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Accessible Videos in Higher Education – Lost in Translation?!

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Abstract. The usage of videos is widespread across various disciplines and learning contexts (e.g., leisure time, school, and work) and is widely used in (higher) education. Learning videos are among the most important digital media in higher education [27]. However, if not designed accessible, videos pose new challenges [34, 41]. In line with the UN-CRPD and respective legislation, higher education has to be accessible for all students, including accessible learning materials such as videos. Accessible videos comprise an accessible video player, captions, and audio description) [29]. Because the accessibility features audio description and caption are both translations [22], it is worth analyzing what information is considered when implementing these accessibility features. As educational institutions are responsible for accessibility, we investigate in this study which information they provide about producing and providing accessible videos on their web pages. In total, 36 national and international higher education institutions are included in the analysis.

Keywords: Accessible videos · Higher education · Web page analysis

1 Introduction

The usage of videos is widespread across various disciplines and learning contexts (e.g., leisure time, school, and work) and is also popular in (higher) education. By now, learning videos are among the most important digital media in higher education [27]. Benefits such as the increased flexibility of learning regarding time, place, and speed or repetition and revisions are associated with the usage of videos [12]. Furthermore, videos can represent a complex and simultaneous situation, such as teaching in a classroom, and are utilized as a basis for reflection on teaching [16, 24]. Thus, videos provide various opportunities for learning and education.

Videos in learning contexts can be differentiated into two categories: explanatory videos, and demonstration videos [27]. Explanatory videos are produced to convey content, which is explicitly formulated in the video. In contrast, the primary objective of demonstration videos is not to explain but to demonstrate and show certain situations. Typical demonstration videos are, for example, videos of (school) lessons or videos of social interaction in different settings [27].

Furthermore, the usage of videos can be differentiated on three levels which differ regarding the intended usage of videos. In line with the intended usage, the complexity of accessibility needs increases. On the first level, “only” the video and the video player must be accessible. On the second level, tools for commenting and highlighting specific video sequences and the respective presentation have to be accessible, too. Additionally, on the third level all used functionalities to edit the video and the newly created video need to be accessible. However, all levels have in common that the video must be accessible [41]. Despite the potential videos have, if not designed accessible, they pose new challenges [34] and can lead to exclusion.

Furthermore, in line with the UN-CRPD and respective legislation, accessibility for all students is mandatory for higher education. Therefore all learning materials need to be accessible, including modern media, such as videos. Accessible videos comprise an accessible video player, captions, and the translation of purely visual information (e.g., audio description) [29].

Accessible video players are crucial to access (accessible) videos. The difficulties and evaluation of different video players are addressed, for example, by Wild [39]. She stated that only Able Player and OzPlayer did not have any show-stoppers. Nevertheless, this article primarily addresses the implementation of captions and audio descriptions.

Educational institutions are responsible for the accessibility, but the actual adaption of the material is the responsibility of the person who is using or providing the material. So, they must have access to appropriate information [8] to learn about accessibility issues and ways to adapt the material. Therefore, we investigate in this study which information higher education institutions provide about producing and providing accessible videos.

2 Accessible Videos in Higher Education

The design of accessible videos is a complex task, which is mandatory for higher education institutions to fulfill their obligation to provide accessible learning materials (e.g., American Disability Act, BITV 2.0).

Non-accessible documents and other media are barriers to participation in education [15]. For example, if students are offered a video as an alternative to text, students with hearing impairments will be excluded if the video has no captions. Therefore, consistent care must be taken to ensure that every form of presentation is accessible [35]. In an assessment of the quality of learning materials, the accessibility of lecture recordings and learning videos was rated poor [25]. These low ratings reveal a need to address, in particular, the accessibility of videos. Nevertheless, there are organizational challenges such as the lack of needed resources (time, costs) for designing captions and audio descriptions or technical difficulties in making them available for students [29, 39].

However, captions and audio descriptions are also audiovisual translations [22], entailing content issues. Audiovisual translation are translations of media with visual and auditory elements. In audiovisual translation, the original material is changed; Parts of the material remain and are supplemented or combined with new parts [22]. In Translation Studies, the translation method is closely connected to the content of the text due to the underlying premise that the translation type or method is different depending on the particular nature of the text. For example, the distinction between literary or technical translations [31].

Therefore, it is essential to look at the type of translation needed to create captions and audio descriptions. If provided in the same language as the audio in the video, captions are intralingual translations: the audible information is translated into written text that is presented in addition to the original material. Standards for captions provide information regarding font, the position of the captions, the number of characters per line, etc. [22]. These standards are often published for broadcasters. Thus, some standards may differ in higher education [29].

Audio description is an intersemiotic translation, in which the sign system changed from pictorial representation into speech. Thus, the visual information of a video is translated into a verbal description and inserted into the gaps in the audio track [22]. However, audio description is also called partial translation because not everything seen can be described, will be described, or needs to be described [4].

There are different guidelines for producing audio descriptions. Having a closer look at audio description guidelines, two difficulties are to be named. First, there are guidelines providing information on how to design an audio description for different genres, which at some points differ widely. As Hughes, Orero, Rai [20] state: „It hardly seems feasible to merge these three [television, live AD and buildings/museums] into one set of guidelines.” In this context, educational videos are not even considered. Another challenge is that because of the nature of audio description, the information provided via the audio description needs to be prioritized [30]. The prioritizing of the described information is often a task for the describer. But the decisions on what is how described are influenced by the knowledge and view of the describer [4]. Again, this may pose challenges for audio descriptions in educational contexts if the describer is not the lecturer or is familiar with the learning objectives because the audio description needs to be aligned with the given task [40]. While, in explanatory videos, the learning objective is explicitly formulated and the primary aim of this kind of video is to convey specific information. Demonstration videos pose two sets of difficulties for the implementation of accessibility. First, demonstration videos do not have an explicit learning objective by themselves, only combined with a given task [27]. Therefore, it is essential that the task and respective learning objective is known so that the important visual information can be translated. Because only if the audio description conveys the important visual information for the given task students with visual impairment can work on the task. Furthermore, because not all visual information can be translated, it might be necessary to create different audio descriptions for the same video if used for different tasks. Second, the amount of information included in the audio description depends on the length of the gaps in the audio track, where the description can be inserted. This might be especially difficult if the video has a high level of visual information, e.g., a video of a classroom situation. Thus, the translation process to design captions and audio descriptions for educational videos has to include didactical considerations to decide which content can be covered to what extent by the accessibility features [40]. So implementing accessibility features for videos has organizational, technical, and content-related challenges.

3 Method

Most common, the responsibility to provide accessible learning materials lies within the respective higher education institution. Web pages of higher education institutions are used for multiple purposes. For example, to recruit, to inform or as an “entrance to the university” [17]. Thus, examining what information higher education institutions provide about accessible videos is worthwhile.

A content analysis of different web pages of selected higher education institutions has been carried out to answer the following research questions:

Which standards/guidelines are used in higher education for the design of accessible videos, what aspects do they address, and how do higher education institutions address the content-related challenges of the translation process for captions and audio description?

To answer these questions, web pages of national and international higher education institutions were examined.

3.1 Sample

Different approaches were chosen to identify national and international higher education institutions, which most likely provide information about accessible videos on their web pages. First, the online library about accessible teaching on the web page of the German “Studying with Disabilities – Information and Advice center” (IBS) [32] was used. This library provides a list of German universities with information about accessible teaching. Higher education institutions located in the categories “accessible online-teaching as an overview” or “accessible videos” were included in the sample ($n = 16$).

Second, higher education institutions from the US were included in the sample. They are considered a model regarding the implementation of accessibility in higher education [26, 28]. In line with a study by Oberschelp [26], who focused accessibility in general of higher education institutions from the US and analyzed different web pages from different higher education institutions, the top ten universities and colleges from the rankings “America’s Top 50 Colleges For Students With Disabilities: Disabled Students Thrive In These Colleges!” [18] and “50 Best Disability Friendly Colleges and Universities” [9] were added in the sample. These two rankings had two duplicates. Thus eighteen colleges and universities were added to the sample.

And last, higher education institutions with members in the Ed-ICT network were added to the sample ($n = 5$). The Ed-ICT network is an international network that explores the role of Information and Communication Technologies (ICT) for students with disabilities in post-compulsory education [13]. This network was chosen because its members are, on the one hand, known authors for accessibility issues in higher education. On the other hand, the membership in this network could be a sign that the respective universities consider accessibility hence accessible videos in their teaching. In total, the sample consists of 36 higher education institutions (Table 1).

Table 1. Sample

Source	Colleges/Universities
IBS	<ol style="list-style-type: none"> 1. Hochschule für Wirtschaft und Recht Berlin (Germany) 2. Technische Universität Chemnitz (Germany) 3. Technische Universität Dresden (Germany) 4. Universität Hamburg (Germany) 5. Technische Hochschule Köln (Germany) 6. Philipps Universität Marburg (Germany) 7. Ludwig-Maximilians-Universität München (Germany) 8. Westfälische Wilhelms Universität Münster (Germany) 9. Universität Stuttgart (Germany) 10. Universität Rostock (Germany) 11. Hochschule Mittweida (Germany) 12. Technische Universität Dortmund (Germany) 13. Universität zu Köln (Germany)
Great Value Colleges 2021	<ol style="list-style-type: none"> 14. Landmark College (USA) 15. University of Arizona (USA) 16. Beacon College (USA) 17. University of Connecticut (USA) 18. University of Iowa (USA) 19. American University (USA) 20. Ball State University (USA) 21. Lynn University (USA) 22. University of California, Berkeley (USA) 23. Marist College (USA)
CollegeChoice.net 2021	<ol style="list-style-type: none"> 24. University of Michigan-Ann Arbor (USA) 25. University of Southern California (USA) 26. Northeastern University (USA) 27. Xavier University (USA) 28. The University of Texas at Austin (USA) 29. College of Charleston (USA) 30. Messiah College (USA) 31. University of the Ozarks (USA)
Ed-ICT	<ol style="list-style-type: none"> 32. The Open University Israel (Israel) 33. University of Washington (USA) 34. The Open University UK (UK) 35. Dawson College (Canada) 36. FernUniversität Hagen (Germany)

3.2 Procedure

After identifying the higher education institutions, each publicly available web page was examined. Starting from the home page, two strategies were used to locate the relevant information. First, the keywords “Accessible Videos, Captions and Audio description (in English and German) were separately searched for via the search engine provided on the home page. All listed websites were then scanned for information and recorded. Second,

the Service Center for Students with Disabilities (or respective offices) was identified for each university/college, and their web presence was also scanned for information about accessible videos. The acquired information was then categorized.

Because of the explorative nature of this analysis, only a few categories were formed upfront: guidelines/standards and recommended tools for both captions and audio description. Then, derived from the material, more inductive categories were developed, such as definition, necessity, realization, other.

4 Results

Of the identified 36 web pages, six universities or colleges did not provide publicly available information about accessible videos. All other web pages provided some information about accessible videos. Hereafter, the results are presented using the developed categories as structure.

4.1 Captions

Most higher education institutions provide some definition: Captions translate the audio content (including sound effects, music description, and speaker identification) into written text. Captions are usually displayed at the bottom edge of the video screen. There are two types of captions: Closed Captions and Open Captions. Open Captions are permanently displayed, while the user can turn closed captions off and on. One university states that closed captions are the “technique to use” (HS 22).

Necessity. Nearly all universities/colleges state that videos have to be captioned. Many universities add that not just students with hearing impairment benefit from captions but also students with another native language or when listening to a video in a loud environment (e.g., HS 4; HS 2; HS 3; HS 4; HS 12; HS 17; HS 30; HS 28).

There are also statements that all publicly posted videos have to be captioned. One university even states that “streaming without captions could expose the university to serious risk, and will be perceived as a proceeding that is contrary to the inclusion ideals of American Universities” (HS 19). It becomes obvious that the necessity to provide captions in line with the ADA, BITV, etc. is communicated by the higher education institutions. Nevertheless, there is also information regarding the prioritization of the captioning effort. This mainly refers to the intern service of universities to caption videos. One example is the following hierarchy: Critical – Media used in courses, where captions are included in a current accommodation, and media which is publicly available; High – Media used in large courses, or will be used multiple times; Medium – Media from third-party vendors, and does not meet criteria named above; Upon request – Media which is not currently used, but is available in an archive; Helpful – Media is used for a limited time, for repetition purposes only, and it is verified, that there is no accommodation need (HS 18).

This prioritizing is a way to handle the growing number of video use and captions. However, it should be noted that there is no lower priority than helpful. Thus, it seems that if the capacities allow, all media should be captioned.

Guidelines/Standards. Regarding guidelines/standards, the information provided by the universities differs. Some refer to guidelines of other universities or known standards, such as BIK, Aktion Mensch (Germany), Captioning Key (America), or WCAG (both). The Guidelines by Aktion Mensch and WCAG do not specify the type of video addressed [1, 38]. The introduction to the Captioning Key [10] states that the guidelines are for both entertainment and educational media, while the BIK Guidelines are developed for usage in educational contexts (vocational training and higher education) [7]. Furthermore, the guidelines differ in the level of detail: The tips by Aktion Mensch propose SubtitleCreator as a free tool, and include that everything which is heard and has meaning needs to be captioned. Additionally, important noises and background music, and speaker identification have to be included in the captions. Regarding the appearance of captions, the length of the caption (two lines) with a minimum of reading time of two seconds is listed. Finally, they provide another link to a general guideline for broadcasters in German-speaking countries.

The guideline by BIK focuses on the captioning process and provides a list of Tools (e.g., Subtitle Edit, Aegisub, etc.), and also names YouTube as an editing tool. As a standard, they recommend the standards developed for German-speaking broadcasters.

The Captioning Key is the most detailed guideline. It covers topics such as “elements of quality captioning,” what to caption, “language mechanics,” “sound effects and music,” “speaker identification,” “numbers,” and tools for captioning, including YouTube. In contrast to the other guidelines, the Captioning Key illustrates most information with examples.

Other universities provide comprehensive information on their web pages regarding color, font, size, location, format, length, reading time, and how to indicate turns. This information is similar across the web pages: high contrast, bottom edge, sans serif fonts, not longer than two lines, aligned with the audio (HS 12; HS 18). Sometimes these instructions are systemized along “Elements of Quality”: Accuracy, Consistency, Clarity, Readability (HS 17) or Synchronized, Equivalent, Accessible (HS 18). These quality elements are introduced on the web pages to determine the quality of the captions, done by oneself or from videos already captioned.

Even though not all web pages refer to a specific guideline, and the level of detail differs, there seems to be a broad consensus on designing captions. While the basics are nearly the same, differences exist in what symbol to use to indicate music (e.g. ♪, #).

Recommended Tools. On the web pages, it is often stated that there are two approaches to caption videos: Do it yourself or outsource. In order to caption the video yourself, a variety of tools is named. Some of them are Open Source others are commercial. To name a few: Subtitle Edit, Gaupol, Aegisub, Camtasia, Amara, AnnotationEdit, Subtile Horse, Streamer, MovieCaptioner (Registered trademarks), and more (HS 2; HS 10; HS 12; HS 18; HS 28; HS 33).

Automatic Captioning. Next to the recommended tools, automatic captioning is addressed as an easy way to create captions for videos, often with the warning that automatic captioning might not be sufficient enough, because depending on the audio quality errors occur, which need to be corrected (e.g. HS 3; HS 12; HS 35; HS 33; HS 15; HS 17; HS 22; HS 28; HS 29). Nevertheless, YouTube’s feature to create automatic

captions for videos, including instructions, seems quite popular among the examined universities and colleges.

Outsource. To outsource captioning, the higher education institutions propose different approaches. Some universities have a contract with a third-party provider (e.g., 3Play Media from the US). Others have an intern provider who does the captioning for the university (HS 5). This service is often integrated into the Office for Students with Disabilities or Accessible Technology Service (HS 33; HS 17; HS 26; HS 28; HS 12; HS 35). Some of these intern services seem to be free. Others charge per hour or minute of video. Costs seem to depend on whether the captions are included in a granted accommodation for a student with disability or not, at least in the US. If the captions are part of an accommodation, the Office for Students with Disabilities often supports lecturers in providing captions (HS 33; HS 17; HS 28).

The way how captions can be outsourced differs between the universities. For example, some universities have online forms to request captions for specific videos. These videos are then provided for the student with the accommodation via the respective Learning Management System (LMS) or are available to download for the lecturer (HS 5; HS 24). Other universities indicate the address where to request captions or name the third-party vendor (HS 22; HS 26).

Other. Some universities also provide information on how to caption live Zoom-Conferences and provide workarounds using software for video recording and live streaming when the Zoom-Service is not sufficient (HS 13).

4.2 Audio Description

Audio description is an additional audio track that provides the description of visual information covered in the video. The descriptions are inserted into the gaps of the audio track. The additional audio track must be recorded and inserted manually.

This technique provides access to the visual content of a video for people with visual impairment.

Necessity. Like the information about captions, most universities state that audio description is essential. Videos conveying information that the audio track does not cover need an audio description. One university illustrates the effect of audio description with a video example: The university has a “Best of” Video with visual illustrations of activities and other things on campus. The video is just music, no spoken word. Thus, with no audio description, people who cannot see the video only can hear the music but still do not know what happens on campus (HS 33).

While many universities state that captions are helpful for various students, this is not so prominent for audio descriptions. Only one university demonstrates in two examples the benefits for all students (HS 22):

- Watching a video on a small screen, where students cannot see everything on the screen, especially diagrams with small numbers

- Watching a video while commuting by public transportation or by car on their mobile phones

However, the urgency to provide audio descriptions is not stated as clearly as for captions.

Guidelines/Standards. Once again, guidelines by “BIK für Alle” and “Aktion Mensch” are named by German universities. In addition, some universities refer to the “Description Key” by Described and Captioned Media Program [11], an equivalent to the Captioning Key. While this guideline specifically targets educational media, the intended audience is K-12-Students. Thus, the examples and some recommendations are for a younger audience than higher education students. Therefore, the question arises whether all recommendations are actually suitable for the intended use in higher education.

Not many higher education institutions posted standards or guidelines. However, a basic rule derived from the definition is that the audio description is inserted into the gaps of the audio track of the original video and that “important” visual information needs to be described. Furthermore, some universities state that everything seen in the video, which is essential to understand the video, must be described (HS 2; HS3; HS 4; HS 9; HS 11; HS 12; HS 15; HS 22; 33; HS 28). The question of defining “important” visual information and the problem of gaps in the audio track restricting the time for a description are not addressed.

Nevertheless, in line with a statement in the guideline of Aktion Mensch, some universities state that “audio description is an art” (HS 33; HS 28), which impacts the viewers’ experience. Even though not designed for educational videos, some universities and BIK für alle refer to standards and guidelines by broadcasters. The University of Washington adds that no “officially sanctioned standard exists that assures quality and consistency across described videos” (HS 33).

Recommended Tools. As stated above, audio descriptions need to be recorded and inserted manually. Therefore, customarily used editing software is recommended. Additionally, one university refers to YouDescribe (HS 33). “YouDescribe is a free, web-based platform for adding audio description to YouTube content” [33]. It provides a range of already audio-described YouTube-Videos and offers the means to add audio description to any YouTube video.

Realization. Audio description itself may look different, depending on the video itself. A short description of the scenario is sufficient for lecture videos if the content is properly described (HS 5; HS 17; HS 22; HS 27; HS 34). As one university put it: “Hosts and Co-Hosts should act as their own alternative text for visual elements” (HS 28). A similar approach is recommended for explanatory videos. If possible, everything that is happening visually should be described in the original audio track (HS 3; HS 4).

The more is described in the video itself, the less needs to be described in the audio description. To teach lecturers to include a description of the visual content upfront in their video/talk is “the easiest and most cost-effective method” to provide a video where an audio description is not or nearly not needed anymore (HS 22).

One Problem is the access to the audio description. Most video players do not provide the possibility to turn on the audio description when needed. Instead, a second video with

the inserted audio description needs to be available most of the time (e.g. HS 12). One exception is “Able Player”, an Open Source Media Player developed by the University of Washington (HS 33). This player has a feature that can access a timed text file in which the visual information is provided. A screen reader can also access these timed text files if the player cannot include the file (HS 26).

As for captions, there are also two ways to produce audio descriptions: Do-it-yourself or outsource (HS 33). As stated in the chapter above, higher education institutions do not provide much information about tools that can be used to produce audio descriptions. Also, the information about who can produce audio descriptions, if not the lecturer, is not as prominent as for captions. Only a few universities state that audio descriptions can be ordered at specialized centers, such as the Student Accessibility Center or similar (HS 4; HS 13; HS 35, HS 12).

The University of Washington provides a list of vendors “that seems to be a good match for higher education institutions” to outsource audio descriptions. They also state that the American Council of the Blind has compiled a list of commercial services (HS 33). This list is displayed by categories: Full Service, Writing, Voicing, Audio Engineering, Training, Quality Control and Consulting, and Local AD Providers [2]. Vendors in Germany are listed by BIK für Alle [6].

Surprisingly, often audio descriptions are not listed as a provided accommodation for students with disabilities, as is the case for captions (e.g., HS 17; HS 20; HS 27).

4.3 Other

When designing accessible videos, some universities provide some general tips and information. In line with the recommendation to consider accessibility up front, this is also suggested for captions and audio descriptions. Scripts for videos make it easier to design the captions. Including as much description as possible or gaps in the audio track makes it easier to provide audio descriptions. It is also recommended to apply the two senses principle on videos (HS 11). Others provide a FAQ section for accessible videos, providing information such as who is responsible for providing accessible videos, who pays, accessible videos, how do I get accessible videos, and so on (HS 33; HS 22; HS 4). Some provide a checklist for accessible videos, which includes captioning, transcripts for audio files, audio description of visual-only content, and can the video be accessed by keyboard (HS 5; HS 27).

5 Discussion

The chosen approach has some limitations. First, higher education institutions that were not included in the chosen rankings or web pages are not analyzed. Thus, institutions with a great deal of information regarding accessible videos might have been missed. Second, only publicly available information was considered. Thus, there might be more information in the respective intranet. Moreover, only information provided in English or German is analyzed; thus, the information provided by the Open University Israel might be missed out because it is in Hebrew.

However, the amount of information provided by higher education institutions on their web pages about captions is high compared with the amount of information about audio descriptions. It is strongly recommended to provide captions on the web pages, especially in the US. If a student with a granted accommodation for captions participates in the lecture, the universities often take care of the captioning. Otherwise, the lecturer is responsible for deciding whether captions are necessary or not and providing them. In order to help lecturers to prioritize the effort for captioning, additional information is provided. This prioritization can be regarded as a way to handle the growing need for captions. However, the hierarchy seems to be influenced by the risk of lawsuits [26] if a higher education institution from the US makes a not-accessible video publicly available. While this approach is understandable, the benefits or potential exclusion risks should be more focused on in an inclusive learning environment.

However, considering that for adaptations for accessibility, working time seems to be “a narrow bottleneck” [8], the competence of lecturers to decide and provide captioned videos should be questioned.

Thus, in light of the growing need for captions, it is no surprise that tools like YouTube are recommended because they simplify the production of captions and save time. While problems like the occurring errors are addressed, privacy issues are not. If only the lecturer is seen and heard in the video, it might be the lecturer’s own choice. However, the privacy issue becomes even more relevant when using a demonstration video, such as a classroom situation with children. Additionally, the audio quality is often not as high as it would be needed for YouTube to provide useful captions.

The need for audio description is not as urgently formulated as for captions, which is surprising because the need for a media alternative or audio description is on the same conformance level (A) as the need for captions unless the time-based media is a media alternative itself [37]. But, the fact that captions are more common than audio descriptions is not unique to higher education. Also, in television and movies, the availability of audio descriptions is below the availability of captions [14]. For example, only since 2015 has Netflix offered selected videos with audio descriptions [3]. Still, it seems that audio description is often the last feature of a movie that is considered [21]. Possible causes may be the relatively high effort to create audio descriptions [5] or the difficulties of making them available for the audience [29].

However, the benefits of audio description for videos in higher education for all students – that videos can be followed while commuting or when watched on a small screen – reflect observations of developments when watching Netflix or TV shows. Audio description can be used as a tool to turn a TV show into an audiobook, which can be listened to while doing other things [14]. This use of audio description might not be seen as beneficial for educational media, where the video aims is to teach the viewers something rather than to entertain. Nevertheless, there are also observations that the audio description is used as an additional source of information, which can help to follow complex videos [14]. Other approaches use audio description as a didactical tool to approve writing abilities, attention to detail, and to deepen an analysis of the video material [19, 23]. Even though these considerations are beyond the scope of this article, it is essential to note that the potential audio description offers is not yet fully utilized.

Furthermore, the instruction on producing an audio description is strongly abbreviated. It is often stated that it is necessary to describe what you see and what is important to understand the video for the audio description, but how to decide what is necessary and important to describe is often not addressed on the web pages, except for the universities which refer to different guidelines such as the Description Key [11]. In the Description key and other guidelines for audio description, it is recommended to describe visual elements which cover the questions where?; when?; who?; what? and how? Additionally, sound effects, which are difficult to identify and on-screen text, need to be included [36]. While this basic information might help when producing an audio description, the didactical dimension of audio description and the need to align the description to the learning objective and task are not mentioned on any web page. Thus, important visual information needed to reach the respective learning objective runs the risk of getting lost in the translation of the pictorial representation into speech.

Moreover, all information about accessible videos on the web pages seems to refer to certain kinds of videos: explanation videos and lecture recordings. In this kind of video, it is possible to integrate the (audio) description into the original audio track. This approach has two benefits: The need for post-editing and the creation of an audio description is minimized. And more importantly, this approach follows the principle of the Universal Design. More students than anticipated can benefit from this integrated description of visual information, for example, simply students looking away [34]. It seems that the description itself and the integration into the video is easier than for demonstration videos. It seems that on the web pages, it is neglected that different types of videos need different types of captions and audio descriptions [41] and that captions and audio descriptions are translations, which need careful considerations during the translation process [22]. When producing captions and audio descriptions for demonstration videos, difficulties were not explicitly addressed on any web page.

6 Conclusion

Regarding the research questions, we can conclude that, at least on public web pages, standards such as BIK für Alle, Aktion Mensch, Captioning Key respective Description Key, and WCAG are used to produce captions and audio descriptions. Nevertheless, the amount of information differs. Higher education institutions seem to provide more detailed information on the design of captions than on audio descriptions. This might be because captions are seemingly easier to produce, especially with the different captioning software or automatic tools, such as YouTube or speech-to-text-converters.

Also noticeable is that specific information for demonstration videos and how to include didactical dimension in the design process of audio description is missing. It seems that mere information and instruction are considered in the design process. However, when using (demonstration) videos with specific reflective tasks or specific learning objectives, the provided audio description must be produced with didactical considerations in mind. Even though both captions and audio descriptions are translations, this is particularly important for audio descriptions. Since when translating something from visual to verbal, it is nearly impossible to describe everything you see and without any interpretation. The didactical dimension of the design process can get lost in translation if

not considered in the translation process. Thus, when designing accessibility features, it is worthwhile to regard captions and especially audio description as a translation, which is influenced by a variety of decisions and the translator's perception. The decisions what to translate and how it should be translated are influenced by the translator's knowledge (in case of audio description, the describer) [5]. Additionally, sighted people should not overestimate themselves. Human perception is limited, and sighted people do not see everything [22]. Thus, the intended learning objective and respective important information as intended by the lecturer can get lost in translation, if the describer does not know about this information. In light of the growing use of videos in higher education, and not just explanatory videos or recorded lectures, it is necessary to include the didactical dimension into the translation process when designing audio descriptions.

In summary, based on the analysis, it seems that while there is a lot of information available about the design of accessible videos. The need to ensure that important information is not lost in the implementation or translation process respectively has been also shown. One approach which could help in this matter is to design a guideline specifically for audio description in higher education, on the one hand including considerations about the different types of videos and respective possibilities to design audio description, and, on the other hand, support for describers on how to include the didactic in the audio description.

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