Summary of the discussion on:

What did we learn from the Covid-19 experience for improving future teaching and learning?

at the virtual SEFI Mathematics SIG Seminar in Kristiansand, Norway, June 2021

Burkhard Alpers, Aalen University

The discussion was mainly concerned with identifying materials, technological tools and forms of learning and teaching that have proven useful during the Covid-19 pandemic and should be maintained and further developed afterwards:

- Many short video clips or longer recorded lectures are now available. These digital offerings increase the flexibility of learning and were hence appreciated by students. Particularly for students who have problems to attend lectures on campus for whatever reason can make use of these offerings.
- Technological tools like Geogebra were used in several courses and students got familiar with these tools. They might also be used in regular lectures since the technology is now available to students, as well as in examinations.
- The use of the chat facility allowed students to participate more actively in lectures by posing questions or giving answers to questions posed by the lecturer. Whereas in class only one student gives an answer, the chat allows for many students to give answers simultaneously. Moreover, the chat seemed to constitute a smaller hurdle for asking questions than the classroom situation. The question is how this can be transferred to normal class teaching. Even if the technology is available, it is hard for a lecturer to give the lecture and at the same time to observe the chat. A teaching assistant would be helpful here but that would create additional costs.
- Polling or voting systems were also mentioned also a means to involve students more. This could be transferred to normal class since polling is already offered via smart phones.
- Online discussion forums were helpful in supporting students by helping each other. It is easy for students to ask (simple) questions since one has not to go physically to a tutorial or support centre. The questions and answers provided over time constitute a useful pool of information that can also be used afterwards. For more complicated questions synchronous communication on site still seems to be advantageous.
- The positive role of support centres during Covid-19 was mentioned. They worked very effectively, organized collaboration between students and even provided support for other colleges.
- At some places the pandemic required the introduction of different assignment schemes. Since in electronic assessment total supervision is often not possible, open book examinations were offered. This led to different types of questions which were of a more conceptual nature. This might be maintained after Covid-19. Technology

was used to introduce small formative tests to give students orientation regarding their learning progress.

It was observed that the more motivated students made better use of the newly available material and technological features than the weaker ones such that the situation rather increased the spread within the student population.

Regarding the lecturers, the pandemic often led to more reflection on what we really want to achieve and in which ways we are still able to reach our goals, so the level of didactical reflection often increased. There is a risk, though, that this interest will be diminishing after Covid-19. Another risk mentioned was that the bulk of material now available might also create an overload for the students. This also holds if there is too much online assessment during the semester made possible by technology.

Covid-19 also showed us the value of those facets of teaching and learning that were no longer possible and now might be valued even more, for example the different form of socialising among students on campus; the direct verbal and non-verbal communication ("reading faces"); and the possibility of direct feedback and interaction. The importance of physical attendance might be clearer now.