GEORG-AUGUST-UNIVERSITÄT
GÖTTINGEN

„barrier-free studying“

Information for lecturers on accessible digital teaching

Representative for students with disabilities and chronic diseases

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www.uni-goettingen.de/ barrier-free

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Dear lecturers,

Corona changes teaching, learning and examining. The extraordinary current situation confronts you, as a lecturer at a university where students are usually present, with the challenge of converting teaching and learning to digital formats. The focus is currently on conducting as many courses and examinations as possible.

Despite your high additional effort by switching to online formats, it should be ensured that all students are able to take part in the courses - this includes the 11% of students who are studying with a study-relevant health impairment. "Barrier-free studying", describes the unhindered participation of students with disabilities and chronic diseases in courses as well as the unhindered access to teaching materials. Barrier-free teaching often does not require enormous adjustments - you can make a big difference with small changes!

Depending on the effects of the individual health situation and on the barriers existing at the university, in the course of studies or the specific lecture, the situation is very different. For some students with health impairments, the current flexibility in terms of space and time increases the chances of participation. However, digital teaching formats can also lead to new and sometimes high barriers, which not only prevent participation in courses but can also jeopardize the successful completion of course- and examination-related achievements . Possible barriers arise primarily from technical and organizational conditions and the form in which content is presented. Also under the current conditions, there is an obligation to enable all students to participate in courses and examinations. If this cannot be fully guaranteed for students with health impairments, appropriate precautions must be taken to ensure individual compensation for the use of the courses and exams in individual cases.

Within the scope of my possibilities I would like to support you as a lecturers and examiners. This handout therefore offers suggestions on how the use of digital technologies can be designed to promote inclusion. If you require information on the subject of barrier-free studying, I am at your disposal as a contact person and I am thanking you for your support!

Katrin Lux

(Representative for students with disabilities and chronic diseases)

1. The ten most important points at a glance

In order to give as many students as possible the same opportunities in their university education, it is not enough to treat everyone equal. The equal participation of students with disabilities can only be guaranteed if their needs are taken into account and they are given the opportunity to use their own potential - without putting barriers in their way. You can support this as a lecturer:

1. Be open to legitimate concerns

By signaling your willingness to support, you reduce insecurities and fears. Many students feel perceived and activated by this, so that they themselves seek or propose solutions.

2. Refer to the university counselling services

In order for students to be informed about their legal options as well as existing support services, it is important to provide information about university counselling services at an early stage.

3. Offer transparent structures

A precise plan of the course (dates, outline, deadlines, summary) and the earliest possible announcement of the planned examination dates and formats enable students to identify difficulties and, if necessary, to organize advice and support.

4. Define concrete learning goals

Clearly defined and formulated learning objectives and examination requirements provide students with clarity about the content of a course and the type and scope of the course- and examination-related achievements. Students can thus adapt more specifically to the learning process.

5. Use understandable and precise wording

In digital teaching, the possibility of understanding a task through direct oral consultation is sometimes missing. In addition, there are no further questions from other students and thus no possibility to recognize that the task itself was understood differently.

6. Provide documents, materials and literature in good time

Only the early provision of materials and literature offers an adequate opportunity for preparation and follow-up. Especially in the current situation, students need sufficient time for the acquisition and possible preparation of documents or are dependent on additional written work (scripts, logs, "blackboard"), if they cannot listen and take notes at the same time.

7. Create accessible teaching and learning materials

Students with visual or hearing impairments are dependent on barrier-free teaching and learning materials. These guarantee equal access to the study contents and participation in your teaching.

8. Communicate via two sensory channels

Information that is seen should also be heard and vice versa. This increases the accessibility of information for everyone and is especially important for students with sensory impairments:

- Verbalize the visual (for visually impaired/blind students)
- Visualize the verbal (for hearing-impaired/deaf students)

9. Offer consultation possibilities

Offer inquiry possibilities regarding your courses and the materials provided. Ideally via two alternative options so that students with sensory impairments can also use one of the communication channels.

10. Make examinations inclusive

Students with a health impairment relevant to their studies can still apply for compensation of disadvantages. The right to compensation of disadvantages results from the principle of equal opportunities and is required by examination law.

Please consider the topic of accessibility when designing your course!

2. Courses (almost) without barriers

When used correctly, digital teaching can help to break down many existing barriers. At the same time, digital teaching formats and the associated multimedia content can create new barriers. This begins not least with the available digital infrastructure.

2.1 Learning management systems & digital tools

Possible barriers for students should be avoided from the outset if possible. However, as a lecturer, you use the existing digital infrastructure such as learning platforms and existing tools for online communication.

In many learning management systems, the use by students has shown that they are not barrier-free, i.e. not accessible to all. This is not a question of the lack of barriers in the teaching and learning materials used, but of the learning management system itself. Many such systems have been and are being modified or "programmed in" afterwards in order to reduce barriers within the system. Nevertheless, these reworked systems often still have barriers. A barrier-free learning management system is thus a structural condition for making digital aspects of teaching inclusive. However, you as a teacher cannot change this in the short term.

With this chapter, however, I would like to increase your sensitivity to the fact that existing systems can exclude certain students. As long as there are no comprehensive low-barrier learning management systems for your teaching, ways must be found to circumvent or compensate for these barriers in the sense of inclusive teaching. One possibility is to overcome such and other barriers in retrospect through individual adjustments or compensation of disadvantages. In addition, the different teaching formats have different barriers as well as possibilities for barrier-free design.

2.2 Synchronous teaching formats

Participation in synchronous teaching formats such as live lectures or live video conferences (seminar talks, discussions, tutorials) can be problematic for some students. This concerns especially students

- that are hard of hearing or deaf and all students when sound problems occur with overloaded or bad lines.
- with visual impairment or blindness, if the content on the screen cannot be seen or correctly recognized.
- in social or health-related stress situations that make participation in live formats impossible or irregular.
- with impairments of language and speech.
- with certain mental disorders.
- with autism spectrum disorders.

Finally, it also affects all students who only have access to devices with small displays or who do not always have a stable and powerful Internet connection.

If you have decided to use a live format, ask the participating students at the beginning of the course whether they need any adjustments due to impairment. If so, you can make adjustments if necessary or provide alternative formats.

Examples of supportive measures:

- Ask the students which tools they cannot use for synchronous communication.
- Make the presentations available beforehand so that students can view the content in advance and can then better follow your live presentation or have the chance to view and prepare the material with assistance programs if necessary.
- Describe important images on your screen orally during the lecture or have students describe them as activating elements. This is essential for students with visual impairments.
- Subsequently, provide scripts or (if permissible) a recording of the lecture - at best with subtitles.
- Alternatively, students can in turn create a transcript for all participants - which you can provide corrected afterwards. The file formats must be possible to open and to read by everyone.
- If discussions are part of your course, make sure that students do not speak in disarray or simultaneously. In this way you can ensure that it is possible for all students to follow the course of the discussion.
- Think about offering a replacement for missing participation early on, if necessary.

2.3 Asynchronous teaching formats

The asynchronous presentation and preparation of course content and materials is a good way for all students to process the information at their own pace. For some students with health issues, the spatial and temporal flexibility increases the chances of participation and is helpful in the current situation for many students. However, participation in asynchronous teaching formats can also exclude students if no attention is paid to barrier-free accessibility when recording lectures or preparing teaching materials. This applies in particular to students

- that are hard of hearing or deaf.
- with visual impairment or blindness.

In order to make the teaching content accessible to students with sensory impairments, it is necessary to convey teaching content in as multimodal a manner as possible according to the two-sensory principle (accessibility for at least two senses) and to prepare the materials used as barrier-free as possible.

Examples of supportive measures:

- Transport content through different channels (verbal-auditive, written, visual). Especially information that is perceived purely visually, such as illustrations, graphics, drawings, sketches or tables, should be described and explained.
- Important visual information must be conveyed to visually impaired and blind students via an audio description (transfer of visible content into audible information).
- When using videos, audio transcriptions and subtitles are required for students that are hard of hearing or deaf (this also helps students who do not speak German as their first language).

2.4 Mixing synchronous and asynchronous teaching formats

A didactically useful mixture of synchronous and asynchronous formats can provide opportunities for all students to participate. However, difficulties may arise depending on the formats chosen.

Collaborative work, such as the creation of services in virtual teams, offers the advantage that the people involved in the work process do not necessarily have to be available for consultation in the same time frame. This enables a higher flexibility. However, there are restrictions in collaborative working (depending on the format used) for students

- that are hard of hearing or deaf,
- with visual impairment or blindness,
- with therapeutic or caring responsibilities,
- with impairments of language and speech,
- with certain mental health problems,
- with Autism spectrum disorder.

Since equal participation cannot be guaranteed for all students, alternative formats regarding the achievements are useful in addition to guidelines for cooperation.

Examples of supportive measures:

- Clear and binding guidelines for the chosen form of cooperation.
- Replacement of the group performance by an individual task.
- Alternatives to certain forms regarding the achievements, e.g. replacing synchronous formats (e.g. live tutorials) with equivalent asynchronous formats (e.g. solutions with written explanations).

The use of **parallel written chats** in live formats is not recommended: They mean more stress and divided attention for everyone and are particularly difficult or impossible to handle for

- blind and visually impaired students using screen readers/voice output or magnifying software ,
- Students with dyslexia, health-related attention deficits or with Autism spectrum disorder ,

- Students who only have access to devices with a small display without an external keyboard.

Should you still use live chats: Do not rely on the fact that all additional information such as links or documents sent via the chat will be recognized as such by everyone.

Examples of supportive measures:

- Provide the links or documents accompanying your event in advance.
- Save necessary chat discussions or information and make them available afterwards in an accessible file format.
- Do not use the chat function for information that is important to everyone.

3. Accessibility of teaching and learning materials

Text work is part of everyday life in university teaching. In use are different teaching and learning materials such as presentations, handouts, scientific articles, lecture notes or textbooks. However, these materials represent a barrier for impaired students - unless they are designed to be barrier-free.

3.1 Barrier-free documents

It is helpful for all students if your self-produced texts have a clear structure. However, this is necessary for students

- with dyslexia or other reading impairments.
- with autism spectrum disorders.
- with impaired vision (including defective color vision) or blindness.

Without assistive technologies, reading texts is a major barrier for people with severe visual impairment or blindness. This difficulty can be compensated by reading software when reading on a computer. These screen readers, however, need a well-structured text so that they can reproduce the meaning. In concrete terms, this means that the programs orient themselves on the formatting templates of the word processing or presentation programs and can thus recognize when a text passage is a heading, for example.

Self-produced materials

If you follow a few rules, self-created materials such as Word documents, PDF documents or PowerPoint presentations become accessible for everyone:

- store meta information (title, author, language, keyword) in the document properties;
- use structured format templates;
- create cover sheet and outline;
- no unnecessary spaces and paragraphs, use of page breaks or paragraph breaks for layout;
- use clear contrasts;
- do not use color as the only distinguishing feature, but also by shape or font;
- use a sans serif font;
- It is best not to create PDFs via the print menu, but via Export or with the Acrobat add-in under "Create PDF".

Microsoft's word processing and presentation programs each contain a tool to finally check the accessibility of a document and to solve possible problems.

Local knowledge

In the context of the University of Göttingen's participation in the diversity audit "Shaping Diversity" of the Stifterverband, the IT department has developed handouts and checklists that provide you with information on the barrier-free creation of teaching and learning materials. These are available on the website of the Equal Opportunities and Diversity Unit under the link Teaching - Protection against discrimination in digital learning (handouts only in German)

Note on alternative texts in the teaching context

Graphics and images are used for different purposes in the teaching context: they can be decorative graphics, content images or functional graphics. In textbooks they can serve various purposes, such as an instructive, illustrative, semantic or organizing function.

For the visually impaired and blind, the corresponding functions must be given by an alternative text: In the teaching context in particular, alternative texts should not simply describe the graphic or image, but should concretely reflect the content that this element is intended to convey. The type of alternative text thus varies with the respective function.

Scanned literature

Scanned literature, such as photo PDF documents that combine scans of a file, cannot be used with screen readers. In order for severely visually impaired and blind students to be able to work with the scanned literature, the conversion, i.e. preparation and appropriate formatting of the documents is necessary.

Local knowledge

The State and University Library (SUB) offers a "Scan Service" for the barrier-free conversion of literature not available in digital form. Students can use the service from May 18th, 2020; teachers can contact the Conversion Service with requests for the conversion of literature from June 1st, 2020. Further information and instructions on how to contact the service can be found under the link Conversion service of the SUB for the visually impaired

3.2 Instructional videos

For learners with a sensory impairment, such as a visual or hearing impairment, an instructional video in its basic implementation initially represents a barrier. This is because videos work with the transfer of information by visual and auditory means. By taking appropriate measures, however, videos can also be prepared and made accessible to visually and hearing impaired students.

Auditory information should also be available in readable text form:

- Subtitles, should be switchable and not "burnt into" the video, as subtitles can be a barrier for students from the autism spectrum.
- Audio transcription of the spoken text, but also of relevant sounds.
- Translation in sign language.

The Disability and Studies Department of the TU Dortmund (DoBuS) has produced a guide to subtitling. This can be viewed under the link Guidelines for the creation of subtitles for university courses (only in German).

Visual information should also be described:

- Describe important images on your screen verbally.
- If presentations are the focus of your recorded instructional video, make them available.
- If essential information is transported via image and not verbalized, an additional audio track with an audio description of the visual content is required.

Note to make subtitling easier

Typing subtitles yourself takes a lot of time. There are now several ways to automatically convert speech to text. However, since automatic text recognition is still prone to errors, you should always correct any information relevant to the exam afterwards.

- On YouTube, subtitles are created automatically. Errors can be edited afterwards in the video editor and then saved. Videos do not have to be published, but can also be made accessible only by link. But you have to weigh up privacy and copyright issues. Link to the instructions for automatic subtitling on YouTube
- There are free speech-to-text converters on the Internet. With them you can at least produce transcripts. Undoubtedly a somewhat cumbersome way, but it saves typing the spoken word. Link to the list of software that can be used for transcripts

4. Examination procedures

4.1 Compensation of disadvantages

Health impairments can have a disadvantageous effect on the course of study. With the compensation of disadvantages, we have a thoroughly tried and tested instrument at hand to enable equal participation reactively in individual cases. However, for the now redesigned teaching and learning settings, there is still no empirical data in which cases new barriers arise and how these can best be reduced. Here I ask you to be generous in the organizational design of the compensation of disadvantages.

The subject-related requirements are not diminished or changed by a compensation of disadvantages, i.e. the basic competences to be acquired remain unaffected.

When can compensation of disadvantages be claimed?

The form of the compensation of disadvantages is always decided on a case-by-case basis; thus, under certain conditions, students with impairments have a right to compensation of disadvantages, but not to a specific compensatory measure. The use of disadvantage compensation may not play a role in the assessment of performance and may not be noted in the university transcript.

Compensation of disadvantages must be approved if

1. there is a prolonged or permanent impairment of health and appropriate evidence has been submitted,
2. this leads to a disadvantage or concrete hardship, provided that an examination has to be completed under the conditions and within the time limits applicable to all (concerns the effects of the impairment on the specific study and examination situation) and
3. the requested modifications have no factual connection with the knowledge and skills to be determined in the examination.

How is the compensation of disadvantages decided?

Provided the three conditions are met, the examination commission has no own discretion *whether* to grant the compensation requested. *How* the compensation of disadvantages can be granted, however, is at the own discretion of the examination board, and should be discussed with the lecturers responsible for the examination. Yet, this discretion is reduced in two ways:

1. The nature and scope of measures to compensate the disadvantages must be designed to fully compensate the effects of the impairment. The standard of comparison are the conditions for examinees without impairments (no undercompensation).
2. Measures to compensate for disadvantages must maintain equal opportunities for other examinees. A decrease of the examination performances without appropriate compensation or modification is not permitted (no overcompensation).

How can a compensation of disadvantages look like?

As compensation of disadvantages is always a matter of needs-based individual decisions, it is not possible to make any generally binding statements on compensation of disadvantages. Which examination modalities are suitable can only be determined depending on the interactions between the effects of a health situation and the competences to be demonstrated by the course- or examination-related performance. Examples can be found under the link Examples - what can compensation of disadvantages look like?

How does the application process work?

The application for the compensation of disadvantages is made with an informal letter to the responsible examination commission. The application, together with the relevant medical statements, will be submitted to the examination office of the respective faculty; from there it will be forwarded to the examination commission in charge.

Local knowledge

Information and counselling for students to clarify questions regarding personal requirements, the application procedure and possible measures are provided by the representative for students with disabilities and chronic diseases as well as the study and examination counselling offices in the faculties. You, as a lecturer, can also use these contacts if you have any questions regarding compensation of disadvantages!

4.2 Inclusive examinations

If study- and examination-related conditions are defined barrier-free from the outset with a view to inclusion, compensation of disadvantages may have to be claimed less frequently in individual cases. This makes it possible from the perspective of students with health impairments, to take the examination without having to apply for compensation, without having to obtain suitable verification and without having to explain their personal situation. From the university's perspective, this means less counselling and administrative work for the individual case assessments of disadvantage compensation.

You can offer all students the opportunity to design the examination situation according to their circumstances and to select the examination form that is suitable for their learning style and examination type if you offer

- different examination forms of the same competence level,
- alternative tasks in one examination format or
- basically several (temporally-extended) examination dates during the examination period.

Local knowledge

If you are thinking about offering examinations in attendance, you can make use of the studIT service: For visually impaired and blind students two notebooks are available, equipped with USB braille display. Besides the Microsoft Office package and Libre Office, the software JAWS is installed. This software enables the reading of screen information at different speeds. Further information - including information on how to rent a notebook - can be found under the link lending notebooks from StudIT for blind students.

5. Further notes

At the University of Göttingen you can use the information and counselling services as well as supporting services already mentioned in the document. At numerous other universities or non-university institutions, information on the concerns of barrier-free digital teaching has been compiled. I would like to make this information available to you as well:

Barrier-free documents

- Color contrasts can be checked for accessibility with the Color Contrast Checker (WCAG 2.0/ Level AAA).
- One format that is well suited for readers is the audio book format DAISY (Digital Accessible Information System). There is a free plugin for Microsoft Word that enables to convert Word documents into the DAISY format.
- PAVE is an online tool for barrier-free post-processing of PDF files; it is available free of charge for personal use.
- The video tutorials of TU Chemnitz (only in German) provide insights into the creation of accessible PDF documents and PDF forms.

Barrier-free videos

- The project "Barrier-free information and communication - for everyone" (BIK) has created a guide for barrier-free online videos (mostly in German).
- "Aktion Mensch" has collected 4 tips for your barrier-free video (only in German).

Lectures & illustrative material

- On the page "mapping access" you will find tips on the topic of Accessible Teaching in the Time of COVID-19 by the US-American scientist Aimi Hamraie.
- Wiebke Köhlmann explains in her lecture about accessibility of collaborative and synchronous learning (only in German), restrictions on access to certain communication and collaboration tools for blind and deaf users.
- Prof. Dr. Sven Degenhardt informs about alternative texts as a component of barrier-free electronic documents: necessity, experience and research needs (video in German).
- The web tutorial of the University of Rostock shows techniques for designing and checking your own teaching materials for accessibility (web tutorial only in German).

The Studying with Disability Information and Advice Centre provides comprehensive information about studying with disabilities in Germany. A great deal of information is so far only available in German. An English-language version is coming soon.

How digital participation in teaching and learning can be implemented for all still raises many questions. In my function as representative for students with disabilities and chronic diseases, I cannot always promise answers to all questions, but I can offer support in finding solutions. In this sense, this compilation is only a first, open collection. For questions, suggestions and additions I am at your disposal:

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This translation was produced at very short notice. If you do not understand the wording or if you do not agree with it, please let me know!