The Transition to Online Education

a case study of Wageningen University & Research

First results

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In collaboration with ***Education & Student Affairs (WUR)***

The corona situation has forced an abrupt transition to online education in many institutions, including Wageningen University & Research (WUR). The 4TU Centre for Engineering Education (4TU.CEE, location WUR), the Education & Student Affairs of WUR, and the Education and Learning Sciences (ELS) chair group have joined forces to investigate and evaluate the process and outcomes of this abrupt transition at WUR. The aim is to provide a comprehensive overview of the transition to online education and map factors that shape the adoption of online tools and methods at WUR. Intermediate results are frequently shared to inform and improve education, and to learn from the interpretations of everyone involved. In this report we summarize the results of period 5 (March 5 till May 10, 2020), based on a first descriptive analysis of the teacher survey (140 responses out of 668 active teachers in period 5), a student survey as part of the course evaluation system PaCE (5147 responses out of 15.324 students from 250 courses), and the remarks of students about the online examination in response to an open-ended question at the end of all exams (we coded and analysed a sample of 25% of the entries (1136 of 4562 entries) from 11.648 exams). The results were discussed with various actors (e.g. various educational experts/practitioners from Education & Students Affairs) to obtain deeper insights. Moreover, an online session with 8 teachers (active in period 5) and 4 educational experts was organized by Education & Students Affairs to exchange experiences, which provided more detailed information about teachers' experiences, knowledge and needs.

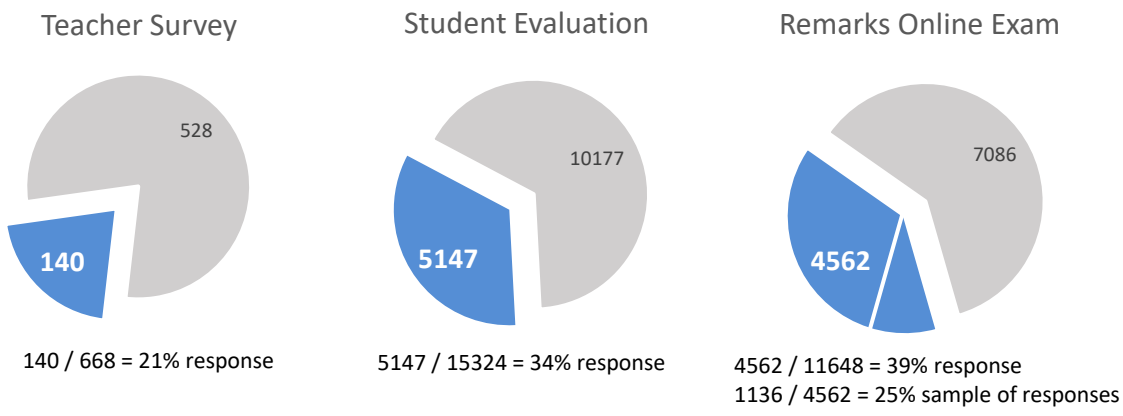

Figure 1. On overview of the data used for the analysis of period 5: the teacher survey, the student course evaluations (PaCE), and the remarks of students about the online examination.

Satisfied about Support

The last couple of months the support for teachers from the university has been extended; a range of new tools for online education were implemented, IT tools and services were extended, several online trainings and webinars were organized, and new information pages on the intranet and Brightspace were set-up to support teachers. To understand whether these services and facilities supported teachers in their online teaching, we asked teachers in a survey about their use and satisfaction. The results showed that teachers were satisfied about the different trainings and webinars (average of 3.8 out of 5), the various IT facilities (3.5 on average), and the educational support for different teaching activities (3.4 on average). They also felt morally supported by colleagues and the organisation in their online teaching (see chart below). In the interactive session it was pointed out that many teachers helped each other and exchanged ideas to organize their education.

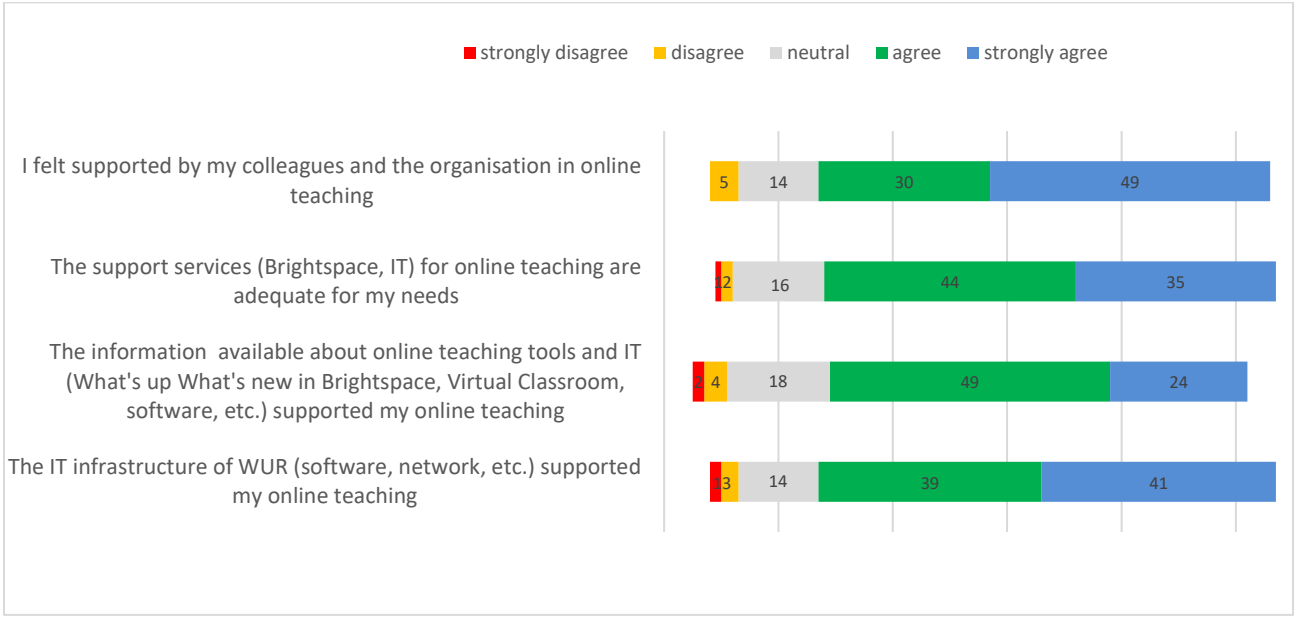

Figure 2. The number of respondents (absolute numbers) that specified their level of agreement to statements about support on the 5-points symmetric agree-disagree scale.

Experiences of Online Teaching

The majority of teachers indicated that they do not like online teaching (60%). Moreover, many teachers experienced more stress (62%) and an increased workload (83%) due to the new situation. In the open comments section of the survey as well as in the discussion teachers emphasized that they missed the informal and 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. Nevertheless, on average teachers indicated to have been 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 the course online successfully (average of 4.1 out of 5).

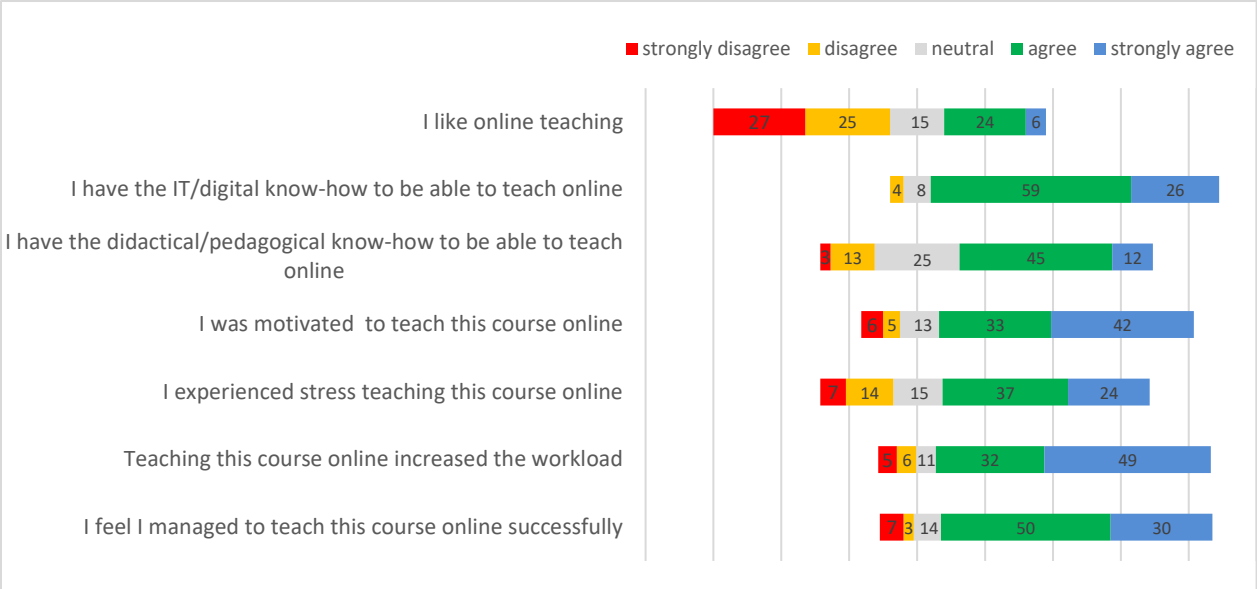

Figure 3. The number of respondents (absolute numbers) that specified their level of agreement to statements about online teaching and their experiences on the 5-points symmetric agree-disagree scale.

Whereas teachers were satisfied about their own teaching skills and performance, the general opinion of teachers was that the feedback to students is somewhat worse in online education compared to face-2-face education. The collaborative learning among students, the motivation of students, and the engagement of students were also considered to be somewhat lower in online education. The exchange session and the responses to the open questions in the survey point out that teachers encountered more inactive students, which became almost 'invisible'.

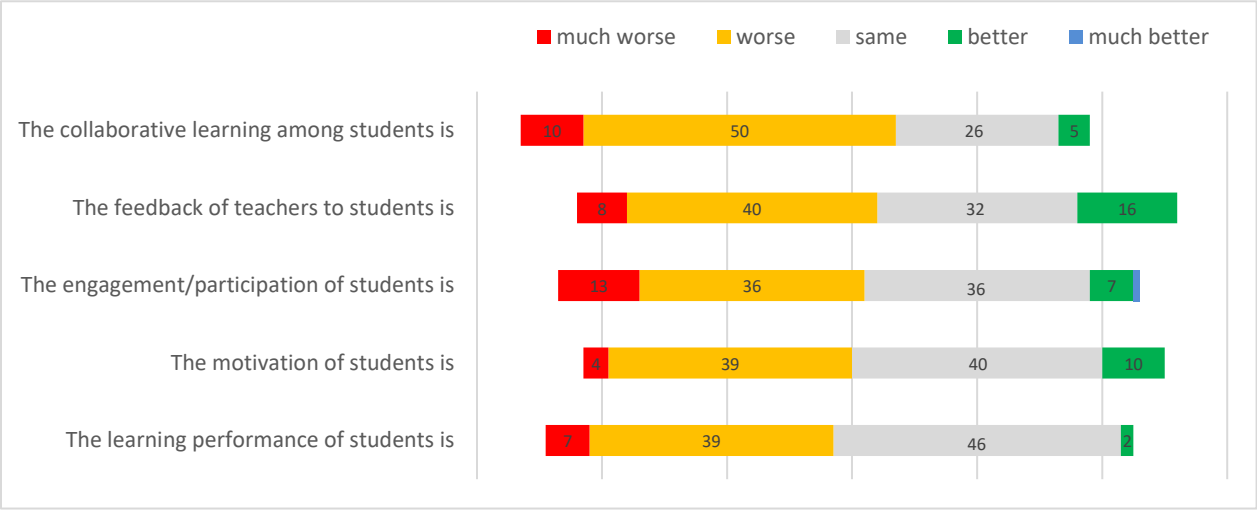

Figure 4. The number of respondents (absolute numbers) that specified their level of agreement to statements about the learning of students on the 5-points symmetric agree-disagree scale.

It is worth noting that the experiences of teachers about online teaching differed from their expectations: teachers seemed to be more optimistic about the extent to which they were able to move the teaching activities to online education directly after period 5 (based on experience) than at the beginning of period 5 (based on expectations). Taken together, the results suggest that

although teachers were not happy with 'being forced' to teach fully online, they were able to teach the course to their own satisfaction. In subsequent analyses we will further investigate how teachers' attitudes, experiences and practices and the type of course they teach are exactly related.

Students' learning

Whereas teachers believed that the learning performance of students is lower in online education, students' course satisfaction of the online education in period 5 in this year was similar to that of period 5 of previous year (on average 3.8 this year, compared to 3.7 last year). The level of learning (acquiring new knowledge/skills), the level of engagement, the workload, and the assessment by students were rated positively, with an average of 3.7 out of 5. Although a comparison between these two years is tricky because each student evaluated a single course only once (and thus took the specific context into account) and because some questions have slightly changed, the results suggest that from the students' perspective the changes in education did not significantly affect satisfaction and self-perceived learning. Moreover, the questions that were added this year about online education showed that students experienced enough online interaction to support their learning process, and that they perceived that the online interaction with teachers and with peers facilitated their learning process.

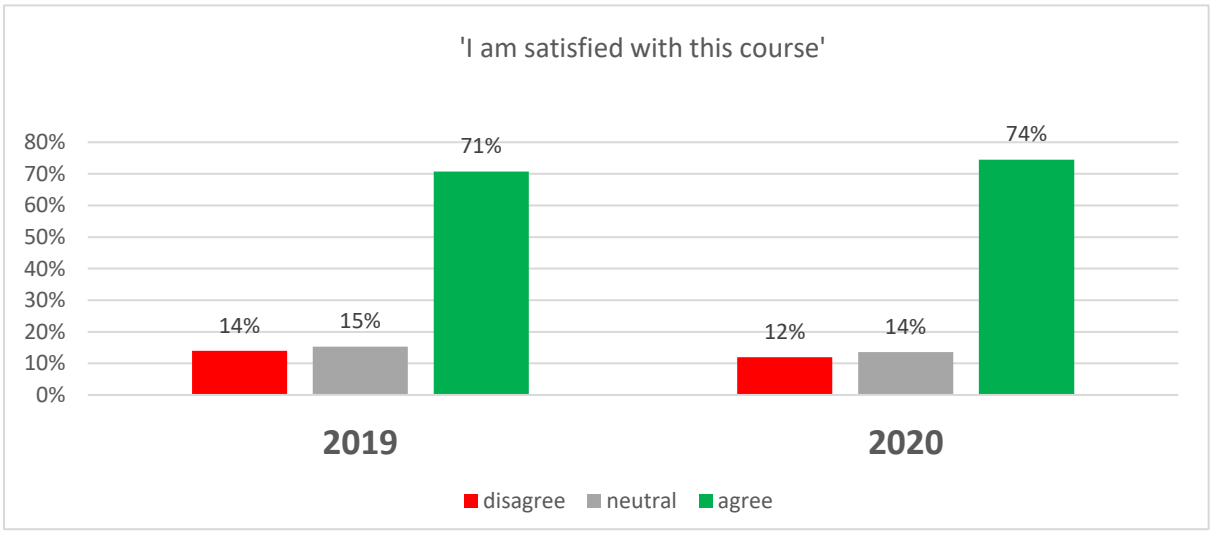

Figure 5. The average satisfaction of students about courses in period 5 2019, and in period 5 2020.

Online Tools

We asked teachers about the use of tools for period 5, whether they used the tool before, whether they would like to use the tool again, and how satisfied they are with the tool on a 5-point satisfaction scale. Many of the tools were used for the first time. At the beginning of period 5, WUR enabled and supported the use of the Virtual Classroom in Brightspace for live interaction. The Virtual Classroom was used by 56% of the teachers in our survey, and Zoom by 21%. Whereas teachers were equally satisfied about Zoom and Virtual Classroom – since it was their own choice to use one of these tools – students were more positive about the Virtual Classroom than about Zoom, with a satisfaction score of 3.6 and 2.7, respectively.

Feedback and assessment tools such as FeedbackFruits, self-assessment, quizzes and rubrics are important tools in online education as they can help teachers to support and track students' learning progress and provide targeted feedback. However, few teachers in our data set indicated to make use of these feedback and assessment tools. Teachers that did make use of these tools were satisfied about the tools. Brightspace Discussion Forums was the only widely used tool that received a satisfaction score below 3, both in the teacher and student survey results. The educational support for using discussion forums was also rated below 3.

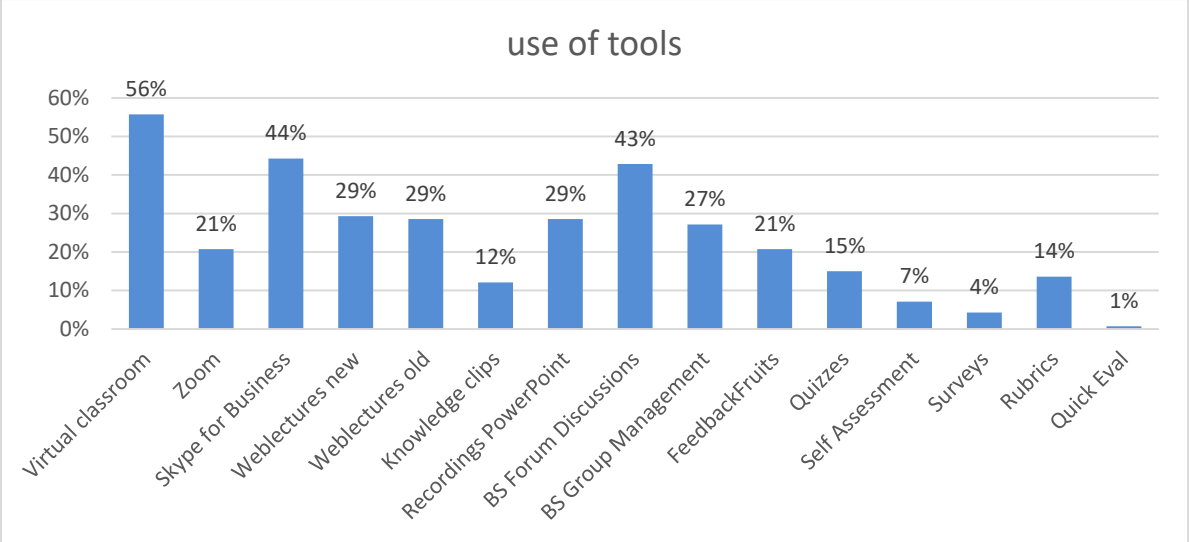

Figure 6. The percentage of respondents (teachers) that used a tool in period 5 2020.

Do teachers want to *keep* or *discard* changes?

Besides the use of online tools, we asked teachers how they changed their teaching method and whether they would like to keep or discard these changes. With respect to changes in the teaching methods as a result of the online transition, in general teachers indicated that lecturing was largely maintained, groupwork and tutorials were largely revised, and that lab practicals, field practicals and excursions were largely replaced by other types of learning activities. When asked about keeping or discarding changes in the course set up for the next year, teachers' responses were diverse. Some teachers stressed that they would like to 'go back to normal' and discard all changes (18 of 62 respondents). However, the majority of teachers that responded to this open question (41 of 62) indicated to keep at least some of the changes, and combine online learning with in-class sessions that focus on interaction (blended learning). A small number of teachers (3) reported that they would like to keep the new online course set-up as much as possible. These results provide valuable information to prepare for and shape the WUR education of the future, which is likely to involve more blended learning.

The exchange sessions resulted in a couple of practical 'lessons learned' for online education at WUR: activate students with (preparatory) assignments; frequently organize moments for live interaction; use a variety of learning activities; stimulate collaboration among students in small groups; provide feedback and assess students' progress frequently, and; use a clear structure for the course schedule and Brightspace page.

Online Exams

In period 5, 11.648 exams were assessed via remote proctoring with *Questionmark Perception (QMP)* or *Ans.* An open question was added at the end of each online exam to ask students about any remarks concerning the online examination. We coded and analysed a random sample of 25% of the responses (1136/4562). Many of the remarks were course-specific and there appeared no major issues in the overall procedure according to students' responses.

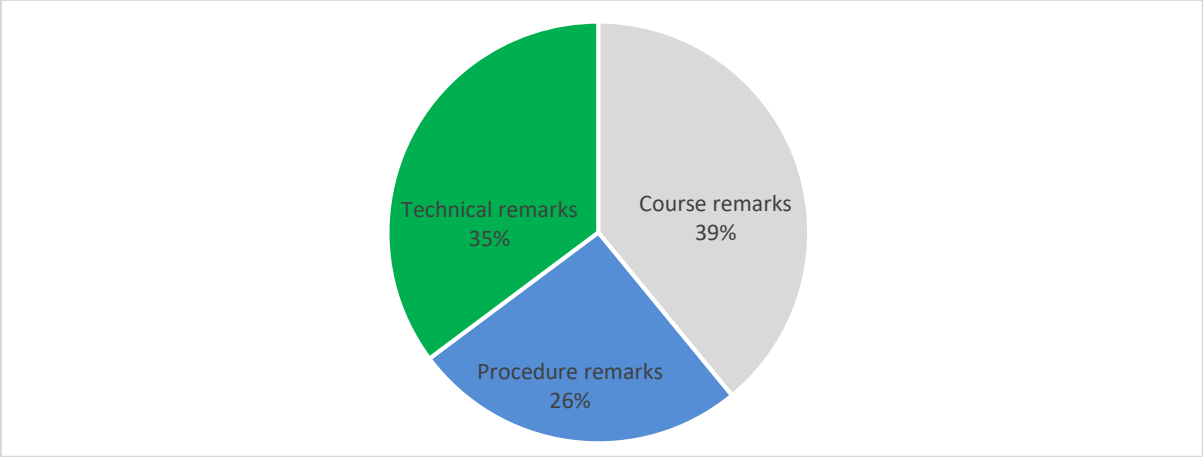

Figure 7. Distribution of remarks about the online examination. Remarks were coded and categorized into three main themes: remarks about the course (e.g. unclear questions, too many questions), remarks about the procedure (e.g. visit toilet, phone call, grab something), technical remarks about IT (e.g. software, devices). One remark can be assigned to multiple themes so the total amount of remarks (n=1866) exceeds the sample size (n=1136).

Nevertheless, some students (7% of the responses in our sample) reported that they experienced more time pressure due to the online examination; scanning the room during online proctoring and making drawings and calculations with software on the computer took them more time. The results also suggested that students did not always know what was allowed and what was not allowed, for example if they had a problem when accidentally opening other software. These results can be used to improve the examination procedure and information provision to students. Moreover, the remarks of students about particular functionalities in the used examination systems (Ans and QMP) can be used to optimize the system.

What's next?

- Similar surveys will be conducted for **period 6** (May 11 till July 4, 2020). The courses in period 6 involve more lab practicals and field work and will thus provide new insights. Moreover, we are curious to find out how the lingering situation of the distance society and online education will affect teachers' and students' evaluations: will they become better able to offer/follow online education, will they have higher expectations, or will they become more fed-up with the distance situation?

- A more in-depth analysis on the **relations** within and between data sources (teachers, students, courses) at the course level will generate information about differences between courses and how specific factors influence the adoption and effectiveness of online teaching methods.

- Based on the results we will conduct an **in-depth case study** (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 you can send an email to tim.stevens@wur.nl

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