments of the survey, teachers emphasized that they missed the personal interaction with students. The lack of direct feedback from students also meant that it was hard

to grasp how students were doing and what was needed to support their learning process. Moreover, personal circumstances, such as having children at home, made online teaching more difficult and stressful.

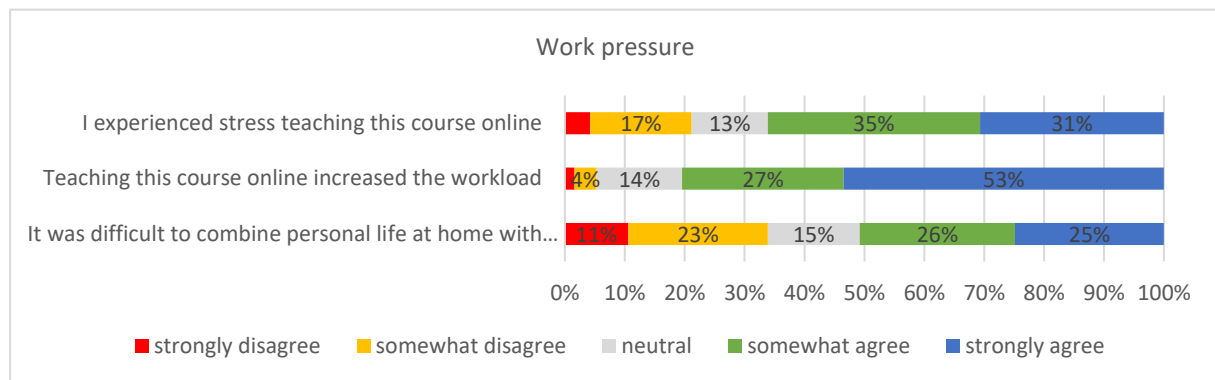


Figure 4. Percentages of teachers with various levels of agreement to statements related to work pressure on the 5-points symmetric agree-disagree scale.

Teachers differed in how much they liked online teaching: 29% liked online teaching, 23% was neutral and 48% did not like online teaching. However, on a scale from largely online, blended (50/50), to largely on-campus education, teachers indicated to prefer to teach largely on-campus and they thought WUR should maintain on-campus education as much as possible. Students also prefer on-campus education, but in comparison to teachers the group that favoured blended education was somewhat larger.

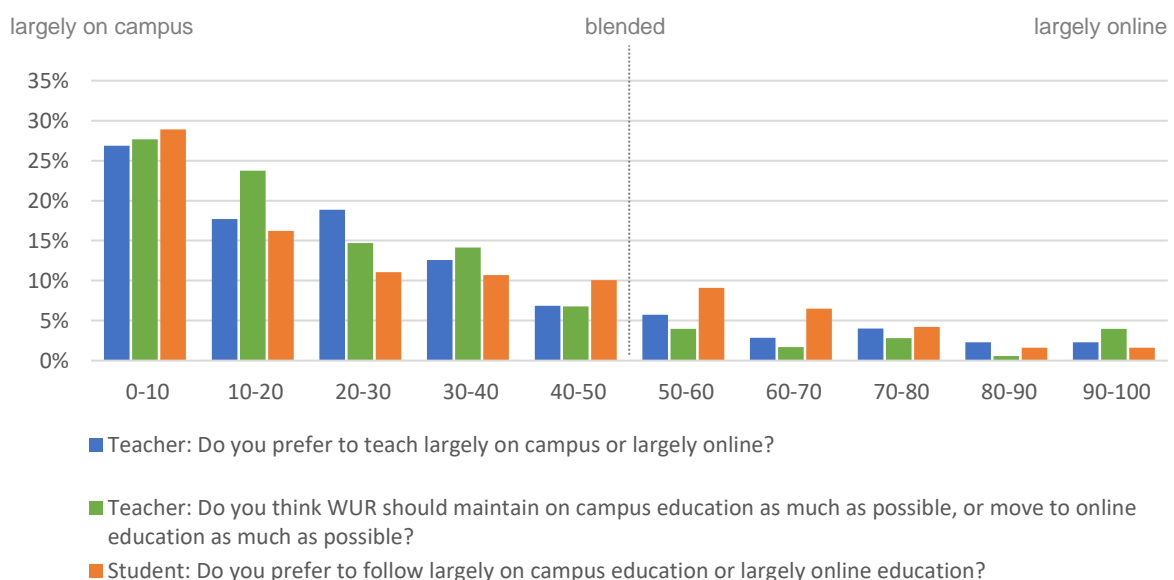


Figure 5. Percentages of respondents that specified their preference for largely on campus to largely online on a 100 points scale, categorized in ranges of 10.

Although teachers experienced a high work pressure and preferred on-campus education, they were generally motivated to teach online. Moreover, they felt that they possessed the skills (both IT skills and didactical skills) needed to be able to teach online, and they felt that they managed to teach their course online successfully. Overall, the results suggest that although teachers were not happy with 'being forced' to teach fully online, they experienced the support and the skills to be able to teach the course to their own satisfaction.

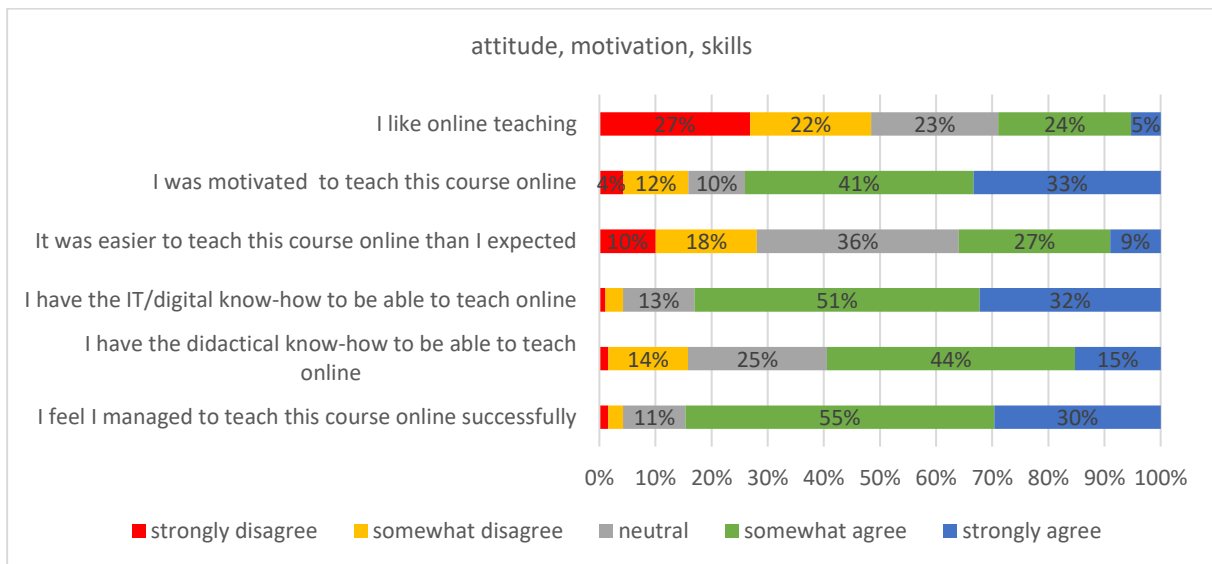


Figure 6. Numbers of teachers (absolute numbers) with various levels of agreement to statements on the 5-points symmetric agree-disagree scale.

Teacher profiles

We found significant relations between different topics of the teacher survey that together formed a coherent pattern. A cluster analysis revealed 3 groups of teachers that differed in motivation, stress, skills, and beliefs. The first profile can be labeled as 'critical teachers' and is signified by a relatively low motivation for online teaching and more negative beliefs about the learning of students in online education. This profile had an occurrence of 33%. The second profile can be labeled as 'motivated teachers that experienced a high work pressure' and is signified by moderately high levels of motivation and skills, combined with very high levels of stress. This profile had the highest occurrence, namely 48%. The third profile can be labeled as 'motivated teachers that experienced little work pressure' and is signified by high levels of motivation and skills, but very low levels of stress. This profile had an occurrence of only 19%. More generally, the surveys and interviews suggested that course coordinators' self-efficacy and autonomy were crucial to move the course online and teach the course to their own satisfaction. Moreover, their own personality and beliefs greatly influenced how they adapted their teaching methods. The typology will be refined and enriched based on an extended analysis of the surveys and interviews.

Students missed social interaction, but felt able to study online

Similar to teachers, students differed in how much they liked online education, but a majority 56% did not like online education. Moreover, similar to teachers, most students largely preferred to follow on campus education, but in comparison to teachers, the group that preferred blended education was somewhat larger (see figure 5 on page 4).

The motivation for online education reported by students can be interpreted as problematic. About half of the students (52%) indicated they were not motivated to follow online education, and 56% became less motivated since the beginning of remote education. Students found it difficult to combine personal life at home with online education and experienced more stress. In the Experience session 'Following a course online' (8 participants), students emphasized that they missed the personal interaction and sense of connection. Personal contact was essential for their well-being, but also for learning (to be able to discuss course content, freely exchange thoughts, learn from others) and for creating a sense of community (connecting). They came up with several suggestions for improvement, such as facilitating informal gatherings (breaks) and supporting and connecting students that struggle with loss of motivation and focus (peer support).

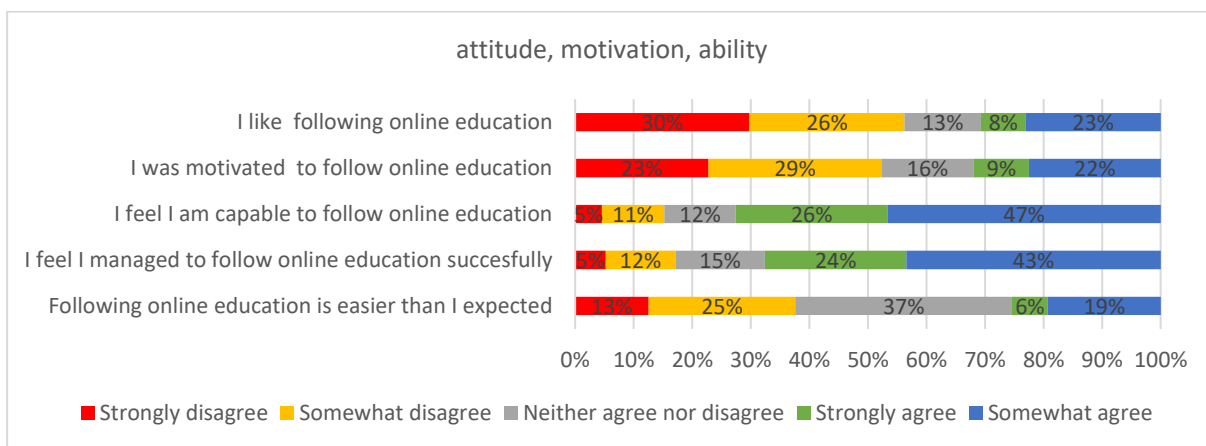


Figure 7. Percentages of students with various levels of agreement to statements on the 5-points symmetric agree-disagree scale.

Although following online education was sometimes difficult, students did not seem to experience a significant increase in workload: 54% of the students agreed with the statement that online education increased the workload, against 46% that were neutral or disagreed. Moreover, students generally did feel capable to follow online education (73%) and the majority felt they managed to follow online education successfully (67%).

Teachers and students think the learning performance is worse in online education

Both students and teachers indicated that they think that in general the learning performance of students in online education is worse compared with on campus education. The feedback of teachers to students, the collaborative learning among students, the motivation of students, and the engagement of students were all considered to be lower in online education.

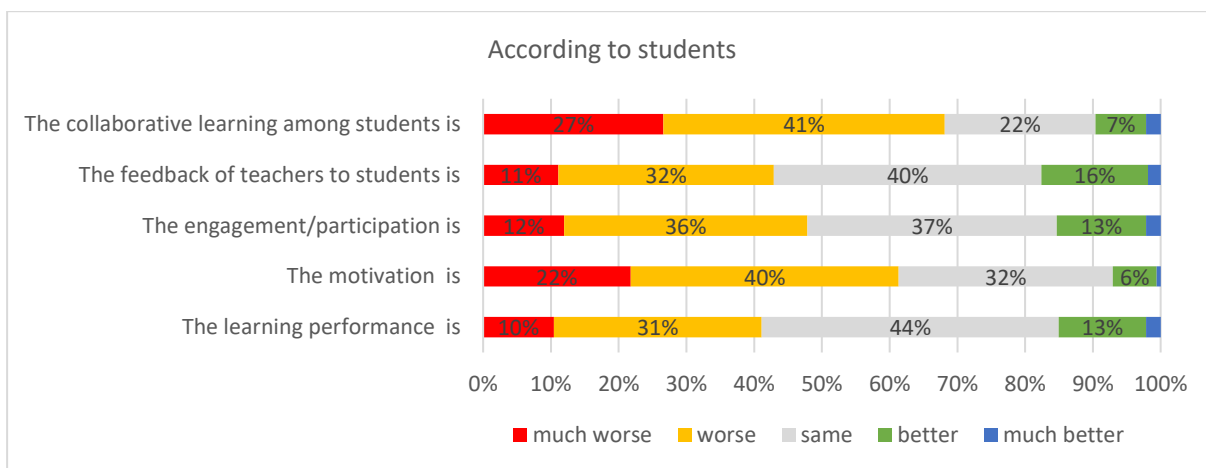


Figure 8. Percentages of students indicating how they think the learning process and performance of students are affected by following online education

In comparison to teachers, students were slightly more negative about collaborative learning and slightly more positive about the feedback of teachers. Most significantly, however, teachers considered the participation and engagement of students in online education to be lower than students themselves. This may have resulted from the type of students that participated in the student survey (probably more engaged types of students), but may also indicate that teachers have difficulty in identifying the level of engagement of students in online education. The responses to the open questions in the survey and the interviews pointed out that teachers encountered more inactive students, who became almost 'invisible'. Teachers also pointed out that smaller groups of students and groups that already knew each other were more easy to engage online.

Grades and course evaluations remain stable

Although both teachers and students think that the learning of students is worse in online education, the average grades and pass rates of period 5 and period 6 showed no difference in comparison to previous years. The PaCE evaluations of period 5 and 6 also remained stable: overall, students were equally satisfied about the courses. The level of learning (acquiring new knowledge/skills), the level of engagement, the workload, and the assessment were all evaluated positively. Although a comparison over years is tricky because each student evaluated a single course only once and because some questions in the surveys changed, the results do suggest that from the students' perspective the changes in education did not significantly affect their satisfaction and self-perceived learning. Moreover, the questions that were added about online education showed that students experienced enough online interaction to support their learning process, and that the online interaction with teachers and with peers facilitated their learning process. There thus seems to be a discrepancy between teachers' and students' general beliefs about the effectiveness of online education, and students' performance (grades), course satisfaction and self-perceived learning (PaCE). A subsequent correlational analysis and a qualitative study will be conducted to investigate this further.

Changes in Teaching methods: Towards blended learning?

Despite the high degree of excursions and practicals in period 6, the percentage of teachers that was able to move to online 'entirely' increased compared to period 5. Moreover, teaching methods were more often revised rather than just maintained or fully replaced: lectures were more often revised instead of just maintained, and groupwork, practicals and excursions were more often revised instead of fully replaced.

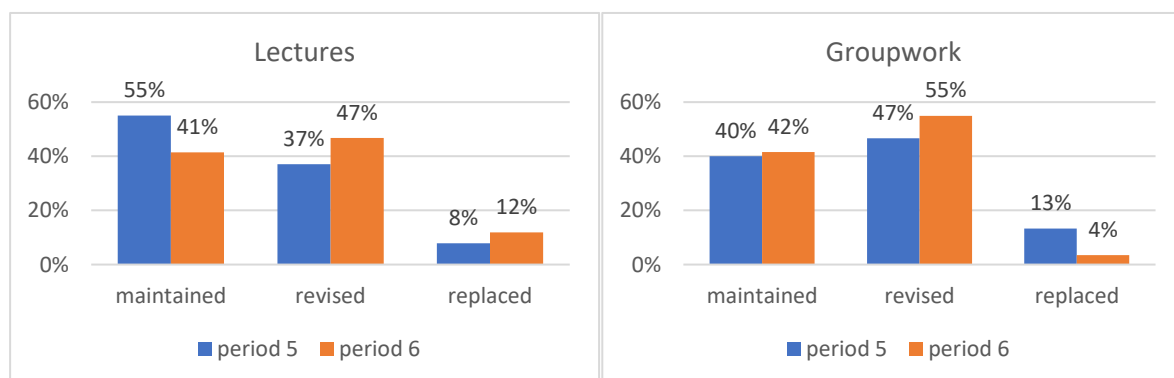


Figure 9. Changes in the type of adaptation (maintain, revise, replace) of teaching methods from period 5 to period 6.

Almost all teachers (>90%) used new methods for live online interaction and recordings. On average, 60% of the teachers who used a new method for live interaction, feedback or assignments would like to use that new teaching method again next year. Hence, despite a preference for on-campus education, many teachers intend to maintain some changes in teaching method.

When asked about keeping or discarding changes in the course setup for the next year, teachers' responses were diverse. Overall, many teachers would like to keep some changes in online videos and assignments (and combine this with small in-class sessions that focus on interaction), while changes to excursions and practicals were largely discarded.

Students' preferences for online teaching methods

In the Experience session 'Following an online course', students emphasised it is important to create a personal and save atmosphere in online environments, to work in small groups, to provide clarity and structure (in terms of program, tools, procedures), and to create specific spaces and moments for questions. The survey showed that students greatly differed in their evaluation of online teaching methods – the degree to which alternative learning activities contributed to their learning. Some preferred *live interaction*, because of the possibility to ask questions directly (38), the feeling of

immediacy (13) and the increased engagement or focus (6). Others preferred *recordings*, because these enable to re-watch, pause and make notes (19), because of the flexible schedule (7) and because they allow for a higher level of concentration (3). Moreover, some preferred *group work*, to learn from discussions and others' perspectives (13), to stimulate motivation / (through peer pressure) (9), and to enjoy personal contact (5), while others preferred *individual work*, because of the efficient learning (12), the level of concentration (3), and to be time-flexible (2). This variety in answers showed that there is no single 'best method' for online teaching and that in order to cater for different types of students, it is important to combine different online teaching methods.

Tools for online education

In comparison to period 5, there was an increase in the use of tools for live interaction such as Virtual Classroom, Zoom and Skype (an average of 21%). The use of Zoom more than doubled to 44% of the teachers in period 6. Moreover, the teacher satisfaction score for Zoom was significantly higher than for the Virtual Classroom in Brightspace, with 3.4 and 4.3 respectively. Students, however, were more satisfied about the Virtual Classroom than about Zoom, with 3.9 and 3.2 respectively. Of the various lecturing tools, such as knowledge clips, PowerPoint recordings, and recordings with other tools, Weblectures had the lowest score on satisfaction and 'want to use next year'.

Feedback and assessment tools such as FeedbackFruits, self-assessment, quizzes and surveys received high satisfaction scores, but were used only sparsely (on average about 10% of the teachers).

Brightspace Discussion Forums was used more widely (59%) but received a satisfaction score below 3, both in the teacher and student survey results (2.8 and 2.7 respectively). In the open question of the student survey and in the interactive students session, many students indicated that of the various teaching methods, online discussion fora contributed the least to their learning.

Online exams

Just as in period 5, most exams were conducted with online proctoring. Many teachers made use of the support for deciding about adaptations to the assessment (41%) and the support for online proctored exams (41%), and they were generally satisfied about this. ANS was implemented as a new tool for the online exam. The survey results showed that teachers were more satisfied about the new ANS tool than about QMP (Question Mark Perception), with a satisfaction score of 4.0 and 3.2 respectively.

The results of the student survey showed that most students generally knew what to expect and understood the procedure before making the exam online. Still, students that participated in the student journey indicated that the communication about online exams via multiple channels was sometimes confusing and that they did not exactly know what was allowed during the exam. More in particular, many students were worried that they could be accused for cheating (this was validated by 68% of the 19 participants). Accordingly, the survey results showed that 60% of the students experienced more stress than usual and about 40% of the students indicated that it took them longer than usual to make the online exam. In the remarks on their exams, students mentioned that scanning the room during online proctoring, making drawings and calculations with software on the computer and technical issues took them more time and increased stress levels. When asked about suggestions for improvements, students mentioned that it helps to receive many practice questions to prepare for the exam, to create opportunities to study with fellow students and to get an opportunity to review and discuss their exam afterwards. Although the PaCE results showed that students were generally satisfied about the assessment (given the circumstances), the survey showed that the majority of students preferred on-campus exams (64% preferred on-campus, 22% was neutral and 14% preferred online exams).

In conclusion

- Although teachers prefer on campus teaching, they generally had the support and the skills to be able to teach the course online to their own satisfaction.
- Based on the survey data we identified three types of teachers that differ in motivation, skills, stress and beliefs.
- In comparison to period 5, teaching methods were more often revised rather than just maintained or fully replaced. Moreover, most teachers intend to maintain some changes in the course design.
- Students differed in the their evaluation of new online teaching methods. This shows that there is no single 'best method' for online teaching and that in order to cater for different types of students, it is important to combine different online teaching methods.
- Although students experienced a loss of motivation and found it difficult to follow online education, they generally felt that they were capable and that they managed to follow online education successfully.
- Both teachers and students think the learning performance is worse in online education, but grades and course evaluations remain stable.

What's next?

- The situation in the new academic year 2020-2021 differs from the situation at the end of last study year (periods 5 and 6). Teachers have had more time to design and prepare their courses and there are more options to combine online and on-campus teaching. We also welcomed new students that started their study. Moreover, the holidays and new information about the corona situation may change the current experience and the perspective on the future. In short, we move from a crisis situation of 'online only' education, to a transition period of redesigning courses for **blended education**, in which there is more eye for the future. The survey research will thus continue to examine changes in course designs, teaching and the learning of students, in order to be able to support and shape the education of the future.
- A more in-depth analysis on the **relations** within and between data sources (teachers, students, course information) will generate insights into differences between courses, types of teachers and types of students.
- We will continue with **in-depth case studies** (incl. interviews) to better understand how changes in specific teaching methods occurred, how teachers and students experienced these, and how it affected the learning of students.
- In-between reports of this study will be **discussed with various actor groups**, to obtain deeper insight in interpretations of trends and findings.

If you would like to be updated about this project by email or receive more detailed information, you can send an email to tim.stevens@wur.nl

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