



Digital lecture seminar

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Abstract

Vortragsseminare finden klassischerweise in Präsenz statt. Der coronabedingte Lockdown im Sommersemester 2020 zwang alle Lehrveranstaltungen in den virtuellen Raum. Dieser Beitrag stellt die in drei verschiedenen Vortragsseminaren an der Fakultät Maschinenwesen der TU Dresden implementierten Anpassungen zur Durchführung unter Kontaktbeschränkungen vor und evaluiert, welche Lernziele mit den jeweils gewählten Formaten erreicht werden konnten. Besonderes Augenmerk liegt außerdem auf den Inhalten und der Durchführung des Einführungsvortrags, bei welchem den Studierenden Hinweise für eine erfolgreiche Vortragsvorbereitung und Vortragsdurchführung gegeben werden. Diese mussten an virtuelle Vorträge übertragen und angepasst werden.

Die Erkenntnis, welche Lernziele erreicht wurden und welche nicht, aber auch welche Vorzüge eine virtuelle Durchführung bietet, soll Anreize und Hinweise für die Gestaltung zukünftiger Formate geben.

Lecture seminars typically take place in in-person sessions. The corona-related lockdown in the summer semester 2020 forced all courses into the virtual room. This paper presents the necessary adaptations in three different lecture seminars at the Faculty of Mechanical Engineering at the TU Dresden for implementation under contact restrictions and evaluates which learning objectives could be achieved with the chosen formats in each case. Special attention is also paid to the content and presentation of the introductory lecture, in which students are given tips for successful lecture preparation and performance during the presentation. These had to be transferred and adapted to virtual lectures.

The insight into which learning objectives were achieved and which were not, but also which advantages a virtual lecture seminar offers, should provide incentives and hints for the design of future formats.

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1. Introduction

Presentations are of great importance in engineering practice and are used as a means of communication in a wide range of areas, from internal project meetings and presentations to customers to scientific conferences and contributions to the media. Therefore, learning and practising an expedient, effective presentation technique is an integral part of the course of study at the Faculty of Mechanical Engineering at TU Dresden. When presenting student papers and defending diploma theses, one's own results must be prepared in such a way that they stand up to scientific discussion and thus justify the final grade. In order to prepare students in the best possible way for their final examination and their subsequent professional life, there are a number of presentation seminars at the Faculty of Mechanical Engineering. These seminars are usually held in larger seminar rooms and thrive on the atmosphere of general tension that most feel before a presentation, the enthusiasm with which the students present their topics and the direct exchange between students, staff and professors.

At the beginning of the summer semester 2020, the start of the lecture seminars was initially pushed back. When it became clear that the time period of contact restrictions in the context of the coronavirus pandemic would not be over after a few weeks, the three seminars thematised here took place in different ways in semi- or fully digital form.

This change in the teaching format and the associated adjustments, e.g. to the content to be taught, inevitably place these lecture seminars in a new light. In order to now shape the future of lecture seminars, a number of questions need to be answered:

What do we want to teach the students? Can we teach this content digitally, and if so, how? Can we assess digital lectures in the usual way?

This article does not presume to answer all these questions comprehensively. Rather, it aims to discuss the learning objectives, (virtual) course of action, problems and successes of each event on the basis of three lecture seminars from the summer semester 2020 in order to provide a basis for the design and evalua-

tion of future hybrid courses and thus to integrate the findings from the virtual space into the education of the future once contact restrictions have ended.

In the second chapter of this article, three lecture seminars, as they are conducted at the Faculty of Mechanical Engineering at the TU Dresden, are presented and compared. Similarities and differences, especially with regard to the learning objectives, are discussed in detail. Furthermore, the schedule for the summer semester 2020, which has been adapted to the lockdown, will be presented. The introductory event, with which all three seminars were opened, is presented with its learning objectives. Methods to be taught are examined for their practicability for virtual seminars and the advantages and limitations of a virtual course of action are discussed. Finally, all presented components of the seminars are discussed, student feedback is presented and the success of the seminars is evaluated.

2. Selected lecture seminars

As an example, three presentation seminars at the Faculty of Mechanical Engineering, as can be seen in Tab. 1, are presented and compared in this chapter. (i) The presentation seminar at the Chair of Magnetofluidynamics, Measuring and Automation Technology (MFD) is a voluntary course aimed at all students in the main course of study in mechanical engineering and purely aims at improving individual presentation techniques based on freely chosen presentation topics. (ii) The Mechanics Seminar has a long tradition at the Institute of Solid Mechanics (IFKM) and offers students who write their theses at IFKM or the Chair of Fluid Mechanics (PSM) the opportunity to present them voluntarily and thus practice defending their thesis. (iii) The latest presentation seminar is the literature seminar in the Master's programme Computational Modelling and Simulation (CMS), which is an integral part of the corresponding curriculum and is intended to teach students how to deal with scientific literature. In contrast to the other two seminars, grades are awarded here that are relevant to the success of the study.

While the number of participants of the seminars does vary, the usual procedure is almost identical. In a first event, appointments are made, topics are selected or announced and an introductory lecture is given. The introductory lecture goes beyond the usual guidelines for slide design and focuses on adequate lec-

ture preparation and structuring and is intended to raise awareness of various presentation techniques. The contents of this introductory lecture and the necessary adjustments for the summer semester 2020 are discussed in more detail in chapter three.

Tab. 1: Overview of the lecture seminars discussed here

	(i) Presentation Seminar	(ii) Mechanics Seminar	(iii) Literature Seminar
Target group	Students of the Faculty of Mechanical Engineering	Students at the Institute of Solid Mechanics and the Chair of Fluid Mechanics with completed thesis	English-language Master's programme Computational Modelling and Simulation
Responsible for the course	S. Odenbach	T. Wallmersperger	M. Beitelschmidt
Number of participants	10 – 15	5 – 15	40 – 60
Grading	no	no	yes
Learning objectives	<ul style="list-style-type: none"> • Students should develop their own style of presentation • Teaching presentation techniques 	<ul style="list-style-type: none"> • Preparation for the later defence of the thesis • Teaching presentation techniques 	<ul style="list-style-type: none"> • autonomous understanding of the contents of a scientific publication and presentation of the contents [1] • Teaching presentation techniques • Practising teamwork where possible
Procedure	<ul style="list-style-type: none"> • Introductory event • Presentation session 1 incl. feedback on presentation technique • Presentation session 2 incl. discussion of the topic and feedback 	<ul style="list-style-type: none"> • Introductory event • Lecture incl. discussion of the topic and feedback 	<ul style="list-style-type: none"> • Introductory session and presentation of the available topics • Lecture incl. discussion of the topic and feedback
Adapted procedure in SS20	Introductory event digitally recorded in the seminar room and made available on YouTube [2] with parallel GoTo meeting [3]	Introductory event and lectures in GoTo Meeting [3]	Introductory session and presentation of the topics, as well as the lectures in up to four parallel sessions online in GoTo Meeting [3] Multi-level enrolment in OPAL [4]

Status	Name	Beschreibung	Anzahl Plätze	Eintragen	Austragen
	Students in Literature Studies		58 / 0	Erlaubt (bis 24.04.2020 23:59)	Erlaubt (bis 24.04.2020 23:59)

(a) General course enrolment

Dateityp	Name	Größe	Zuletzt geändert
	additional_Topics_MMFS.pdf	133,8K	am 21.04.2020 um 17:07 Uhr
	DMT_Topics_update.pdf	384,1K	am 16.04.2020 um 17:28 Uhr
	MMFS_Topics.pdf	611,2K	am 09.04.2020 um 10:48 Uhr
	NEFM_Topics_update_200416.pdf	487,6K	am 16.04.2020 um 15:03 Uhr
	PSM_Topics.pdf	989,2K	am 14.04.2020 um 08:25 Uhr

(b) Overview of the topics offered

Name	Verantwortliche/r	Termin Einschreibung	Anzahl Plätze
DMT01: Aerial Manipulation: A Literature Review	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	2/2
DMT02: Control of Fully Actuated Unmanned Aerial Vehicles with Actuator Saturation	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	1/1
DMT03: Model Predictive Control of Unmanned Micro Aerial Vehicles	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	1/1
DMT04: Vision-Based Methods for Measuring Vibration	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	2/2
DMT05: Dynamics of Threads	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	2/2
DMT06: Measuring stress field without constitutive equation	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	0/1
MMFS01: Electro-Active Polymer Based Soft Tactileinterface for Wearable Devices	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	2/2
MMFS02: Morphing aircraft based on smart materials and structures: A state-of-the-art review	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	2/2
MMFS03: Electrostriction of polymer dielectrics with compliant electrodes as a means of actuation	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	1/1
MMFS04: Auxetic metamaterials and structures	Micha Sebastian Schuster	ab 17.04.2020 00:00 bis 24.04.2020 23:59	2/2

49 Einträge

(c) Enrolment in the topics offered

Status	Name	Termin	Ort	Dauer	Anzahl Plätze	Bemerkungen
	Session 01B MMFS & PSM	22.05.2020 14:50 - 16:20	ZEU/260	1 Std. 30 Min.	2/3	Only for topics from the Chairs of Fluid Mechanic and Mechanics of multifunctional Structures
	Session 01A DMT & NEFM	22.05.2020 14:50 - 16:20	ZEU/160	1 Std. 30 Min.	1/3	Only for topics from the Chairs of Dynamics and Mechanism Design and Computational and Experimental Solid Mechanics
	Session 02B MMFS & PSM	29.05.2020 14:50 - 16:20	ZEU/260	1 Std. 30 Min.	2/3	Only for topics from the Chairs of Fluid Mechanic and Mechanics of multifunctional Structures
	Session 02A DMT & NEFM	29.05.2020 14:50 - 16:20	ZEU/160	1 Std. 30 Min.	2/3	Only for topics from the Chairs of Dynamics and Mechanism Design and Computational and Experimental Solid Mechanics
	Session 03B PSM & NEFM	12.06.2020 14:50 - 16:20	ZEU/260	1 Std. 30 Min.	3/3	Only for topics from chairs of Fluid Mechanics and Computational and Experimental Solid Mechanics
	Session 03A MMFS & DMT	12.06.2020 14:50 - 16:20	ZEU/160	1 Std. 30 Min.	3/3	Only for topics from the Chairs of Mechanics of multifunctional Structures and Dynamics and Mechanism Design
	Session 04B PSM & NEFM	19.06.2020 14:50 - 16:20	ZEU/260	1 Std. 30 Min.	3/3	Only for topics from chairs of Fluid Mechanics and Computational and Experimental Solid Mechanics
	Session 04D: NEFM & MMFS	19.06.2020 14:50 - 16:20	tbd	1 Std. 30 Min.	0/3	exact date is preliminary
	Session 04C DMT & PSM	19.06.2020 14:50 - 16:20	tbd	1 Std. 30 Min.	3/3	exact date is preliminary
	Session 04A MMFS & DMT	19.06.2020 14:50 - 16:20	ZEU/160	1 Std. 30 Min.	3/3	Only for topics from the Chairs of Mechanics of multifunctional Structures and Dynamics and Mechanism Design

20 Einträge

(d) Enrolment in the sessions

Fig. 1: Multi-level OPAL enrolment for the CMS literature seminar

The main part of the semester consists of the sessions with the student presentations. Here, in all formats, a presentation of 20 minutes duration is given and then evaluated with a short discussion. In both the mechanics seminar and the literature seminar, this is a 10-minute discussion of the topic and a short evaluation of the presentation technique. A more detailed feedback of the presentation technique at the end of the course takes place individually with the respective supervisor. In contrast to this, the focus of the presentation seminar is very much on the detailed discussion of the presentation technique. Here, students give the same presentation twice on two different dates and are assessed on the basis of their improvement in the second round. A short discussion of the topic is part of the second round.

All three courses met the challenges of the 2020 summer semester in different ways.

(i) In the presentation seminar, the introductory lecture was broadcast live from the empty seminar room via YouTube and has since been available as a video via YouTube. This means that students can also access it asynchronously and watch individual aspects of the event again afterwards. Parallel to the public YouTube stream, a GoTo meeting organised the participants to coordinate dates. The student presentations took place in presence under strict hygiene regulations.

(ii) The mechanics seminar took place entirely via GoTo Meeting. For the introductory lecture as well as the student lectures, the moderator rights were handed over to the lecturer in each case. The scheduling took place in consultation between the supervisors of the thesis and the respective university lecturers.

(iii) The literature seminar also used GoTo-Meeting. Some students in this international course were unable to travel to Germany from their home countries for the summer semester, which made it essential to fully digitise this course. This also made it possible to parallelise the lectures in up to 4 sessions, so that all 55 participants could give their presentations in the time slot provided in the timetable. An additional challenge in this seminar is the enrolment and preparation of the schedule. The topics offered, from which the students are

free to choose, are provided by the three professorships of the IFKM and the PSM. Once chosen, the topics must then be presented in the sessions supervised by these professorships in order to enable a professional assessment. For this purpose, a multi-level enrolment procedure, as shown in excerpts in Fig. 1, was created in OPAL. After an initial general enrolment for the course, Fig. 1 (a), students can view the topics offered, Fig. 1 (b). After selecting a topic to be worked on, the corresponding enrolment, Fig. 1 (c), takes place according to the "first come - first served" principle. The topics contain the abbreviations of the corresponding professorships, so that in a third enrolment, Fig. 1 (d), students can choose a presentation date that is supervised by the corresponding professorship. Since each topic in the literature seminar is assigned to its own supervisor, there is also a large number of supervisors in this seminar. In order to provide them directly with the current information, an additional "supervisor" enrolment has been provided in the course.

Some topics in the literature seminar were designed in pairs, for example by dealing with the first part of a publication in one presentation and the second part of this publication in another presentation, or by giving two very closely related publications as presentation topics. The aim here was to get the students to exchange ideas about subject content and presentation technique, to give each other hints and feedback in the process of preparing a presentation, and to practise teamwork. Above all, in times of isolated work in home office, this was also intended to be a deliberate trigger and incentive for communication to perhaps alleviate the often psychologically stressful situation at least a little.

3. Introductory event

The assessment of student presentations should always be preceded by a clear definition of requirements. This means that it has to be clarified and communicated what is expected of a presentation. This is best done in the introductory session of such a seminar.

Within the presentation seminar, which traditionally focuses on the individual presentation

technique, a summary was developed for this purpose which, beyond general regulations on slide design, raises the participant's awareness to various communication techniques. In addition, presentation preparation is discussed intensively and it is shown that - in contrast to classical dogmatic guidelines on presentation design - the manner of presentation must always suit the presenter and the audience.



Fig 2: Title slide "Your perfect presentation" to motivate an individual style of presentation

This approach was adapted for the mechanics and literature seminar a few years ago. As illustrated by the title slide in Fig. 2, the aim is to encourage students to develop their own style of presentation in addition to the basic rules of presentation design and to test this personal style during the seminar.

So how can we measure whether a presentation is "good", beyond its purely technical accuracy? Presentations always aim to convey something to an audience. If the audience listens enthusiastically and can absorb the presented content, the presentation is good. To do this, the audience's interest must first be aroused, which can be achieved through various methods. They range from vivid motivation, appealing slide design, clear language, facial expressions and gestures to spatial audience contact. These points are equally important and can also be implemented in the virtual space. Only the spatial contact is now the chosen position to the camera and which image section the camera shows. It is taken for granted that the presentations are held with the presenter's camera running. All these points are to be applied and adjusted individu-

ally for each person. Speakers with naturally quiet voices can improve the acoustics by taking on step closer towards the audience or by moving a little closer to the microphone. In contrast, a presenter with a very loud voice and a position directly in front of the front row may overwhelm the audience. How much gesticulation suits one's own way of speaking is also individual.

The introductory lecture should give an impression of the effect of these methods. For this purpose, it is deliberately spoken too loudly or too softly, unfavourable slide design is discussed using concrete examples, etc. The effect of the individual methods is demonstrated in the lecture and discussed afterwards. For example, the lecturer loses the attention of the entire audience by showing a slide with a lot of continuous text and a video. The lecture continues with the content and after a few seconds the audience is asked to indicate by a show of hands which part of the lecture they really noticed in the last 20 seconds. About one third will have read the continuous text and two thirds will have watched the video. There are rarely individual students who report that they would have continued to listen to the lecture. By directly experiencing and reflecting on the points at which they, as listeners, enjoy listening, when they feel uncomfortable listening or at which points they are no longer attentive, the importance of these methods for a successful presentation becomes clear to them in their own experience. Afterwards, the students are asked to try out exactly these design points for themselves within the framework of the respective seminar. Furthermore, when listening to their colleague's presentations they are asked to repeatedly ask themselves the questions "What works? What is good? What doesn't work, and why? How would I do it better?" Learning by watching is important to the success of such a seminar.

4. Feedback during the presentation

In order to determine whether individual presentation techniques work out the way they are planned, the perception of the reaction of the audience is necessary. Therefore,

we now have to discuss how to capture the audience's reaction.

If the audience is physically sitting in the presentation, an experienced speaker can identify at a glance how many listeners are still interested in the topic or are perhaps looking bored or even completely distracted. Even if it is difficult to follow the presentation because people are speaking too quickly or unclearly, or the topic is too complex, the ensuing perplexity can be read in the faces. This "real-time feedback" is not transferable to a virtual presentation. Usually the cameras and microphones of the audience are switched off to keep the technology stable.

Active questions from the presenter can counteract this and activate the audience, either in the form of a direct learning success question or by briefly summarising what was said and asking them to name gaps in understanding. These questions can also be incorporated very well into digital presentations, although this takes a little more time. In the authors' experience, answering the questions via the chat function leads to more feedback than the classic raising of hands in the lecture hall.

With the tools mentioned, presentation techniques can certainly be used virtually and tested selectively. Only "real-time feedback" in the form of eye contact with the audience cannot be reasonably digitised.

5. Implementation and evaluation

The students in all three lecture seminars were able to achieve the primary learning objectives, which are listed first in Tab. 1, in the summer semester 2020.

In the presentation seminar, the students worked successfully on their individual presentation techniques as usual. This was made possible by the established procedure in presence, supplemented by strict hygiene measures.

The online lectures in mechanics and literature seminars were also successful. The students took the lectures seriously and were generally well prepared. The supervision of the preparation was not significantly affected by the exclusive online contact. In some cases, contact with

the students of the literature seminar was insufficient in this phase, but this was also observed in the face-to-face version of the event, although now somewhat intensified by the physical distance. In the first lecture dates, individual technical problems occurred, such as difficulties with logging in, functioning of the terminal devices, etc.

Students were asked to arrive 15-20 minutes before the start of the literature seminar in order to test the technology and to process the formalities for the later assignment of grades. Technical aspects took a little more time than in a normal face-to-face seminar. Individual students only appeared very shortly before their own slot in the seminar date, which then took additional time for set-up and testing.

According to their own statements, some students were less agitated when giving their presentation due to the greater distance to the examiner and the auditorium. Nevertheless, if they had the choice, they would prefer a seminar in presence.

In the context of the virtual seminars, as explained in section 3, it was not possible for the students to further develop their individual presentation style in detail through "real-time feedback" from the audience. The aforementioned obtaining of explicit feedback during the lecture was also not practised. This is unusual, requires more self-awareness and does not take place during a classroom presentation in a seminar, mainly for reasons of limited time. Feedback was given during the subsequent discussion, which was then moderated by the supervisor or examiner.

Another learning objective of the seminars discussed here is to get to know different scientific topics. The students are presented with a selection of different topics in a short period of time within the respective course and are expected to enrich the discussions following each presentation by asking questions. Unfortunately, especially in the mechanics and literature seminar, there was relatively little participation from the students. Even in presence, it is always difficult for students to participate in the discussion with questions and often the events are not attended before and after their own presentation date. This effect is intensified by the virtual implementation. In the liter-

ature seminar in particular, it was necessary to organise the large number of lectures in up to four parallel sessions. Here, the number of the few listeners was additionally distributed among these four sessions.

In contrast, the multi-level OPAL enrolment and course architecture in the literature seminar worked very well and will also take place in this form in future semesters.

With the points discussed here, does it make sense to integrate virtually conducted lecture seminars in the future? The lockdown in the context of the coronavirus pandemic has shown that meetings and conferences can in principle be held in virtual space. If one also takes into account the omitted travel costs and time, it can be safely asserted that virtual presentations will continue to be part of everyday life even after the contact restrictions have been lifted. If the opportunity and capacity exists, it would thus be advantageous for students to additionally develop their presentation skills in the virtual space. Lecture seminars with large numbers of participants, such as the literature seminar, also require more space in a classroom setting. Setting up to four parallel lecture rooms is only feasible with enormous effort in terms of time, organisation and room capacity. Virtual sessions therefore offer a practicable alternative.

In order to raise the student's awareness to the possibilities of how one as a presenter can influence the mood of the audience and bind their attention more or less and at which points one loses it, a successful introductory lecture as described in section 3 is important. However, with the lack of "real-time feedback", it cannot be ensured that the students have perceived the learning effects presented in the desired form. This is less of a disadvantage in the presentation seminar, as students are assessed on the improvement of their presentation in the second round and receive very detailed feedback after their first presentation. The participants of the mechanics and literature seminar, however, had worse starting conditions. Here, the presentations are assessed in the first and only round and the time for public feedback on the presentation techniques is limited. However, there was an offer to discuss the slides with the supervisor before

the presentation, and there was in-depth feedback afterwards. The mechanism of students making progress by critically adopting successful features from other presenters was less evident.

Beyond the pure evaluation of the presentations, these seminars should show the possibilities of presentation design and its effects, so that the students can also work on their presentation technique in the future. Especially for the mechanics and literature seminar, the introductory lecture is particularly important and should be conducted with direct audience contact in the future wherever possible.

6. Summary and outlook

Presentation, mechanics and literature seminars are important components of teaching at the Faculty of Mechanical Engineering at TU Dresden, which, adapted to the contact restrictions, were also successfully carried out in the summer semester 2020. The primary learning objectives in each case - teaching individual presentation techniques, defending one's own thesis, autonomous understanding and subsequent presentation of a scientific publication - were all achieved.

The introductory event, which had a similar structure in all three seminars, was held entirely digitally and could not fully achieve its goal of raising awareness of various presentation techniques due to the lack of direct audience contact. For the future, it should be considered whether special digital techniques such as surveys, chat during the lecture, etc. should be presented, tested and practised in more detail.

The participation of students as listeners in the lecture sessions was rather low - especially in the mechanics and literature seminar. This problem, already known from previous years, was worsened by the virtual implementation.

Not only have the students, also the teachers learn in the seminars described here. In the current edition of the literature seminar in the summer semester 2021, three things are practised differently. In the previous year, the lecturers had a list of criteria to support the as-

essment and help with uniform grading. However, it was internal and not handed out to the students so as not to guide them too much. In the summer semester of 2021, the criteria list was revised and handed out to the students at the beginning of the semester. In addition, inspired by the procedure in the presentation seminar, the grading is now split up and a partial grade is given in advance for the quality of the slides, with the possibility of improving the quality of the slides before the actual presentation, which is also included in the grade. Finally, all topics are now basically dealt with in group work. At the time of writing this article, the presentations have not yet taken place. The authors are curious to see the effect of these measures.

When planning future lecture seminars in general, it is worth asking what content should be taught in each case. Hybrid and digital formats can compensate for a lack of room capacity, minimise travel distances and teach the skills of digital presentation, which are probably important in the long term. However, virtual formats have limitations when it comes to developing a personal presentation style; students should first learn to interact with a physically present audience before transferring the knowledge they have gained into the virtual space.

Literature

- [1] CMS Literature Seminar: [Module description](https://tud.link/w339) (accessed on: 14.05.2021) (<https://tud.link/w339>)
- [2] Presentation Seminar: [YouTube Introduction](https://youtu.be/d0zubK2pTXk) (accessed 26.05.2021) (<https://youtu.be/d0zubK2pTXk>)
- [3] [GoTo Meeting](https://www.gotomeeting.com/) (accessed on: 14.05.2021) (<https://www.gotomeeting.com/>)
- [4] [Online Platform for Academic Teaching and Learning \(OPAL\)](https://bildungsportal.sachsen.de/opal/) (accessed on: 14.05.2021) (<https://bildungsportal.sachsen.de/opal/>)