



Accessible E-Learning and Teaching

**Checklists for Creating and Reviewing
Accessible Digital Content**

University of Bremen
**The BALLON Project – Accessibility in E-Learning and
Teaching**

These checklists were created as part of the BALLON Project (Accessibility in E-Learning and Teaching), which was launched at the University of Bremen in January 2021. The aim of the project is to develop a support system for teaching staff and students for accessible digital learning and teaching at Bremen universities as part of the implementation of digital and hybrid studies. Further information and support are available directly from the BALLON Project. This document contains descriptions on how to implement accessible design as well as checklists for reviewing different formats and materials: Word, PDF documents, PowerPoint, websites, online classes, and information videos. You can also download the checklists separately on the BALLON website under “Checklists and Tools”:

[Checklist for accessible Word documents](#)

[Checklist for accessible PDF documents](#)

[Checklist for accessible PowerPoint slides](#)

[Checklist for accessible online classes](#)

[Checklist for accessible websites](#)

[Checklist for accessible information videos](#)

Checklists for Creating and Reviewing Accessible Digital Content

© The BALLON Project – Accessibility in E-Learning and Teaching, University of Bremen

Second edition, July 2022, Bremen

Author: The BALLON Team

Email: ballon@uni-bremen.de

Website: www.uni-bremen.de/ballon

Contents

Introduction.....	5
Barriers at universities.....	5
Aim and target group of the checklists	5
Legal foundation.....	6
How to use the checklists.....	6
1. Creating accessible content: Word.....	8
1.1. Implementation in Word.....	8
1.2. Checklist for Word	14
2. Creating accessible content: PDFs	18
2.1. Implementation in PDFs	18
2.2. Checklist for PDFs.....	23
3. Creating accessible content: PowerPoint (PPT).....	25
3.1. Implementation in PowerPoint	25
3.2. Checklist for PowerPoint.....	33
4. Creating accessible content: websites	38
4.1. Implementation of websites	38
4.2. Checklist for websites	39
5. Creating accessible content: online classes.....	43
5.1. Implementation of online classes.....	43
5.2. Checklist for online classes	46
6. Information videos.....	49

6.1.	Implementation of information videos	49
6.2.	Checklist for information videos	53
	Further information	56
	List of links.....	57

Introduction

Barriers at universities

There are a wide range of different hurdles at universities that result in unequal access to university education and can even prevent access in the first place. These barriers are distributed across different inequality dimensions such as age, background, gender, disability, and other aspects. The resulting disadvantages experienced by some students have become further exacerbated since 2020 in the course of the COVID-19 pandemic and the associated switch to digital learning and teaching formats. This transformation posed a challenge to students, teaching staff, and the administration alike – and continues to do so in some cases. Disadvantages, including greater social distance, limited communication, and sometimes poor technological infrastructure, constitute barriers for all students, but affect students of already marginalized groups in particular. The **barriers** in e-learning and teaching raise a number of questions:

- *How should I study for an exam if the learning material is only available as an audio file, which is inaccessible to me due to my deafness?*
- *Home alone with a poor internet connection and/or with German as a foreign language – how will I ever be able to pass the course?*
- *My student is unable to read the slides – how can I make them compatible for a screen reader?*
- *What exactly are digital barriers?*

Aim and target group of the checklists

The checklists provide general **information on creating and reviewing accessible digital content**.

The checklists are aimed at everyone who is interested in supporting equal-opportunity access to digital content, with a particular focus on accessible e-learning and teaching. For this reason, they are intended especially for **teaching and administrative staff** who play a decisive role in student access to digital studies. The aim is to raise awareness of the topic of digital accessibility and provide a guide to

creating, designing, and reviewing Word and PDF documents, PowerPoint slides, websites, online classes, and information videos. Moreover, the checklists refer to helpful tools and further information. Accessible study material from teaching staff, work from students, and information material from administrative staff contribute toward a diverse and inclusive university and should be the norm. From easy-to-use forms and PDFs legible to screen readers, to high-quality online videos with live subtitles: every barrier prevented and dismantled ultimately benefits *everyone*.

Legal foundation

In some areas of university, full accessibility is already **legally mandated** – for example, by the UN Convention on the Rights of Persons with Disabilities, the Basic Law of Germany, the German Higher Education Framework Act, the Bremen University Act, and other legislation. You can find details about the legislation under “[Further Information](#)” in the “Guide for Teaching Staff: Supporting Fully Accessible Teaching” (KIS, University of Bremen, 2018). The foundation for accessible online content is provided by the global standards of the [Web Content Accessibility Guidelines \(WCAG\) 2.1](#), upon which the German [Accessible Information Technology Regulation \(BITV\) 2.0](#) is also based. These standards are currently outdated and a draft of the [WCAG 3.0](#) has already been published. As a result, Bremen universities are obligated to enable equal access to studies for all students – irrespective of social dimensions such as disabilities or illnesses.

How to use the checklists

The checklists can be accessed or used in two ways:

1. Are you about to start designing or creating materials and would like to make sure they are accessible? In this case, pay attention to the sections titled “**Implementation**” in the documents. Here you can find the aspects that should be kept in mind as well as information on specific settings in the relevant programs.
2. Have you already created your materials and would like to test their accessibility? You can review your materials yourself using the “**Checklists**.” Cross off the applicable checkpoints and use the information under “**Implementation**” to work through aspects that have not yet been fulfilled.

The checklists refer to work with the programs **Microsoft 365 Professional Plus 2019** and **Adobe Acrobat Pro**. Your software versions may differ in terms of the respective functions or presentations. You can find support at [Microsoft: Make your Word documents accessible to people with disabilities](#) and [Adobe: Create and verify PDF accessibility \(Adobe Pro\)](#).

Alternatively, you can use OpenOffice or LibreOffice. You can find guides for these programs here: [Accessible PDFs with OpenOffice and LibreOffice](#). In addition to Adobe Acrobat Pro, you can also use [axesPDF](#) and [Kofax Power PDF](#).

1. Creating accessible content: Word

This chapter helps you create accessible Word documents. It is a good idea to read through subchapter 1.1 “[Implementation in Word](#)” before creating Word documents. This allows barriers to be prevented from the outset, eliminating the need to correct them afterwards. The criteria have been broken down thematically to improve orientation. An accessible Word document should consider all criteria equally, where possible. Existing Word documents can be reviewed using the “[Checklist for Word](#)” in subchapter 1.2.

The function “Check accessibility” has only been available in Word versions from 2013 and will be covered later. However, this guide can also be used to create accessible Word documents without this function.

1.1. Implementation in Word

Text formatting with format templates

The information described here should help you structure your Word document appropriately and accessibly using Word format templates, making it easily legible for everyone.

With the Word document open, you can implement the following settings step by step using the Word menu bar. If the functions cannot be found in the location described, you can find them using the search function in the menu bar.

a) **Format templates:**

For people with visual impairments, it is necessary to design text using format templates in Word for navigation using screen readers. This clearly defines selected text elements as (sub)headings or as (body) text, which can then be read out. Format templates are selected via “Home – Format templates.” This is also where changes can be made to standard format templates and where user-defined format templates are created. A range of format attributes can be configured using the format templates: font style, paragraph, tab stop, frame, language, position frame, numbering, key combinations, and text effects. To apply a format template, mark the text passage, and select the corresponding format template. Conversely, you can also format a text passage, mark it, and

then press “right click on format template – update [name of format template].”

This saves your manual settings in the respective format template.

b) Font:

To make sure the font is legible, a common sans-serif font style like Arial should be used. The font size must be 12 pt. Employees of the University of Bremen use the fonts defined in the corporate design (Sharp Sans or Arial).

c) Line spacing:

In order to ensure the text is also legible with limited eyesight, the line spacing should amount to at least 1.25 or ideally 1.5.

d) Text alignment:

Texts must be left-aligned and unjustified for legibility. Margin justification that is typically used can distort the text and make it unreadable.

e) Special formatting:

Highlighting should be used sparingly in format templates, because this can quickly make specially formatted text illegible. It is particularly important to ensure that the whole document is formatted with Word functions (Layout – Breaks). Please note: manual formatting with Enter and Tab should be avoided, as these entries are read out individually by some screen readers, which significantly disrupts the reading flow. Instead of placing breaks with Enter, breaks can be inserted via “Layout – Breaks – Continuous” if necessary.

Otherwise, it is best to configure spacing directly in the format template: “Menu – Format template – Format – Paragraph – Indents and spacing – Spacing.” Using the key combination “Ctrl + *” the existing paragraph marks and other formatting symbols can be shown and checked.

Text structure

Text structure is essential for designing accessible text files. Your document can be structured into columns, lists, or continuous text using Word functions. This not only improves the general overview, it also facilitates text design. The following information is also intended to ensure correct legibility for screen readers.

a) Structure:

The document must be structured clearly and consistently for the text to be logical and legible for everyone. The correct structure can be checked in the

outline view (View – Outline). An incorrect structure will result in the wrong reading sequence for screen readers.

b) Columns:

It is also important not to create text columns manually for the above reasons. Automatic columns should be used (Layout – Columns – Column number). The text is divided into the chosen number of columns, and the width and spacing can be adjusted individually.

c) Lists:

Lists and bullet points need to be configured using the corresponding functions to ensure screen readers can recognize the text as a type of list and read it out correctly. Do not use manual lists. Instead, different types can be selected and adjusted via “Home”: bullet points, numbering, and multi-level lists. Roman numerals should be avoided as bullet points.

d) Page numbers:

These are indispensable for orientation and should always be inserted (Insert – Header and footer – Page number).

e) Table of contents:

An automatic table of contents is necessary for various functions and screen readers. The table of contents is integrated and adjusted by Word (References – Table of contents). The interactive table of contents is based on heading levels defined by format templates.

f) Headers and footers:

These are not legible for a number of screen readers and should not therefore contain any information relevant for understanding.

g) Hyphenation:

Manual and automatic hyphenation for splitting words must be deactivated (Home – Layout – Hyphenation). This is for several reasons: It is not always correctly applied when converted to PDF files, sometimes screen readers read out hyphens as “hyphen”, and hyphens can impair legibility for people with learning difficulties or reading and writing disabilities.

Pictures, tables, and web links

To ensure the contents of pictures and tables can be understood non-visually, certain settings must be kept in mind. These are explained below and improve accessibility for everyone.

a) Image properties

The images used should be clear to everyone. It is important to use a suitable size and resolution. Black and white content should also still be recognizable.

b) Graphic layout:

To place embedded images in the correct sequence for screen readers, select the option “In line with text” as an image property (right click on the image – Layout options).

c) Tables:

For compatibility with a screen reader, tables need to contain a defined header line (Table tools – Table information options – activate checkmark for “header line”) in addition to an alternative text for complex tables (right click on the table – Edit alternative text or Table properties – Alternative text). Moreover, tables should only be used for tabular data and not for layout design. Since screen readers read out tables row by row, each row must contain the same number of columns. Adding a description (right click on the table – Insert label) identifies the purpose of the table and is necessary for an automatic table of contents.

d) Alternative text:

All information from graphic elements and tables also has to be provided via a non-visual channel, in accordance with the multi-channel principle. Alternative text can be inserted in Word for this purpose (right click on the image – Edit alternative text). Logos, symbols, pictograms, photos, diagrams, and other types of graphics likewise require an alternative text. Where images are only intended for layout design, they should be marked as “decorative” (right click on the image – Format image – Alternative text – activate the checkmark for “Mark as decorative”). This is necessary so that people with impaired vision can have a screen reader read out relevant content. An alternative text should be worded briefly, precisely, and objectively to describe the core message of the image. Everything that can be seen on the image should be described objectively, so

that people with and without vision experience the same content. In principle, image descriptions should be structured consistently, starting with general information before going into detail. Do not use the automatic function “Generate description for me,” as the result will not meet requirements.

e) **Links:**

Links and references should be recognizable as such in the text. They must be formatted accordingly as a link and labeled with link text and a screen tip (select link – right click – Link – Text to display and screen tip). The link text and screen tip should contain a suitable name for the webpage destination. Make sure a working link is entered.

Document properties

At this level, you can find information on settings that you should configure regardless of the content of your documents in order to increase the accessibility of your text. These points are particularly essential for files intended for publication.

a) **Meta information:**

Accessibility requires certain document properties (File – Information). At least a document title and the author should be entered here. Tags and comments can also be helpful, especially for retrievability on the internet (via search engines).

b) **Document language:**

Correctly configured document languages are important for a text document to be correctly interpreted by screen readers. They can be assigned individually to every document (Review – Language – Language settings). The defined document language must be identical to the language of the text content, otherwise this can result in readout errors with screen readers. Individual paragraphs in the document can be assigned a different language setting. To do so, select the text in the foreign language and change the language via “Menu – Review – Language – Set proofing language.” The option “Detect language automatically” can also be activated for this purpose.

Additional information for accessibility

Further general criteria are listed here that are intended to increase the accessibility of your document and help you dismantle any remaining barriers.

a) **Language:**

The language you use should be determined by the target group. However, to make sure everyone can understand the language, simple language is important. Sentences should be clear and unconvoluted. Abbreviations and foreign words should be explained or listed in a glossary, and a gender-appropriate language should be considered.

b) **Contrast:**

All content must have a sufficient color contrast between the foreground and background. Low-contrast content represents a barrier for people with color blindness. The combination of red and green should generally be avoided. Under "[Further information](#)," you can find a tool for automatically testing contrasts. The contrast ratio should be at least 4.5:1. Highlighting should follow the multi-channel principle: a color effect should be combined with bold print or similar. This makes the highlighted content also recognizable in black and white.

c) **Checking accessibility:**

The function "Check accessibility" (Home – Review – Check accessibility) in Word reveals a number of typical mistakes and should always be used after creating content. Once the check is done, the errors detected must be corrected.

1.2. Checklist for Word

Here you can find information for reviewing your Word document. This information is intended to help you check existing material for any barriers that may exist. Open your Word document and check all the listed settings step by step. If a point is unclear or incorrect, you can consult the previous chapter to resolve the issue.

Text formatting and format templates

Have you formatted your text with format templates?

Check whether you have formatted all content using pre-configured format templates.

Have you used a sans-serif font with a size of at least 12 pt?

Have you used a common, sans-serif font type like Arial? The font size should also be at least 12 pt.

Does your line spacing amount to 1.5?

For a standard body of text, the line spacing should ideally be 1.5 and should not fall below 1.25.

Is your text left-aligned and unjustified?

Format your text left-aligned and unjustified. Text justification can lead to difficulties reading the content.

Have you used special formatting sparingly and automatically?

Avoid manual formatting with spaces and empty rows using the Enter key. Instead, use the corresponding Word functions.

Is your document structure logical and consistent in the outline view?

Check for the correct structure in the outline view. An incorrect structure will result in the wrong reading sequence for screen readers.

Have you configured text columns automatically?

Text columns should not be configured manually. Work with automatic columns instead.

Have you inserted all lists using list/numbering options?

Lists and bullet points must be configured using the corresponding functions to allow screen readers to recognize and read them out properly.

Does your document have complete, automatic page numbering?

Page numbers are indispensable for orientation.

Do you have an automatic table of contents?

Did you insert and adjust the automatic table of contents using Word?

Do the header and footer not contain any relevant information?

Headers and footers are illegible for some screen readers. For this reason, make sure they do not contain any information relevant for understanding.

Have you deactivated hyphenation?

Hyphenation should be deactivated to improve legibility and compatibility with screen readers.

Pictures, tables, and web links

Are all your images embedded in sufficient size and resolution?

Generally, you should only use images when their size and resolution satisfy an accessible standard of quality. Information should also still be discernable in black and white.

Are all your images inserted in line?

Check whether images have been inserted in line with text.

Have you marked layout graphics as decorative?

If images are only intended for layout design, they must be marked as “decorative.”

Do all your images have an appropriate alternative text?

Following the multi-channel principle, information in graphics must also be available via a non-visual channel. Each image should therefore have an alternative text as an image description.

Do all your tables have a header line, label, and alternative text?

Review the alternative text for complex tables, make sure all tables have a defined header line, and check whether a correct label is added so that the tables can be read out correctly by a screen reader.

Do you only use tables for tabular data?

Tables should only be used for tabular data and not for layout design.

Do all your rows have an identical number of columns?

Since screen readers read out tables line by line, each row in your table should have the same number of columns.

Do all your links have a link text and screen tip?

Are all links formatted as a link and are they labeled with a link text and screen tip? Both must reflect the content or destination of the link.

Document properties

Have you entered the main meta information?

Are document properties correctly configured? If necessary, add at least a document title and the author.

Have you configured the document language correctly?

The defined document language should be identical to the language of your text content. This goes for the complete document as well as for any sections in a foreign language.

Additional information for accessibility

Have you used language appropriate for the target group?

The language used should be based on the target groups and also meet the normal requirements of the University of Bremen.

Is your language easy to understand?

Make sure your content is written in a clear language with easy-to-understand

sentences or bullet points. This facilitates teaching and learning, also in a university setting.

Are abbreviations and foreign words explained or listed in a glossary?

Have you explained all abbreviations and foreign words or listed them in a glossary?

Is your color contrast high enough (minimum ratio: 4.5:1)?

Check your content has enough contrast – both in black and white and for color content. No red/green contrasts may exist, and the content should still be recognizable in black and white.

Is color highlighting combined with a second type of formatting?

Highlighting should follow the multi-channel principle. Do not just use a color effect but also bold print, etc.

Have you performed an accessibility check and corrected any errors?

After creating the content, use the accessibility check in Word and correct any errors detected.

2. Creating accessible content: PDFs

In subchapter 2.1, you can find information on how to create accessible PDF content. However, before you proceed with the PDF file, you should first make the Word document as accessible as possible, if applicable (See chapter 1 “[Creating accessible content: Word](#)”). Changing an existing Word document into an accessible PDF document is easier. But if you only have PDF files available, go through subchapter 2.2 step by step and review the accessibility using the checklist.

An internal accessibility check can be carried out in the program Acrobat DC. [axesPDF](#) and [Kofax Power PDF](#) can also be used for this purpose. Two other programs for external accessibility checking are [PDF Accessibility Checker PAC 2021](#) and [PDF Accessibility Validation Engine PAVE](#). Possible screen readers will be covered in greater detail at the end.

2.1. Implementation in PDFs

Creating the PDF

The points listed here explain how to export a Word document into a PDF file. Initial settings are also configured here that are then paramount for the quality of the accessible PDF. It is important to treat the content and layout as distinct parts of the document. The layout determines legibility for screen readers with the help of underlying structural information (document structure tags). Only the content element is visible.

a) **Word document:**

First of all, the content should be prepared in Word as explained in the previous chapter.

b) **PDF format:**

Next, the document needs to be saved in PDF format. This file format allows for compatibility with screen readers and also keeps content immutable and virus-free.

c) **PDF export:**

The file is exported in Word (File – Export – Create PDF/XPS document). A new window then opens, where you can define the file name and storage location.

By clicking on “Options,” a window will open with the export properties that need to be configured correctly:

- 1) Include non-printable information: **Activate all options**
- 2) PDF options: **Deactivate** “Save text as a bitmap”

Adobe Acrobat Pro enables the export properties to be configured directly in the Word menu before exporting (Acrobat – Create Adobe PDF – Basic settings):

- 3) In the “Settings” tab, all checkmarks except for “Attach source file” and “Activate extended tag creation” should be activated.

PDF corrections

After exporting the file, a number of additional points need to be configured that are not possible in Word. The exported properties should also be checked. These aspects are discussed below.

a) Make Accessible:

The Make Accessible feature in Adobe Acrobat Pro guides you through initial (meta) information and settings that may require adjustment to ensure accessibility. These include missing form fields, images and tables, or the document title. Call up the function under Tools – Action Wizard – Make Accessible and select the relevant document. The program will then guide you step-by-step through necessary and optional features and provide assistance on how to fix barriers.

b) Internal Accessibility Check:

Adobe Acrobat Pro's internal accessibility checker then comprehensively checks your document for settings that are necessary for low-accessibility. Open your PDF document with Adobe Acrobat Pro and start the checking process: Tools – Protect and Standardize – Accessibility – Accessibility Check – Start Check. Go through the reported barriers and correct them if possible. For an overview of significant barriers, see the following section. For detailed help on accessibility report messages and how to correct them in Adobe Acrobat Pro, see [Adobe Helpdesk: Create and verify PDF accessibility \(Adobe Pro\)](#).

c) **Correcting errors:**

Corrections often have to be made manually. The aspects described here are sometimes output as issues in the accessibility check. Only some of these corrections can be made in Adobe Acrobat Pro:

1) *Document properties* (File – Properties):

Here you can find settings such as the title, author, security (permitted actions in the case of document restrictions), and document language. All of these settings have to be present and correct for an accessible document.

2) *Tags* (Document properties – Description – Advanced – “PDF with tags: Yes”).

These correspond with the Word format templates and define the structure. Accessibility requires the presence of tags. If the tags are missing or incorrect, they have to be revised. The function can be found in the navigation bar to the left of the document (Navigation bar – Tags (tag symbol)). If necessary, the "Tags" option must first be shown: Display – show/hide – navigation window – tags. Tags are of utmost importance for assistive technologies as they define the order of content. The "Read order" and "Reflow" functions are not based on the tag structure and are therefore not for assessing the structure tags.

3) *Links and references* (Tools – Edit PDF – Link):

Missing or incorrectly exported links should be fixed.

4) *Alternative text* (Tools – Accessibility – Define alternative text or

Tools – Accessibility – Check accessibility – Start full check):

This function can be used to find and add missing alternative texts.

Additional correction and review options

Besides Word and Adobe Acrobat Pro, there are other programs available that can help to review and edit PDF documents. These can all be used free of charge.

a) **External accessibility check:**

Further and more extensive accessibility checks are possible with external

tools. The tools named here can provide highly detailed error messages in certain circumstances, some of which can only be fixed with Adobe Acrobat Pro. Examples:

1) *PAC 2021*

The PDF Accessibility Checker 2021 is a free tool for use under Windows, which enables a check of PDF for accessibility. The test basis is the standard PDF/UA (universal accessibility) and since 2021 also WCAG version 2.1. The output reports can be exported as PDF.

[PDF Accessibility Checker PAC 2021](#)

Do not be put off by the extensive error messages of PAC 2021! For a detailed explanation of the errors issued, as well as video instructions (without sound) for fixing the errors in Adobe Acrobat Pro for the previous version PAC 3 (with slight visual differences in the user interface), see:

[PDF/UA with PAC 3](#)

2) *PAVE*

PAVE is a free online platform for reviewing and editing online documents. The corrected document can then be downloaded. It can partially replace Adobe Acrobat Pro in some areas:

[PDF Accessibility Validation Engine PAVE](#)

The manufacturer of the program offers a comprehensive video for getting started with PAVE on Youtube (in German language:

[Einführung in PAVE v2.0 - YouTube](#)

b) **Screen readers:**

To test the result and get an impression of how a PDF optimized for screen readers works, it can be helpful to use a screen reader. A read-out program is installed and applied in the corresponding document.

[NVDA Screenreader](#) for Windows is free and highly popular in Germany, for example. JAWS is a paid alternative to NVDA that offers extensive functions. It is available in the [Tool Repository for Visually Impaired Students of the State and University Library Bremen](#). There are also integrated options for voice

output: Apple offers for Mac and iOS devices the integrated VoiceOver, Android operating systems use TalkBack, and Windows includes Microsoft Narrator.

2.2. Checklist for PDFs

Here you can find information for reviewing your PDF document. This information is intended to help you check existing material for any barriers that may exist. You can also use the checklist at the end of the chapter for implementation. Open your PDF document and check all the listed settings step by step.

Creating the PDF

Was the content of your PDF previously created and prepared in Word according to accessible standards?

We recommend considering accessibility criteria already when creating the Word document. This way, you can avoid dealing with many accessibility barriers when exporting to PDF.

Did you generate the PDF document using the export function?

To make sure all the information contained in the document is correctly transferred, the Word document should be exported to the PDF document using the correct options. If the options are configured correctly, you can find the document structure tags, links, and meta information in the PDF.

PDF corrections

Did you perform the internal accessibility check in the PDF?

You can run an internal check for your document directly in Adobe Acrobat Pro. The barriers detected then have to be manually resolved.

Did you export the correct meta information?

The PDF should have all the document properties relevant for the intended purpose, at least the title and author. The document restrictions should also be checked and adjusted if necessary.

Are the tags present and correct?

Missing or incorrect tags can be revised or automatically added in Adobe Acrobat Pro.

Do all your images have an alternative text?

The alternative text for an image gives a brief and objective description of the content. Depending on the version, missing alternative texts can be added in Adobe Acrobat Pro. If images only fulfill a decorative purpose, they should be marked as decorative.

Are your links and document references present and correct?

Accessibility requires correctly labeled links and references. Missing or incorrectly exported links should be fixed.

Additional correction and review options

If you did not create the PDF yourself or it was generated without taking accessibility into account, quite a few corrections will likely be necessary. If you do not have Adobe Acrobat Pro, you should consider the following steps. External checks can be very helpful, especially when new to the topic. They enable you to better understand a range of digital barriers and look out for them in your document.

Did you check your PDF using an external tool?

Particularly when starting out, it can be a good idea to run a check on all PDF documents with other tools afterwards. [PDF Accessibility Checker PAC 2021](#) allows you to perform a check, including a report that can be exported as a PDF. [PDF Accessibility Validation Engine PAVE](#) enables you to check and edit documents and can replace Adobe Acrobat Pro in some areas.

Did you test the final PDF with a screen reader?

Read-out programs provide an impression of how accessible PDF documents work and can also reveal barriers when used correctly. We therefore recommend testing the finished PDF document with a screen reader.

Was the final PDF alternatively checked by an expert?

The trained eye of an expert can be useful in finding barriers. Do not shy away from consulting an expert if necessary.

3. Creating accessible content: PowerPoint (PPT)

The information provided in this chapter can help you create PowerPoint slides that are as accessible as possible. We recommend noting the information in subchapter 3.1 "[Implementation in PowerPoint](#)" before or while creating slides. This way, you can keep any necessary work on corrections to a minimum. The list in subchapter 3.2 "[Checklist for PowerPoint](#)" is intended to help you check existing documents for accessibility yourself. If you only have slides in the form of a PDF document, please see chapter 2 "[Creating accessible content: PDF](#)" in this guide.

3.1. Implementation in PowerPoint

Slide design

Here you can find information on how to improve the accessibility of your PowerPoint slides with appropriate design and formatting. It is important to treat the content and layout as distinct parts of the document. Combined with background information including image descriptions, the layout is required for compatibility with screen readers. Only the content element is relevant for visibility. Open the PPT document and implement the following settings step by step using the PPT menu bar. If the functions cannot be found in the location described, you can find them using the search function in the menu bar.

a) Corporate design:

It is advisable to use the university's own template from the corporate design portal (see "[Further information](#)"). Otherwise, you can utilize pre-configured slide layouts in PPT (Home – Layout). Avoid making manual design changes with spaces and empty rows. When using pre-configured slide designs, there is the advantage that some of the underlying settings (e.g. reading sequence) already meet the requirements for accessibility. But beware: A (manual) check is still required after preparing the file!

b) Slide numbers:

These are indispensable for orientation and should always be inserted (Insert – Slide number).

c) **Line spacing:**

In order to ensure the text is also legible with limited eyesight, the line spacing should ideally be 1.5.

d) **Font:**

To make sure the font is legible and compatible for screen readers, a common sans-serif font style like Arial should be used. Employees of the University of Bremen use the fonts defined in the corporate design (Sharp Sans or Arial). The font size must be at least 18 pt, or 24 pt for headings.

e) **Structure:**

The document must be structured clearly and consistently for the text to be logical and legible for everyone. The correct structure can be created in the master slide view (View – Slide master). Make sure each slide only contains a few keywords. Use bullet points where possible, rather than whole sentences.

f) **Slide titles:**

Every slide needs a slide title, as this is necessary for the structure of the document. A screen reader uses slide titles to navigate. For custom layouts, insert a placeholder for the slide title instead of a text field (View – Slide master – Insert layout – Insert placeholder – activate the checkmark for “Title”).

g) **Columns:**

Text columns should be added automatically, not manually (Home – Paragraph – Add or remove columns). The text is divided into the chosen number of columns, and the width and spacing can be adjusted individually. Screen readers don't recognize manual columns.

h) **Lists:**

Lists and bullet points need to be configured using the corresponding functions to ensure screen readers can recognize the text as a type of list and read it out correctly. Do not use manual lists. Instead, different types can be selected and adjusted via “Home – Paragraph”: bullet points, numbering, and multi-level lists. Roman numerals should be avoided as bullet points.

i) **Text flow:**

Texts must be left-aligned and unjustified for legibility. Margin justification that is typically used can distort the text and make it unreadable.

j) **Hyphenation:**

Refrain from hyphenation for splitting words. This is for several reasons: It is

not always correctly applied when converted to PDF files, sometimes screen readers read out hyphens as “hyphen”, and hyphens can impair legibility for people with learning difficulties or reading and writing disabilities.

k) **Contrast:**

All content must have a sufficient color contrast between the foreground and background. Low-contrast content is a visual barrier. The combination of red and green should generally be avoided. Using the function “View – Color/gray scale – Black and white,” you can check whether content has enough contrast to be discernable in black and white. Under [“Further information,”](#) you can find an external tool for automatically testing contrasts. The contrast ratio should be at least 4.5:1. Highlighting should follow the multi-channel principle. Color effects should be combined with bold print or similar. This makes the highlighted content also distinct in black and white.

l) **Reading sequence:**

PPT tells screen readers the sequence that slide elements should be read in. For this reason, you should check the sequence and make corrections if necessary (View – Arrange – Selection area – arrange elements via arrow keys). Here it is important to note that the lowest element is read by the screen reader first, and the highest element last. Alternatively, you can use the function “Review – Check accessibility – Reading sequence area.” But beware: The warnings produced by the accessibility check regarding reading sequence do not always disappear in PPT. If you have already checked and corrected the reading sequence, you can simply ignore these warnings. Likewise, PPT may fail to automatically recognize an incorrect reading sequence. A manual check should therefore always be performed.

Pictures, tables, and integrated media

In order for the content of integrated media, images, and tables to be comprehensible to everyone, including via screen readers for people with visual impairments, a number of settings need to be implemented. These are explained below and improve accessibility for everyone.

a) **Image properties**

The images used should be clear to everyone. It is important to use a suitable size and resolution. Black and white content should also still be discernable.

b) **Alternative texts:**

All information from graphic elements and tables also has to be provided via a non-visual channel, in accordance with the multi-channel principle. Here, alternative texts can be used as image descriptions that can be inserted in PPT (right click on the image > Edit alternative text). Logos, symbols, pictograms, photos, diagrams, and other types of graphics likewise require an alternative text. Where images are only intended for layout design, they should be marked as “decorative” (right click on the image > Format image > Alternative text > activate the checkmark for “Mark as decorative”). This is necessary so that people with impaired vision can have a screen reader read out relevant content. An alternative text should be worded briefly, precisely, and objectively to describe the core message of the image. Everything that can be seen on the image should be described objectively, so that people with and without vision experience the same content. In principle, image descriptions should be structured consistently, starting with general information before going into detail. Do not use the automatic function “Generate description for me,” as the result will not meet requirements.

c) **Grouping:**

The following points should be kept in mind when grouping elements on PowerPoint slides for the purpose of accessibility: PowerPoint treats grouped elements like graphics and requires an alternative text to be inserted for them. The problem here, however, is that after inserting the alternative text for the grouped elements, only the alternative text is read out by the screen reader. The content of any text fields contained in the group as well as alternative texts for individual elements will no longer be read out. The decision therefore has to be made whether people who rely on the use of a screen reader should benefit more from the information content of individual graphical elements or whether an informative alternative text for the entire group is enough to convey the content. In other words, you have two options:

1) *Ungroup*

If you decide that the content of individual elements should be read out by a screen reader, we recommend ungrouping the elements and only

reactivating the group only while editing the slides: Right click on the group – Group – Ungroup.

2) *Group as an image*

If you think an alternative text is enough to convey the information content of the group, we recommend saving the group in JPG format (right click on the group – “Save as image”), inserting it into the slides as an image, and then adding an alternative text. This way, you can avoid potential error messages in PowerPoint regarding the reading sequence of individual elements. The saved alternative texts will also be transferred when exporting the slides to a PDF document.

d) **Tables:**

Tables need to have a defined “header line” as a point of reference for screen readers (Table format options – activate the checkmark for “Header”). Here you should also add alternative texts that convey the content of extensive tables (right click on the table – Edit alternative text). Moreover, tables should only be used for tabular data and not for layout design. Use the table tool to insert tables. Avoid Excel spreadsheet tables as these result in errors during export and need to be fixed.

e) **Videos:**

Video files need to contain subtitles for people with hearing impairments, including a translation into (German) sign language if applicable. Audio or video descriptions are required for people with visual impairments.

f) **Audio:**

Audio files need to be accompanied by a transcript or an audio description. This is important for people with hearing impairments or no hearing at all, and in the case of language barriers.

g) **Links:**

Links and references should be recognizable as such in the text. They must be formatted accordingly as a link and labelled with link text and a screen tip. The link text and screen tip should contain a suitable name for the webpage destination. Make sure a working link is entered.

Presentation settings

Here are some possible settings listed according to the KISS principle (“keep it short and simple”):

a) **Slide transitions:**

Avoid automated and complicated slide transitions. Use simple transitions instead.

b) **Animations:**

They can be distracting or make it hard to discern content. Animations are best avoided for this reason. Any animations that are necessary should be kept as short and simple as possible.

Document properties

At this level, you can find information on settings that you should configure regardless of the content of your documents in order to increase the accessibility of your text.

These properties are relevant for everyone, especially when publishing PPT presentations.

a) **Meta information:**

Accessibility also requires certain document properties (File – Information). A document title and the author are entered here.

b) **Document language:**

Correctly configured document languages are important for voice output. They can be assigned individually to every document (Review – Language – Language settings/Set proofing language). The defined document language must be identical to the language of the text content, otherwise this can result in readout errors with screen readers. If individual paragraphs in the document are in another language, they can be assigned a different language setting.

Additional information for accessibility

In this section, general criteria are listed that optimize the accessibility of your slides and the presentation content, removing any existing barriers. Clear information that is accessible and transparent for everyone is helpful in research and teaching.

a) **Language:**

The language you use should be based on the target groups. However, to make sure everyone can understand the language, simple language is important. Sentences should be clear and unconvoluted. Abbreviations and foreign words should be explained or listed in a glossary, and a gender-appropriate language should be considered.

b) **Testing accessibility:**

The function “Check accessibility” (Home – Review – Check accessibility) in PPT reveals a number of typical mistakes and should always be performed after creating content. Once the check is done, the detected errors must then be corrected.

c) **Transcript:**

PPT is normally used for a presentation. Offer the audience a full transcription. This is important for people with hearing impairments or no hearing at all, and in the case of language barriers. In fact, a transcription is generally helpful for all participants.

d) **Subtitles:**

PPT is now able to integrate automatic subtitles for a live presentation (Screen presentation – Subtitles). They only need to be activated and adjusted via the settings.

e) **Multi-channel principle:**

With PPT presentations, it is important that the verbal presentation is identical to the slide content. This way, all the information is conveyed by at least two channels. For instance, key information should always be visible in writing on the slide, quotes read out in full, and the content of images described.

f) **Publication as a PPT:**

We recommend saving and publishing your presentation as a PowerPoint document. The PPT file is often exported and published in PDF format. However, some important properties of the PPT are lost in this process, which reduces the accessibility of the PDF. This can be fixed with subsequent corrections in the PDF (see chapter 2 “[Creating accessible content: PDF](#)”). To export the file as a PDF, proceed as follows: “File – Save as – Options – Document structure tags for accessibility – activate the checkmark”. If a PPT format is

unwanted, Word is a possible alternative. Convert the slide content to Word and begin each slide section with the slide number and slide title.

3.2. Checklist for PowerPoint

Here you can find information for reviewing your PowerPoint presentation. This is intended to help you check existing slides for any barriers that may exist. You can also use the checklist at the end of the chapter for implementation.

Slide design

Does your draft match the prescribed corporate design?

Please always consult the materials provided by the University of Bremen. This allows you to prevent a number of barriers from the outset.

Does your document have full and continuous slide numbering?

The slide numbers are always contained in the PPT template of the University of Bremen. Please do not delete them. When using custom templates, insert the slide numbers as they are essential for orientation.

Does your line spacing amount to 1.5?

The text body should also ideally have 1.5 line spacing on slides. The spacing of other content should not fall below 1.25.

Have you used a sans-serif font with a size of at least 18/24 pt?

The font type is likewise predefined in the PPT template of the University of Bremen (Arial, Calibri is also possible in custom templates for example). Please use this font. The font size is also specified depending on the content type and should not fall below 18 pt (text body) or 24 pt (heading).

Is your document structured logically and consistently?

A logical document structure helps a screen reader read out the content correctly. A logical structure is already configured in the PPT template of the University of Bremen. Please do not change it, and check for any errors after completing the draft or using custom templates.

Does each slide only contain a few bullet points?

Has the content been prepared in an appealing and legible manner? Prefer bullet

points over sentences. Also, more slides are better than overfilled and unreadable content.

Does each slide have an individual slide title?

The PPT template in the corporate design of the University of Bremen contains different slide types, each including a slide title. Make sure that the slide title is kept and also present in custom slide templates. This is because it determines the structure for screen readers, for example.

Did you create columns using the corresponding functions?

Text columns should always be inserted automatically using the program's internal column function. This is important to be read out correctly by a screen reader.

Did you create lists using the corresponding functions?

Lists and bullet points should also be generated using the relevant PPT function, and not manually.

Is your text left-aligned and unjustified?

In contrast to common practice, you should format the text left-aligned and without justification. This allows people with dyslexia and reduced vision to follow the text flow better.

Is your color contrast sufficient (minimum ratio: 4.5:1)?

Check your content has enough contrast – both in black and white and for color content. No red/green contrasts may exist, and the content should still be discernable in black and white.

Have you checked and revised the reading sequence?

Screen readers read elements in the order they were inserted. Therefore, it may be necessary to correct the content sequence.

Pictures, tables, and integrated media

Are all your images embedded in sufficient size and resolution?

Generally, images may only be used when their size and resolution satisfy an

accessible standard of quality. Here too, you should check how discernable they are in black and white.

Do all your images have an appropriate alternative text?

Following the multi-channel principle, information in graphics must also be available via a non-visual channel. All images should therefore have an alternative text as an image description.

Have you marked layout graphics as decorative?

Where images are only intended for layout design, they should be marked as “decorative.”

Have you added alternative texts correctly to grouped elements?

In order for alternative texts for grouped content in PPT to be informative for everyone and compatible with screen readers, please check the grouped elements on your slides. If the content is conveyed in the alternative texts for the individual elements, only group them while editing the file and then ungroup the elements afterwards. In the case of a more complex group, we recommend inserting an alternative text to convey the group content.

Do all your tables have a header line?

Tables need to have a defined “header line” as a point of reference for screen readers.

Do you only use tables for tabular data?

Tables should only be used for tabular data and not for layout design.

Do extensive tables have an alternative text?

Alternative texts should also be added here to convey the content of large tables.

Do videos include subtitles and video descriptions?

Embedded video files should contain subtitles, including a translation into (German) sign language if necessary. Moreover, audio descriptions or video descriptions are necessary.

Are all your audio files accompanied by a transcription?

A transcription or audio description should be created and provided for audio files embedded in the presentation.

Do all your links have a corresponding description and screen tip?

Are all links formatted as a link and are they labeled with a link text and screen tip? Both must reflect the content or destination of the link.

Presentation settings

Are your slide transitions simple and free from time limits?

Remove any automated, complex slide transitions with time limits and only use simple transitions, as specified in the PPT template of the University of Bremen.

Have you avoided animations or only used them sparingly?

Animations can be distracting. Remove them whenever possible.

Document properties

Have you entered all the meta information?

Are the corresponding document properties present and correct? If necessary, add a document title and the author.

Is the document language configured correctly?

The defined document language should be identical to the language of the text content, otherwise this can result in readout errors with screen readers. This goes for the entire document as well as any individual paragraphs in other languages.

Additional information for accessibility

Is the language used appropriate for the target group?

The language used should be based on the target group and meet the normal requirements of the University of Bremen.

Is the language easy to understand?

Make sure your content is written in a clear language with easy-to-understand

sentences or bullet points. This facilitates teaching and learning, also in a university setting.

Are foreign words or technical terms explained?

Have you explained all abbreviations and foreign words or listed them in a glossary?

Have you performed an accessibility check and corrected any errors?

Run an internal PPT accessibility check and fix any errors that are detected.

Have you created and handed out a transcript for the presentation?

PPT is normally used for a presentation. Offer the audience a full transcript. Although it takes time to prepare a transcript, it comprehensively records spoken content.

Are internal PPT subtitles activated?

Check whether automatic subtitles in PPT make sense for your presentation.

Have you followed the multi-channel principle for all content?

All information should be provided via at least two channels to improve accessibility. Therefore, check whether all written content is also conveyed verbally in the presentation, whether a slide or transcript is available for all spoken content, and whether color highlighting is additionally formatted with bold text for example.

Have you published the presentation as a PPT?

Have you saved and published your presentation as a PowerPoint document? When exporting PPT to PDF, more barriers to accessibility should be expected due to the technical requirements. For this reason, avoid exporting to PDF format unless you then edit the converted file. Inserting the slide contents into a Word document is a possible alternative.

4. Creating accessible content: websites

The checklist provides step-by-step guidance on how to remove barriers from existing websites and thereby improve accessibility for all readers. We recommend the [WAVE Web Accessibility Evaluation Tool](#) for help reviewing your website. It can quickly and clearly check a wide range of points, including formal aspects like structural elements, the heading hierarchy, and alternative texts. The program also identifies potential barriers and suggests ways to resolve them.

In addition, the [BIK “Easy Checks”](#) provide an easy-to-understand breakdown of possible barriers as well as guidance on how to check and resolve them. The guides are particularly useful if you only have a limited knowledge of HTML.

For a screen reader check, we recommend [NVDA Screenreader](#) for Windows, which is free and highly popular in Germany. It lets you check whether all texts can be discerned and read out.

4.1. Implementation of websites

Since most adjustments to websites still occur after, not before, launch, a detailed implementation guide is not necessary.

Use the checklist below to avoid any barriers on your website or find out more here:

[How to meet WCAG 2.0. A customizable quick reference on Web Content Accessibility Guidelines \(WCAG\) 2.0 requirements \(success criteria\) and techniques.](#)

4.2. Checklist for websites

Here you can find information for reviewing your website for potential barriers. Open the website and check the listed settings step by step.

General

Is your source text complete and structured logically (header layers)?

All content should be correctly labeled, including table markups, header attributes, and label elements.

Have you formatted the text accessibly in the website system?

The text should be left-aligned and without justification.

Is your font sans-serif and large enough?

Use sans-serif fonts like Arial or Calibri in a font size of at least 14 pt to ensure legibility.

Is the color contrast for all content high enough (minimum: ratio 4.5:1)?

Check your content has enough contrast – both in black and white and for color content. No red/green contrasts may exist, and the content should still be discernable in black and white.

Do your color elements follow the multi-channel principle?

Highlighting should satisfy the multi-channel principle. Do not just use a color effect for highlighting, but combine it with bold print, etc.

Is an English version of your website available?

In the university setting, every German website should also have an English translation to improve accessibility.

Is the language used clear and appropriate for the target group?

The language used should be based on the target groups and also meet the normal requirements of the University of Bremen. Make sure your content is written in clearly structured language with easy-to-understand sentences or bullet points.

Are foreign words listed in a glossary?

Have you explained all abbreviations and foreign words or listed them in a glossary?

Are all your links and cross-references formatted?

Are all links formatted as a link and are they labeled with a link text and screen tip?
Both must reflect the content or destination of the link.

Is the full website also usable via keyboard?

All the functionalities of your website should also work via keyboard interface. The focus should be on the currently selected element, visible via a graphical change for example.

Is your content legible in common browsers when enlarged?

Apart from subtitles and image captions, it should be possible to enlarge the text content by up to 200% without making the content unreadable.

Does your website contain an accessibility statement?

According to current guidelines, your website needs to contain a statement on accessibility.

Does your website contain a feedback option for barriers?

According to current guidelines, your website needs to contain a feedback option for reporting possible barriers.

Are simple language and (German) sign language available?

Information should be available in simple language and (German) sign language. This means that information on content, navigation, the accessibility statement, and information on further content should be in these languages.

Does your final website meet all legal requirements?

By the end of the transition period until February 12, 2022, the websites of public organizations need to comply with the accessibility standard according to EU Standard EN 301 549: [Implementation Decision of the Commission of the European Union on the Harmonized Standard for Websites and Mobile Applications](#).

Have you informed all responsible contacts about accessibility?

As multiple people are typically responsible for a website, you should ensure that everyone involved has been informed and briefed on the importance of accessibility.

Have you tested your website with a screen reader?

Read-out programs provide an impression of how accessible websites work and can also reveal any remaining barriers when used correctly. It is therefore a good idea to test the finished website with a screen reader.

Has your website been tested by experts?

Experts can be helpful, especially if you are not particularly experienced in the topic of accessibility. Do not shy away from consulting an expert if necessary.

Has your website been tested with accessibility checkers?

Perform a check on your website using a tool like the accessibility checker [WAVE Web Accessibility Evaluation Tool](#).

Integrated media

Do all your images have an alternative text or image description?

Following the multi-channel principle, information in graphics must also be available via a non-visual channel. An alternative text is added as an image description for this purpose.

Have you marked design elements as decorative?

Where images are only intended for layout design, they should be formatted accordingly.

Have you avoided using CAPTCHAs?

CAPTCHAs can pose a barrier, so avoid using them or choose an accessible alternative.

Are image types appropriate for the purpose (grid/vector)?

Generally, besides the appropriate data formats, you should only use images when their size and resolution satisfy an accessible standard of quality. The black and white view should also still be clear here.

Do all videos contain subtitles, sign language, or an audio description?

Video files should contain subtitles, including a translation into (German) sign language if necessary. Moreover, audio descriptions or video descriptions are necessary.

Are written transcripts available for all your audio files?

A transcript or audio description should be created and provided for the audio files you use.

Have you correctly implemented and labeled control elements?

Accessible control elements include a label that describes their purpose.

Are audio control elements available for pausing?

Audio or video content that plays automatically and lasts for more than three seconds should have a pause option and volume control.

Have you refrained from flashing content?

Avoid using any content that flashes more than three times a second. Flash effects can trigger epileptic seizures, for instance.

Special plug-ins

Were integrated contents from external sources like databases and ticket systems created in an accessible manner?

Plug-ins should also be accessible. Generally, you are not responsible for them as the content owner. But if you are responsible, you should make sure the plug-ins meet accessibility standards.

Do newsletters offered on your website meet accessibility standards?

If you offer a newsletter, make sure it is also free from barriers.

Are forms controllable via keyboard and are all fields labeled?

All form control fields must be labeled according to their properties. Moreover, like the rest of the website, it must be possible to navigate the form via keyboard interface.

5. Creating accessible content: online classes

The following chapter is helpful for planning and implementing accessible web conferences and digital classes. It is limited to the most important aspects that are intended to improve the accessibility of online classes, including for people with illnesses, disabilities, language barriers, or similar. Good teaching formats are distinguished by accessibility to all. The first section "[Implementation of online classes](#)" describes what should be kept in mind when preparing and implementing accessible digital classes. The second section "[Checklist for online classes](#)" contains a checklist that you can use to review your (planned) online class for accessibility yourself.

5.1. Implementation of online classes

Preparing online classes

Here you can find information on aspects that should be considered when you prepare an online class in order to make your teaching content accessible for all class participants.

a) **Structure:**

It is helpful for everyone when the structure and topic of the (online) class is clear from the beginning. You should therefore share the agenda (including timing) in advance before the class.

b) **Content:**

The content (seminar texts, presentations, scripts, etc.) should also be provided in advance.

c) **Transcript:**

As soon as audio content is used, real-time subtitles or a written transcript must be offered. This is especially important for participants with hearing impairments or no hearing at all, as well as native speakers of a foreign language. If necessary, speech-to-text interpreters can be used.

d) **Document barriers:**

All digital documents used must be accessible. Here it is important to consider the information in the previous chapter.

e) **Equipment:**

Do all participants have the necessary equipment for the online class? It may be helpful to offer alternatives for the programs used or lend out hardware.

f) **Online tools:**

All tools used must be accessible and appropriate for the intended purpose. Ideally, you should combine different teaching formats and tools that you have previously tested for accessibility.

g) **Sign language interpreters:**

In some situations, subtitles and scripts are not enough. It may be necessary to engage external interpreters for (German) sign language.

h) **Alternatives:**

Communicate your openness to alternatives early on, should these be necessary in the case of individual difficulties. This demonstrates to those affected a willingness to help instead of exclusion.

During the online class

This section lists aspects that should be kept in mind during the online class to minimize barriers and optimize online classes and studies for everyone.

a) **Breaks:**

Particularly for people with disabilities, illnesses, or care responsibilities, synchronous online classes can be very strenuous. For this reason, it is important to include enough breaks. Often, a few short breaks of five minutes are already beneficial.

b) **Time planning:**

You should always allow for a buffer in the event of unforeseen problems, technical issues, or follow-up questions.

c) **Internet:**

A stable internet connection is necessary for online classes, as poor internet connectivity endangers the flow of class. Interruptions to image or audio broadcasts can lead to difficulties in understanding.

d) **Environment:**

A quiet environment is important for sound quality. Disruptive noises in the environment should be minimized, for example by closing windows.

e) **Quality of integrated media:**

Audio and video files must be produced in sufficient quality to ensure the content can be clearly heard and seen. External content must likewise be of good quality.

f) **Background:**

Make sure you present your online class against a neutral-colored, static, and high-contrast background. Both you and the content should be clearly visible and any distractions kept to a minimum. In principle, the use of a virtual background does not prevent low barriers. In this case, care must be taken to ensure a high contrast between the person and the background. It is also important that the technical requirements for an optimal virtual background are met, otherwise there will be disruptions that may conflict with low barriers. The virtual background depends in particular on the following factors: Quality of the algorithms of the software, quiet natural background and the processing power of the computer.

g) **Visibility:**

Every speaker needs to be clearly visible. This concerns both your position in front of the camera as well as good lighting in the room. When speaking, look towards the camera so that your lips can also be read. This is important for people with hearing impairments or deafness.

h) **Speaking:**

Speak clearly. Shouting is unnecessary, but you may need to increase the volume or sound quality with a headset or microphone.

i) **Multi-channel principle:**

The multi-channel principle also applies here. Always convey important information verbally and in writing, so that it reaches everyone.

j) **Image descriptions:**

Much like digital alternative texts, it is necessary to describe images verbally in online classes. Simply referring to the image is not enough for participants with visual impairments.

5.2. Checklist for online classes

Here you can find information for reviewing your online class(es). This is intended to help you identify and remove any barriers in prepared seminars and lectures.

Preparing online classes

Have you communicated the structure and content in advance?

The agenda and timing should be shared in good time before class.

Have you sent the content in advance (presentation, audio file, etc.)?

The content (seminar texts, presentations, scripts, etc.) should also be provided in advance.

Do the audio files you use have a written transcript?

As soon as audio content is used (speaking lecturers, audio files, etc.), a written transcript should be offered.

Alternatively, have you used a speech-to-text interpreter?

Have you provided a speech-to-text interpreter if necessary? This way, spoken content during class is also conveyed in writing.

Do you have real-time subtitles for video files?

Make sure that the video files you use include subtitles or add them yourself.

Do the documents you use meet accessibility standards?

All digital documents used must be accessible. Please bear in mind the relevant information provided in the other chapters.

Do your participants have the necessary equipment?

Do all participants have the necessary equipment for the online class?

Do you use accessible online tools?

All tools used must be accessible and appropriate for the intended purpose. Ideally, you should combine different teaching formats and tools that you have previously tested for accessibility.

Have you engaged a sign language interpreter if necessary?

In some situations, subtitles and scripts are not enough. It may be necessary to engage external interpreters for (German) sign language.

Are alternative formats or proofs of student performance possible?

Have you communicated your openness to alternatives early on? This demonstrates to those affected a willingness to help instead of exclusion.

During the online class

Have you included enough breaks?

Make sure you plan enough time for breaks. Even just five minutes can be helpful.

Have you planned a sufficient buffer in case of problems or questions?

You should plan enough time in each class in case there are any unforeseen problems, technical issues, or follow-up questions.

Do you have a stable internet connection?

A stable internet connection is essential to avoid difficulties in understanding.

Are you in a quiet environment without any disruptive noises?

Make sure your environment is quiet and free from disruptive noises.

Are the audio files you use of good quality?

If you use your own or external audio and/or video files, they must be good quality.

Is your virtual/real background neutral and high in contrast?

Conduct your online class against a neutral-colored, static, and high-contrast background so that everything is clearly visible.

Are you positioned well live or in the video (visibility for lip reading) and is the lighting good?

Are you clearly visible at all times? This means a well illuminated face, with your mouth visible at all times for lip reading.

Do you speak clearly?

Make sure you speak clearly. Test the sound quality using a headset/microphone.

Do you provide important information both verbally and in writing?

Always convey important information verbally and in writing (multi-channel principle), so that it reaches everyone.

Do you also provide graphical information verbally?

You should always provide graphic content verbally. Simply referring to the image is not enough for participants with visual impairments.

6. Information videos

Information videos are generally characterized by the fact that they provide information for an unknown audience and do not have a direct target group. This means that they cannot be adjusted to a target group or specific situation. For this reason, accessible video design is paramount. All information should be provided accessibly, clearly, and comprehensively. Information videos are a format suitable for providing information about starting studies, important news at university, cooperation projects of the institutes, or classes. Subsequent corrections for existing information videos are only possible to a limited extent. For this reason, please make sure you consider accessibility from the very beginning. Subchapter 6.1 "[Implementation of information videos](#)" provides a step-by-step guide through creating your own videos. Subchapter 6.2 "[Checklist for information videos](#)" helps you review existing videos for any potential barriers.

6.1. Implementation of information videos

Production of video material

Here you can find information for producing image material in your information video. This is intended to help you eliminate barriers in production and optimize the quality of information accessibility.

a) **Background:**

Make sure your video is recorded against a neutral-colored, static, and high-contrast background. Everything should be clearly recognizable, and distractions should be kept to a minimum.

b) **Visibility:**

The speaker in the video should be clearly visible where possible. This refers to the position in front of the camera, good lighting in the environment, and contrast with the background. When speaking, people should face the camera to facilitate lip reading. This is important for people with hearing impairments. A good camera helps achieve a sufficient quality of image resolution for videos.

c) **Text / image design:**

If information is embedded in the form of visual content in the video (such as texts or images), it needs to be designed in an accessible manner: sans-serif

font style, legible font size of at least 14 pt, high color contrasts, and no red/green combinations. This is covered in detail in chapter 1 “[Creating accessible content: Word.](#)”

d) **Translation into sign language:**

Depending on the reach, the information video should contain a video layer that shows an interpreter. (German) sign language increases the accessibility tremendously, especially for deaf people. You do not need to interpret yourself; you can hire an external expert.

e) **DGS logo:**

When integrating sign language, it is necessary to add the corresponding symbol to the relevant video.

f) **Effects:**

As enticing as advanced video effects may be, you should avoid fast video transitions, flickering lights that flash more than three times a second (due to epilepsy), and overloaded scenes in order to improve accessibility.

Production of audio material

Important aspects also need to be considered when producing the audio track to your video in order to increase the accessibility of content.

a) **Simple language:**

Depending on the content, it may still be advisable to convey information in a simple language in the university setting, such as the “simple language” website of the University of Bremen.

b) **Speaking:**

Voice recordings must be clear. The sound quality can be improved using a microphone. Make sure all audio content has the same volume.

c) **Subtitles:**

Subtitles are not only helpful as an additional information channel for people with hearing impairments or no hearing at all, as well as non-native speakers, they also improve understanding for everyone. This is especially important for muted viewing on mobile devices. Always add subtitles whenever acoustic information is provided in the video. They can be embedded manually or automatically. The options and quality of automatic subtitles depend on the

playback media used (open or closed captions, subtitle settings, etc.). However, the quality of manual subtitles is always better than that of automatic subtitles. For this reason, you should use manual subtitles if possible.

d) **Audio description:**

While subtitles primarily convey spoken content, audio descriptions are an additional sound track in the video that describes the visual content. They are used to describe everything that is presented visually. This is necessary to ensure the information is also conveyed to people with visual impairments, for example. Depending on the type of video, the audio description may not be required if the video already includes verbal explanations of what can be seen visually.

e) **Audio track:**

An audio track in the information video must contain subtitles and/or an audio description, as mentioned earlier.

General production aspects

The points described here refer to accessibility aspects that concern both the video material as well as the audio track.

a) **Multi-channel principle:**

The multi-channel principle is important especially for information videos. All information needs to be conveyed via multiple channels at the same time. This ensures at least one form of communication channel is understood. For instance, a blind person cannot see the images shown but can hear the audio track.

b) **Audio and image quality:**

Visual and listening comprehension strongly depends on the content quality for people with visual or hearing impairments. Therefore, please make sure the quality and resolution of the content are sufficient.

c) **Environment:**

Record the audio track in a quiet environment free from disruptive noises. Prefer static over moving recordings (lip reading is generally impaired when the speaker moves in the video).

Playback and download

Here we would like to explain some criteria that you should consider when selecting a suitable playback medium and when publishing video material on websites.

a) **Playback medium:**

Please note that different settings are available depending on the playback medium, which affect accessibility. Find out which playback medium is most appropriate, since the video player should be usable for everyone, including via keyboard and for people with visual impairments. Make sure playback media are identifiable and labeled.

b) **YouTube:**

YouTube is a special case. The platform enables the activation of automatic subtitles (closed captions). However, these subtitles are prone to algorithmic errors, especially for technical terms and content in German. For this reason, you should use manually produced subtitles. You could consider editing automatically created subtitles to this end.

c) **Legal provisions:**

Since information videos are typically integrated on websites, they are subject to rules on accessible online content. You can read about these rules under "[Information](#)" and in chapter 4 "[Creating accessible content: websites](#)." This document is geared toward these rules. They are based on [WCAG 2.1: Chapter 1.2 Time-based media](#).

d) **Download:**

Enabling information videos to be downloaded can also improve accessibility. This has to be configured accordingly, with information provided on file size and video length.

6.2. Checklist for information videos

Here you can find information for reviewing the image material in your information video. This checklist is intended to help you review existing material for any barriers that may exist. Open your information video and check all the listed settings during playback. We not only recommend testing the file on your computer, but also from the perspective of recipients, such as on a tablet or smartphone. Also test the information video where you publish it.

Production of video material

Is your video background high-contrast, static, and neutral?

Visually check the background of your video for color neutrality, high contrast, and static images, and make sure it is free from any distractions.

Are you clearly visible, including your mouth for lip reading?

Look at the person talking and consider aspects related to their visibility: position, lighting, possibility of lip reading, contrast with the background, eye contact, as well as image resolution.

Are your images and texts legible and accessible?

Integrated content should also be checked. Ensure the use of a sans-serif font and lack of red/green combinations, for example. This is explained in detail in chapter 1 "[Creating accessible content: Word.](#)"

Does your video include a sign language interpreter?

Check whether an interpreter for (German) sign language is clearly shown in a sufficient size.

Is your information video labeled with the DGS logo?

Make sure the DGS logo is displayed as a reference to the translation in the video and video description.

Are creative effects using sparingly?

Watch the full video and look for any barriers like creative slide transitions or strobe lighting.

Production of audio material

Is information provided in simple language?

Depending on the content, it may be appropriate to convey information in simple language also in a university setting, for example to summarize key content.

Do you speak clearly into a microphone?

Voice recordings should be clear, and audio content should have the same volume. The voice quality can be improved using a microphone.

Are subtitles available for all spoken content?

Check in the video whether subtitles are available and whether they actually convey the spoken content. You should also make sure the subtitles are legible. If subtitles are not available as standard, an option must be provided to activate them (closed captions).

Is an audio description available for all visual content?

Compare all visual content with the available audio descriptions and amend them if necessary. Both the visual and audio channels should provide the same information.

Are visual elements described verbally?

Where there is no audio description, check whether all visual content is described verbally in the video.

General production aspects

Have you followed the multi-channel principle when it comes to the information provided?

The multi-channel principle is important especially for information videos. All information needs to be conveyed via multiple channels at the same time. This ensures that people can understand at least one communication channel.

Is the quality of your audio and images suitable?

Make sure the quality and resolution of audio and image material are sufficient.

Did you produce the video in a quiet environment?

Also check the audio track. It must be comprehensible for everyone and should not

contain any disruptive noises or quality shortcomings. In addition, it is important that the person speaking can be seen at all times.

Playback and download

Is the playback medium accessible?

This includes all aspects concerning accessibility. Subtitles should be available including with customizable options such as the size of subtitles. The video player should be controllable via keyboard and the video data recognizable for screen readers.

Do YouTube videos contain edited subtitles?

If you share your content on YouTube, activated subtitles (closed captions) should be available. These subtitles should be prepared manually (no auto captions).

Does your video meet the legal requirements on accessibility?

It is important that your video meets the legal requirements. Adhere to binding specifications that often cover most potential barriers. These rules are described in detail here: [WCAG 2.1: 1.2 Time-based media](#).

Have you provided video details for downloadable videos?

Check whether the full details about your video are available on the playback platform. These include the content, author, file size, duration, etc. You should also make sure the video is actually available to download.

Further information

Contrast Checker:

<https://contrastchecker.com>

Corporate design of the University of Bremen:

<http://www.uni-bremen.de/corporatedesign>

KIS and kivi, University of Bremen (2020): Guide for Teaching Staff.

[LoB Broschuere 2020.pdf \(uni-bremen.de\)](#)

ZMML, University of Bremen (2021): Accessible Digital Teaching. Tips for Teaching Staff: General, Lectures and Seminars, Accessible Documents and PowerPoint Presentations:

<https://www.uni-bremen.de/zmml/lehre-digital/zugaengliche-digitale-lehre>

List of links

Accessibility checker test:

<https://www.einfach-fuer-alle.de/artikel/test-werkzeuge/>

Create and verify Adobe PDF accessibility (Adobe Pro):

<https://helpx.adobe.com/de/acrobat/using/create-verify-pdf-accessibility.html>

axesPDF:

<https://www.axes4.com/de/produkte-services/axespdf>

BALLON:

<https://www.uni-bremen.de/digitale-transformation/cdo-projekte/ballon>

Accessible Information Technology Regulation (BITV) 2.0:

https://www.gesetze-im-internet.de/bitv_2_0/BJNR184300011.html

Accessible PDFs with OpenOffice and LibreOffice:

<https://www.netz-barrierefrei.de/wordpress/barrierefreies-publizieren/barrierefreie-pdfs/barrierefreie-pdfs-mit-openoffice-und-libreoffice/>

Implementation Decision EU 2021/1339 of the Commission:

<https://eur-lex.europa.eu/legal-content/DE/TXT/HTML/?uri=CELEX:32021D1339&from=DE>

Tool Repository for Visually Impaired Students:

<https://www.uni-bremen.de/studium/rund-ums-studium/barrierefreies-studium/lernhilfsmittel-raeume/hilfsmittelraum-fuer-sehbeeintraechtigte-studierende/>

Kofax Power PDF

<https://www.kofax.de/products/power-pdf>

Microsoft: Make your Word documents accessible to people with disabilities:

<https://support.microsoft.com/de-de/topic/gestalten-barrierefreier-word-dokumente-f%C3%BCr-personen-mit-behinderungen-d9bf3683-87ac-47ea-b91a-78dcacb3c66d>

NVDA Screenreader:

<https://www.nvaccess.org/>

PDF Accessibility Checker PAC 2021:

[PAC Download - PDF/UA Foundation \(pdfua.foundation\)](https://pdfua.foundation/)

PDF Accessibility Validation Engine PAVE:

<https://pave-pdf.org/>

PDF/UA with PAC 3:

<https://www.barrierefreies-webdesign.de/knowhow/pdf-ua/>

WAVE Web Accessibility Evaluation Tool:

<https://wave.webaim.org/>

Web Content Accessibility Guidelines (WCAG) 2.1:

<https://www.w3.org/TR/WCAG21/%23contrast-minimum>

Web Content Accessibility Guidelines (WCAG) 3:

<https://www.w3.org/WAI/standards-guidelines/wcag/wcag3-intro/>

How to meet WCAG 2.0. A customizable quick reference on Web Content Accessibility Guidelines (WCAG) 2.0 requirements (success criteria) and techniques:

<https://www.w3.org/WAI/WCAG21/quickref/?versions=2.0>