# Barriers and facilitators for students with disabilities: Results of semi-structured interviews in Swiss universities

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## Abstract

### Purpose

This paper investigates the following two research questions: What are the barriers and facilitators for students with disabilities while studying at Swiss universities? When do these barriers and facilitators occur for students with disabilities? Research on barriers and facilitators encountered by students with disabilities at higher education institutions in Switzerland is still scarce. Identifying when and how to include persons with disabilities could enable Swiss universities to uphold their commitment to the inclusion of people with impairments.

### Methods

31 qualitative semi-structured interviews were conducted with students with diverse impairments who were enrolled in French- and German-speaking Swiss universities. Interviews were analyzed thematically in a deductive and inductive manner.

### Results

The study demonstrates that students with disabilities experience many barriers before and throughout the term, as well as during examinations. Awareness of disability and accessibility among staff and peers was revealed to be a key issue, both as a major barrier where awareness was lacking and as an important facilitator where awareness was high. Awareness levels were also shown to be connected to other aspects of accessibility. Factors such as access to accommodations for exams, advanced access to study materials, and digital accessibility, arose as important issues for students with disabilities.

### Key Message

This study underscores the crucial role of awareness, both as a barrier when lacking and as a facilitator when present. Exam accommodations also emerged as a critical issue, again both as a barrier where experiences were unsatisfactory and as a facilitator where accommodations were received. The interviews emphasize the importance of providing study materials in advance, as well as the impact of course formats on inclusion, particularly the positive effect of online learning. The presence of barriers and facilitators before the start of lectures suggests that support should be offered even before the start of the semester.

## Points of Interests

- When lecturers or university administrators know about and are sensitive to the topics around disabilities and accessibility, the inclusion of students with disabilities is greatly facilitated. Conversely, the lack of awareness of university staff greatly limits the inclusion of students with disabilities.
- Reasonable accommodations for exams can make it easier to study. However, several students reported that those accommodations were still insufficient.

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- Lecturers should give students learning materials before class for preparation. This is particularly important for students with visual impairments who may need to make the materials accessible. It also helps them follow the courses during which it can be difficult to read the visual content and listen to the lecturer at the same time.
- Specific course types and activities (e.g. block course, group work) can impact the inclusion of some students with disabilities. In comparison, online streaming and recording can provide greater flexibility.
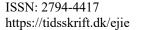
## Introduction

From a socio-medical perspective, disability is the result of the "interaction between health conditions […] and a range of environmental and personal factors" (World Health Organisation, 2021, para. 2). When people with disabilities are not able to obtain a degree in higher education, it is not necessarily due to their health condition, but can also be the result of barriers that arise among higher education institutions (HEIs) In 2006, the United Nations adopted the Convention on the Rights of Persons with Disabilities (UNCRPD) which aims to protect the rights of persons with disabilities, such as the right to education (Convention on the Rights of Persons with Disabilities Pledged, Article 24 – Education, 2006). Yet as recent research shows, students with disabilities still face many barriers in higher education.

Barriers related to learning and assessment, e.g., barriers in taking notes or in class participation, are frequently encountered. These barriers have been shown for example in the UK (Kendall, 2016), Spain (García-González et al., 2021), Sweden (Olsson et al., 2021), Turkey (Firat, 2021), South Africa (Mutanga, 2017), and Zimbabwe (Majoko, 2018). Other barriers arise from a lack of awareness among teachers and/or other students, as well as a lack of training in inclusive education, and may result in lecturers failing to meet the needs of students with disabilities (e.g., not providing lecture slides in advance), and in social barriers (such as discrimination due to disability or hindered social interactions) (Firat, 2021; García-González et al., 2021; Kendall, 2016; Majoko, 2018; Moriña, 2017; Olsson et al., 2021; Rath, 2022). Due to the lack of awareness, some students experience an additional burden of "having to constantly self-advocate" (Rath, 2022, p. 8). Physical accessibility issues, including architectural barriers and environmental factors like noise and poor lighting, further hinder inclusion (see e.g. Firat, 2021; Nolan et al., 2023). Finally, removing barriers in HEI takes time and implementation may vary by department (Fuller et al., 2004). For that reason, regular identification of potential barriers in higher education is necessary.

With the increasing prevalence of online learning, particularly due to the Covid-19 pandemic, it is important to give attention to the accessibility of digital technologies. Digital technologies can benefit students with disabilities in higher education (Heiman et al., 2020; Wilkens et al., 2021). However, research reveals numerous barriers in higher education related to Information and Communication Technologies (ICT) (Fichten et al., 2020; García-González et al., 2021; Moriña, 2017). For example, Fichten et al. (2020) reported inaccessible digital course materials, textbooks, and websites, as well as the high cost of some assistive technologies and a lack of training on how to use these technologies. Another common problem students with disabilities encounter is that PDFs are not accessible by default, requiring students to undertake a "cumbersome, time-consuming, and expensive" (Heiman et al., 2020, p. 103) process to make them accessible.

While most research focuses on the barriers that students with disabilities encounter, there is also evidence of facilitating factors. Disclosure of disabilities during admission and registration can provide students with access to support services, assistive technologies, and funding (Majoko, 2018). Peer support and assistance from friends, such as sharing lecture notes, are important facilitators for students with disabilities (Firat, 2021; McIntyre et al., 2019; Moriña, 2017). In addition, individual members of academic staff also provide support and contribute to students' accomplishments (Rath, 2022). For example, students find it helpful when lecturers are willing to provide notes and allow voice recordings of lectures (Firat, 2021). Additionally, curricular adaptations and modified exams, such as granting

additional time and separate rooms, can alleviate barriers for students with disabilities (Firat, 2021; Majoko, 2018; Moriña, 2017). In terms of the physical environment, clear signage and disability-friendly infrastructure improve campus navigation and accessibility within institutional facilities (Majoko, 2018; Nolan et al., 2023). Overall, facilitators in higher education such as academic support, inclusive practices, and accessible infrastructure are instrumental in empowering students with disabilities and ensuring their well-being.

In Switzerland, research on this topic is scattered and usually focuses on one institution. Switzerland is bound by national and international law to guarantee the right to education for people with disabilities. Since 2004, Swiss legislation requires the elimination of any disadvantages or discriminations that persons with disabilities may face (Behindertengleichstellungsgesetz BehiG, 2004). In 2014, the UNCRPD came into force in the country. However, a recent shadow report by Inclusion Handicap, the umbrella organization of Swiss organizations for the disabled, reveals insufficient implementation of the UNCRPD in various areas, including higher education (Hess-Klein & Scheibler, 2022).

In a study conducted in 2005, 12% of students at three Swiss HEIs reported having a disability or chronic illness (Hollenweger et al., 2005, p. 147). At the Zurich University of Applied Sciences, half of all students with disabilities reported encountering barriers in their studies, according to a report by Passalacqua et al. (2018). The barriers identified in higher education in Switzerland are similar to those identified in other countries. The most prevalent barriers among students with disabilities are related to instruction methods (Hollenweger et al., 2005). Inaccessible forms of instruction have also been identified as the most common issue for students with hearing impairments in other HEIs in the German-speaking part of Switzerland (Hohenstein et al., 2018). Further barriers at Swiss universities include inaccessibility of information, inaccessible study materials and digital platforms; a lack of awareness and training among lecturers and staff; inadequate support structures; and architectural/infrastructural barriers (Dietsche, 2015; Passalacqua et al., 2018; Tomczak-Plewka, 2016).

In addition to barriers, Hollenweger and Enz (2003) also describe facilitators for students with disabilities in Switzerland. For example, the University of Zurich has set up a relaxation room which features accessible sanitary facilities and a fridge where medication can be stored. Another facilitator is compensation for disadvantages, which describes the accommodations students with disabilities are entitled to. For instance, students with visual impairments may have difficulty accessing certain digital document formats, such as PDFs, which are frequently used in academia but were found to be largely inaccessible in Swiss academic repositories (Darvishy et al., 2023) and international publishers (Nganji, 2018; Wang et al., 2021). To compensate for this, students with visual impairments are entitled to support from the Swiss Library for the Blind to adapt texts into accessible formats. On the other hand, it reportedly takes so long to actually receive this support that it is often not worth the trouble.

As a participant from Kobi and Pärli's 2010 study said, the accessibility of Swiss HEIs is "still in its infancy" (p. 4, translated from German). It is clear that there are still many barriers in higher education for persons with disabilities. In Switzerland, research on barriers and facilitators in higher education is still scarce in general. Thus, following a qualitative approach, this study aims to identify barriers and facilitators in higher education for students with disabilities in Switzerland. Investigating both barriers and facilitators simultaneously has the advantage of revealing areas that are both potentially harmful but also carry high potential for benefits if improved. Additionally, the authors of this paper also emphasise the importance of exploring not only *what* barriers occur, but also *when* these occur during the semester (i.e., before the semester, during the semester, and during the examination period). Knowing when barriers and facilitators happen is critical because it can indicate when intervention is necessary and avoid a restricted focus on the assessment of the request for accommodations. In this study, the following research questions will be explored:

1) What are the barriers and facilitators for students with disabilities while studying at Swiss universities?
2) When do these barriers and facilitators occur for students with disabilities?

Young people with disabilities and chronic illnesses are increasingly aware of — and active in vocalizing — the systemic issues that exclude them. In order to improve inclusion, it is imperative to continuously investigate access to higher education for students with disabilities and chronic illnesses, and to do so by talking to them directly about their experiences.

## Methods

For the present qualitative study, semi-structured interviews with students with disabilities were chosen as the data collection method. In total, 31 students were interviewed following a convenient and purposive sampling procedure. The participants were drawn from universities and HEIs all over Switzerland.

To recruit students, researchers contacted disability offices at Swiss HEIs. Contact information of the disability offices were found on the website of Swissuniability, a Swiss network for studies and people with disabilities. For confidentiality reasons, these offices informed students with disabilities via email about the study so that they could themselves contact the researchers if they were interested in participating. Additionally, researchers purposively contacted students with disabilities who had previously worked with them and who were therefore likely to be willing to participate.

Interviews were conducted between September 2022 and April 2023, lasting 30 to 60 minutes per interview. Prior to the interviews, participants received consent forms and were given the opportunity to ask questions. Interviews were conducted in German, French, or English via Zoom or Microsoft Teams. The interviews were video- or audio-recorded. To ensure confidentiality and anonymity, the interviewees were assigned numbers prior to the analysis.
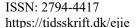
For the interviews, a semi-structured approach (Galletta, 2013; Knott et al., 2022) was chosen to capture students' experiences with barriers in higher education. Questions were grouped into the five following themes: (1) introduction, (2) before lectures, (3) during lectures, (4) during examinations, and (5) wishes on how to improve inclusion in their university. These themes were chosen based on the research gaps identified earlier, i.e. exploring not only *what* barriers occur in higher education, but also *when* they occur.

Interviews were analysed thematically using a qualitative, inductive approach. The analysis was performed according to inductive category formation (Mayring, 2014). Inductive category formation considers only text passages which are relevant for the research questions and defines the reduction level prior to category formulation according to a deductively established selection criterion, so that when working through the text, categories can be formulated directly at the reduction level (Mayring, 2014) . Once the category system had been formed, it could be interpreted further using both an inductive and a deductive approach, and it was analysed quantitatively by looking at the frequencies of categories (cf Mayring, 2014).

The encountered barriers and facilitators were analysed independently of the specific universities they were experienced at. One the one hand, this was done to ensure privacy, so that findings could not be traced back to specific students. On the other hand, barriers and facilitators related to a specific university would not be representative of the respective university, as the sample of most universities was too small to draw general conclusions for a specific university.

## Results

In our sample, 31 students studied at eleven different Swiss universities and had various disabilities. Table 1 summarizes the different kind of impairments of the interviewees. As 10 students had more than one impairment, the total of impairments is not equal to the sample size. Impairments are reported in the text as they were self-described by interviewees.

**Table 1**
*Kind of Impairments and Number of Students.*

| Impairment | Number of students |
|---|---|
| Visual impairment | 9 |
| Impairments due to chronic illness (e.g., fibromyalgia, endometriosis, diabetes) | 6 |
| Autism spectrum | 5 |
| AD(H)D | 5 |
| Mobility impairment | 4 |
| Mental health condition (e.g., bipolarity, depression, anxiety) | 4 |
| Dyslexia / Dysorthographia | 3 |
| Hearing impairment | 1 |

Due to their impairments, these students face a variety of challenges such as a difficulty reading or concentrating on academic papers, sensitivity to light, smell, and noise, anxiety issues that make participation in class harder, among others. Both barriers and facilitators were categorized on whether they were experienced before lectures (meaning before the term would start), during lectures (during the term, when students attend classes), and during examinations (during the examination period at large as well as while writing examinations).
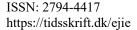
A taxonomy was created to illustrate data categories and examples of barriers that students encounter (see Table 2), and another taxonomy for the facilitators they experience (see Table 3).

*Barriers*

The most frequently encountered barriers occurred during the lecture and related to course format and lack of awareness. Furthermore, students often reported barriers to requesting accommodations. Table 2 shows the frequencies of the various barrier categories. A more detailed discussion of each category follows.

**Table 2**
*Barrier Categories Encountered Before Lectures, During Lectures, and During Exams, and the Respective Frequency of Reports by Students.*

| Period | Barrier category | Frequency |
|---|---|---|
| Before lectures | Limited course selection | 10 |
| | No advance access to learning materials | 7 |
| | Poor campus orientation | 6 |
| | Extra effort and energy | 10 |
| During lectures | Inaccessible architecture | 20 |
| | Lack of awareness | 21 |
| | Inaccessible learning materials and learning management system | 20 |
| | Inaccessible course formats | 23 |
| During examinations | Obstacles to requesting accommodations | 23 |
| | Lack of accommodations | 17 |
| | Barriers while writing the exam | 11 |

*Barriers Before Lectures*

Participants reported four main barriers occurring before the start of the lectures: 1) limited and difficult course selection, 2) no advance access to learning materials, 3) poor campus orientation, and 4) the need to invest additional effort and energy.

**Limited and Difficult Course Selection**

Ten students reported difficulties or limitations in course selection. The most common issue (8 students) related to the lack of information relevant to course accessibility. Course descriptions were sometimes unclear and available on short notice. This prevented students from assessing whether the course would suit them and requesting accommodations early. Additionally, six students explained that their course-booking platform was inaccessible. This issue was particularly prevalent for students with visual impairments who reported a lack of clear logical structure of platforms and having to navigate multiple folders before reaching relevant information. Three students also mentioned how administrative rules for registration or accommodations can be hindering. For example, a student with ADHD and Asperger syndrome explained that it is problematic that they could no longer pick classes after attending the first session which enabled them to assess the course workload:

> When you have to pick your courses, it's always a bit difficult. Especially now that the [university] has introduced a new module booking program where you can only cancel modules with limited places up to one day before the lectures starts. And that [is] a bit of a problem for me because [before] I often booked seminars and then spent the first week assessing "Okay, what's the workload, so how much work is it for me?" - because somehow the ECTS information isn't quite right for me – and then maybe I didn't book the seminars afterwards, i.e. I canceled them because I realized "no, that's too much". And unfortunately, that's no longer possible. Otherwise it's easy. It's okay for the compulsory modules. But it's always a bit difficult to choose [elective subjects]. (P6)
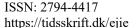
**No Advance Access to Learning Materials**

Seven students reported not receiving study materials before the start of the semester as a barrier to their studies. Students noted that receiving study materials in advance gave them time to make the materials accessible and allowed them to prepare their lectures in advance, as following courses may take them more time and energy than other students. Availability of course materials varied depending on the lecturers:

> It's usually only after I've chosen the module or the lecture that I first come into contact with the lecturers and then actually realize how flexibly my situation can be dealt with or not. And then the courses are relatively different. Sometimes they are very responsive and helpful and teaching materials are provided in advance. In other lectures this is refused. And really no documents are provided in advance. It's very, very different. (P20)

**Poor Campus Orientation**

Difficulties navigating on campus were mentioned by six students. Out of those six students, four found that there was inadequate information on the buildings and rooms, e.g., obscure or missing room signage, and two students remarked that it was not possible to explore the rooms in advance.

**Extra Effort and Energy**

Six students reported having to be proactive and initiate the first contact with lecturers (e.g., because the university would inform the lecturers only shortly before the exams). Two participants pointed out that there was no disability office at all at their university. A student with a hearing impairment explained that they had to organize and finance interpreters themselves. In another case, a student with a chronic condition was asked to come earlier to bring every morning a chair on campus. One participant also explained that room accessibility information was unreliable, requiring them to check the room in advance.

*Barriers During Lectures*

Participants reported four main barriers occurring during lectures: 1) inaccessible architecture, 2) lack of awareness, 3) inaccessible learning materials, and 4) inaccessible course formats.

**Inaccessible Architecture**

Barriers related to architecture could be categorized into barriers within classrooms and barriers within buildings in general. Nineteen students listed barriers in classrooms (e.g., stairs, narrow rooms, uncomfortable seats, and bags or other objects lying on the floor). Some of these reported that having to sit on the side, in the back, or at the top of a classroom (for reasons of mobility or accessibility of the seats) was an obstacle, which led to additional obstacles such as hearing and seeing less, and also being seen less by the lecturer if the student had a question.

Barriers linked to buildings in general were reported by seven students. One student mentioned that although there were elevators, it took more time to use them compared to if the student were able to use the stairs. Another student explained that they need to drive to avoid sensory stimulation in public transport, but since the university does not offer parking, they had to pay for a parking spot.

Taken together, the barriers associated with architecture led to consequences such as a loss of autonomy, pain, and not being seen or heard by the lecturer.
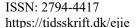
**Lack of Awareness**

A lack of awareness among lecturers about disability and accessibility was encountered by 17 students. Eight students reported such a lack of awareness among fellow students. Four students felt that there was a general lack of awareness due to a lack of visibility of their disability. For example, a student with a visual impairment explained the following:

> You can't see [my disability]. And I think that's the difficulty, even if I disclose it and the lecturers then take note of it. It is later simply forgotten again. Honestly, it is sometimes a bit tedious to always remind them. And because of that, I try to arrange it as well as possible without having to say "sorry, I can't read well. Couldn't you give me some help et cetera? (P13)

This barrier resulted, for instance, in students having to explain their disability to others multiple times.

**Inaccessible learning materials and learning management system**

Sixteen students reported having to deal with inaccessible course materials. For example, a student with a visual impairment (P2) realized, only when retaking first-year courses, that they had missed half of the information on the slides because they were not fully accessible. Many regretted that slides or learning materials were not good enough to support notetaking. Additionally, nine mentioned that digital

accessibility challenges in learning management systems. In particular, the lack of standardized structure on the platforms made the search for documents tedious and at times impracticable without assistance.

**Inaccessible course formats**

Specific course activities or formats can hinder students with disabilities. For example, ten students pointed out difficulties with group work due to the recourse to inaccessible tools (e.g. unfamiliar laptops without accessibility settings, flipcharts), sensory and acoustic difficulties resulting from group discussions, or the necessity to adapt to different persons. Ten students also highlighted that breaks were not adapted to their needs; they would have usually needed more. Twelve participants also identified the lack of course recording or streaming as a barrier because it prevented them from catching up in case of sickness and even felt pressured to attend classes. These barriers led to students feeling exhausted or stressed and having to spend a lot of time to recap materials after class. For instance, a student with Ehlers-Danlos syndrome and who is on the autistic spectrum explained how energy-consuming it was to follow block courses and how it prevented them from going to regular medical appointments:

> We have block weeks where we have classes every day from Monday to Friday, from 9am to 5pm, and we have no choice but to do these weeks all at once. And I haven't found any way of accommodating that. As a result, these weeks really take up a lot of my energy, and they are super complicated to keep up with.
> […] I can't make any [medical] appointments during that week because it's already 9am-5pm. Anyway, those weeks are not at all adapted and not at all adaptable and I have to deal with it and it's not great. (P39)

Four students also noted how teaching practices could be problematic for them such as unpredictable course structure, use of unknown technologies, cold calling, or talking too fast.
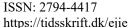
*Barriers During Examinations*

Participants reported three main barriers occurring during examination periods: 1) obstacles to requesting accommodations, 2) lack of accommodations, and 3) barriers experienced while writing the exam.

**Obstacles to requesting accommodations**

Ten students stated the process of getting accommodations for disadvantages was bureaucratic, costing them significant time, energy, and money. Responsibility was placed on students, who had to pro-actively ensure that they received their accommodations. For instance, Participant 8 explained an imbalance between the efforts it took them to request accommodations and the support they received:

> It takes a lot of effort to apply for compensation for disadvantages. So, the path to the barrier-free examination is not barrier-free in itself. You have to deal with so much bureaucracy. I have to have a form filled out by my doctor, and then I have to have an interview with the disability office and then a protocol has to be made there again and then I have to apply for all this individually for each course. That is so much effort and I see that as a barrier as such. And in the end, for exams I get 10 minutes extra time. Where I simply think 10 minutes is almost nothing.

For some, requesting accommodations became a sort of negotiation. This can be difficult to handle due to the power imbalance between students and university administration. For instance, an individual with a chronic condition explained the following:

> Then perhaps it's also due to the fact that there's no very clear diagnosis for what I'm suffering from. I don't know how unconvinced the head of the deanship was by the medical report. After all, a lot of specialists looked at my case and described what I was suffering from. It's true that it was peculiar. But I didn't really insist on talking about this problem. Because I'm dealing with someone who can influence my studies, so I took what she gave me, this extra time for the Bachelor's thesis, without insisting or saying 'Yeah, but listen to this process, it's still very special. (P18)

Ten students explained situations when the administration lacked awareness on the topic of disability. For instance, three participants reported being told their requested accommodations could be unfair towards others. Four also felt they were not taken seriously and had to justify themselves. Furthermore, three students mentioned a lack of communication and/or transparency around accommodations.
Some wished for their university to take on a more proactive role. Nine students highlighted the difficulty of finding information on reasonable accommodations. Some only became aware of the possibility of applying for adjustments through a friend's guidance. Others pointed out that they lacked support and information to know what to ask for. Additionally, one student remarked that at the beginning of their studies, applying for accommodations was not possible altogether because a contract between their faculty and the disability office did not yet exist.

**Lack of accommodations**

Seventeen students expressed receiving inadequate or no accommodations for examinations. Students noted various barriers, including dissatisfaction with the provided solution, perceived unfairness or arbitrariness in the accommodation, and examiners' refusal to enact the accommodations despite official approval (for example, refusing to give extra time which had been promised).

**Barriers experienced while writing the exam**

Eleven students encountered issues while writing exams. These included inaccessible exam documents, unclear instructions, technical issues or missing equipment, or noise in the examination room. Two students also mentioned cases when examiners were unaware of their additional time, which caused them stress and distraction.

*Facilitators*

The term 'Facilitators' refers to things or circumstances that the students reported as being helpful or facilitating for their studies with regards to their disability. The most frequently encountered facilitators were those related to the format of the course and its respective learning materials, awareness and openness from university staff and peers, and accommodations for exam writing. Table 3 shows the frequencies of the various facilitator categories. A more detailed description of each category follows.

**Table 3**

*Facilitator Categories Encountered Before Lectures, During Lectures, and During Exams, and the Respective Frequency of Reports by Students.*

| Period | Barrier category | Frequency |
|---|---|---|
| Before lectures | Coordination and support | 10 |
| | Learning materials | 4 |
| | Course selection | 9 |
| | Campus orientation | 4 |
| During lectures | Course format and materials | 19 |
| | Awareness and openness | 24 |
| | Online learning | 26 |
| | Architecture | 12 |
| | Study program | 4 |
| During examinations | Suitable accommodations | 20 |
| | Ease of requesting accommodations | 13 |

*Facilitators before lectures*

Participants described four major facilitators occurring before the start of lectures: 1) coordination and support, 2) learning materials, 3) course selection, and 4) campus orientation.

**Coordination and support**

Before the start of courses, ten students appreciated when their universities provided proactive support and coordination. For instance, two persons mentioned that lecturers contacted them early and inquired about their needs. Five students also valued that the university administration informed lecturers about their presence and their requested adjustments. For instance, Participant 14 explained that a few lecturers proactively contacted them after being informed by the disability office advisor that a student with visual impairment would join their courses:

> This semester, the lecturer contacted me directly by email and suggested to me that the exam, which will now be in January, I would have the opportunity to take it orally with them because at the moment it is not yet taking place online with him, but with a pen and paper which is rather difficult for me. I thought that was very good, for example. He really offered me this solution straight away.

Still, three students preferred the option to talk directly to lecturers. In addition, three students indicated that having an assigned support person to assist with study questions or mediate communication with lecturers was beneficial.

**Learning materials**

Four students explained that receiving learning materials in advance enabled them to prepare for the lectures. For example, one student with a hearing impairment received the course notes to read before the class.

**Course selection**

Out of the nine students reporting on facilitators related to course selection, seven mentioned that knowing the examination type and/or teaching style and/or lecturer helped them in selecting their

courses. One student appreciated the ample time provided for course booking and that there were reminders for the booking deadline. Another student mentioned receiving help with choosing courses.

## Campus orientation

Two students found it helpful to be able to explore the campus and/or the classrooms in advance. Another student acknowledged that, although they would have liked to learn to navigate the campus autonomously, their fellow students were helpful in guiding them. One student also wished for online plans to prepare their path.

*Facilitators during lectures*

Participants described five major facilitators occurring during lectures: 1) accessible format of course and materials, 2) awareness and openness, 3) online learning, 4) accessible architecture, and 5) study program.

## Accessible format of course and materials

Overall, 19 students identified facilitators related to course format and materials. In particular, the provision of learning materials made note-taking and following courses easier and enabled them to catch-up if they missed something. For example, one student explained that if the study material was made available in advance, they did not need to further communicate with lecturers. Technologies (e.g. live transcription, tablets) and accessible learning materials were also useful. Three students mentioned receiving support for notetaking and studying.

Specific teaching practices and course format or activities were also enabling. For example, students asked to be warned before starting videos or closing windows. Another appreciated when lecturers read out loud written content and call students by their names when they raise their hand. Three students explained that group work benefited them.
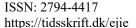
## Awareness and openness

Nineteen students reported experiencing openness, awareness, and general support from lecturers. However, this positive experience varied across participants; some reported most lecturers were open, while others found open-minded or proactive lecturers to be the exception. Generally, students mentioned that lecturers were willing to help and adjust their courses. Students also reported a few cases when lecturers were particularly proactive (e.g. asking how the course was going or providing supplementary materials).

Furthermore, according to 13 students, fellow students were also supportive and open (e.g., they shared their notes or moved obstacles). Four students reported receiving support from specialized assistants, e.g., one student mentioned the university paid an assistant to describe graphs and videos.

Ten students expressed that, overall, the university was making a genuine effort.

## Online Learning

Twenty-two students experienced course streaming and recording as a facilitator, making their studies more comfortable and/or flexible. Many students valued the possibility of deciding whether to go to class. Students could be missing classes due to medical appointments or feeling unwell. Online courses also allowed them to reduce stimuli and learn in a more comfortable environment with adapted chairs and the possibility to lie down when necessary. Others mentioned that they could follow their learning rhythm by pausing and rewinding the recording.

Some students felt studying during the Covid-19-pandemic was even better than before, e.g., because learning online made it possible to study without feeling different and eliminated commuting, thus saving time and energy. A student also pointed out how helpful it is when lecturers still offer online participation in courses to avoid them feeling overwhelmed in a crowded classroom:

> I'm also very grateful, especially in larger courses with more people, that lecturers will give me the opportunity to join in online via Zoom, because in the long run I am exposed to fewer stimuli and can follow along better. That's such a positive thing about corona, when lecturers still offer this, not everyone does it anymore, but the ones that do, I'm very grateful for that. (P8)

Fourteen students mentioned positive experiences with learning management systems. Most notably, they explained that the platform itself is accessible; one student with a visual impairment reported an improvement in its accessibility over her studies. Learning management systems also facilitated communication through learning materials uploading, announcements, and the possibility to ask questions online. One student also wished for an option to post questions anonymously.

**Accessible architecture**

Twelve students mentioned facilitators related to architecture. More specifically, eight students pointed out what helps them with regard to the classroom, e.g., sitting in a specific place or brightness/illumination. Two participants noted that using their laptops in the classroom made lighting issues less relevant. Five students named facilitators related to building accessibility, notably the availability of an info guide and that pathways are wheelchair-accessible. Among those, two valued the possibility to go to a relaxation room to prevent sensory overload.

**Study program**

Four students pointed out that their study program is a facilitator. Out of those four students, two said it had to do with their study program being small and another two students said it was due to the possibility to study part-time.
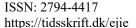
*Facilitators during examinations*

Participants described two main facilitators occurring during the examination period: 1) suitable accommodations, and 2) ease of requesting accommodations.

**Suitable accommodations**

Twenty participants explained their exam accommodations suitably supported their studies. Several of them noted a real improvement for them when they received accommodations compared to when they did not (due to a change of university or because they did not request them). The most common adjustment was additional time (16) followed by writing the exam in a separate room (5). One student with dyslexia highlighted the importance of combining those two accommodations:

> Extra time is useful if it's arranged properly. Like at [name of university], it was very useful because I didn't have 2 hours and after 40 minutes I had 2 hours 40 minutes straight away. I wasn't cut off at the end of the 2 hours saying 'Everyone's finished, time to hand in your pens, please be quiet'. But it's not really possible to make any noise in a big hall where all of a sudden 300 people get up to hand in a paper. So, at [name of university], it was much more appropriate. (P28)

Other suitable accommodations included change in exam type, the use of a computer, a tablet, or a screen, writing an exam with an accessible software, and allowing to miss class.

**Ease of requesting accommodations**

Eleven students experienced a good communication in requesting their accommodations, not having to justify their disability to receive the accommodations and describing the process as transparent and flexible. Two mentioned it helpful not having to reapply. One person also reported that their university asked whether support would be needed upon enrollment.

**Discussion**

An important result from these interviews is the high frequency at which the topic of awareness arose, both as a facilitator and as a barrier (in the latter case, a "lack of awareness"). This finding underscores the importance of awareness for the success of students with disabilities. While "awareness" is not as a tangible factor such as accessible architecture or accessible materials, there are concrete measures that could be taken to support it. For example, awareness-raising workshops and training sessions could be offered to university staff, and talks and conferences could be organized for students, staff, and the public.

Accommodations for exam-writing arose as a key issue. About two thirds of the interviewed students reported experiencing barriers in examinations and were unsatisfied with the availability of accommodations. Likewise, almost two-thirds of students listed accommodations they did receive (often in the form of extra time) as an important facilitator. These findings suggest that exam accommodations are critical but remain insufficient, and thus fail to fulfill Swiss legal requirements to eliminate any disadvantages or discriminations that persons with disabilities may face (Behindertengleichstellungsgesetz BehiG, 2004).

Several students reported that their requests for accommodations were denied altogether. This indicates that awareness could play an important role here as well. Lecturers who are aware of disabilities may be more open to grant requests for accommodations. Awareness is especially important people with less visible disabilities (such as learning disabilities, chronic pain, etc.). According to Moriña (2017), the needs of students with visible disabilities may be more easily accepted than those of students with invisible disabilities. In our study, it was also pointed out by a few students that fellow students and lecturers are less open and aware if their disability lacks visibility. Reports of unavailable or denied accommodations also supports the case for designated disability offices at universities. As one student put it, "the path to barrier-free examinations is not barrier-free in itself". Some students felt that they were not being taken seriously in general, requiring them to justify themselves over and over. Qualified disability officers can ease the coordination of accommodations, reducing the burden placed on students and ensure their needs are taken seriously.

Confirming findings from other Swiss studies (Heusser & Guggisberg, 2023; Passalacqua et al., 2018; Tomczak-Plewka, 2016), we also found that infrastructure and architecture barriers are still prevalent at Swiss HEIs. Already in 2003, Hollenweger and Enz pointed out that barriers related to infrastructure are not always apparent to persons without disabilities who could consider an elevator as accessible without considering that buttons are too high to be reached from a wheelchair. More recently, studies show that wheelchair accessibility alone is not enough to make the campus accessible for everyone. For instance, at the Zurich University of Applied Sciences, Passalacqua et al. (2018) highlighted issues with lighting, signage, or room acoustic on top of typical barriers for wheelchair users (e.g. stairs). Additionally, they mentioned the necessity of providing a room where students can relax (ibid.). This study highlights that those issues can be found across different Swiss higher education institutions.

Although most barriers are experienced during lectures, many barriers and facilitators occur before the start of courses. For example, some students, notably those with visual impairments, face difficulties finding accessible classes. Additionally, many students underscored the facilitating effect of receiving study materials in advance. In particular, students who are visually impaired often need a lot of time to make the materials accessible. Students benefit from the possibility of preparing for courses in advance and at their own pace. As one student noted, providing study materials in advance can likewise reduce the need for students to reach out to lecturers with extra questions or requests. This could mean a significant time win for both students and lecturers. The importance of letting students prepare themselves properly for courses highlights that inclusion strategies that mostly focus on providing accommodations to exams will not be sufficient.
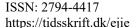
One finding which had not been previously pointed out in the literature is the fact the format of some courses, such as block courses or group work, can hinder inclusion for some. Block courses can be inaccessible to students with weekly appointments or who get tired over long periods of concentration or due to sensory stimulation. While this format can benefit others, for example, those with work or family obligations, it needs to be adaptable, especially for mandatory courses. Online courses, on the other hand, can often improve inclusion: over 75% of the interviewed students perceived online learning from home as a facilitator because it made their studies more comfortable and saved them time and energy, since the commute to class was eliminated. A few students mentioned regret about lecturers discontinuing live streams and recordings after the end of the Covid-19-pandemic. However, students also reported having to deal with partly or completely inaccessible digital tools and materials. This makes it clear that digital accessibility is still an issue that needs attention.

There are some limitations to the research conducted for this work. First, the present study does not include participants from the Italian-speaking part of Switzerland (Ticino), as none could be reached. Secondly, since the present study relied on convenience and purposive sampling, the findings are not representative for the experiences of all Swiss students with disabilities. Thirdly, it is possible that the interviewed students may represent a subset that is more likely to be dissatisfied, which could make the findings subject to selection bias. While this study indeed identified barriers and facilitators in Swiss higher education, their prevalence requires further investigation. A quantitative study would offer insights into how widespread these issues are. In future work, it could also be interesting to interview both students with and without disabilities about their experiences, and to compare their responses.

It should be noted that HEIs in Switzerland appear generally aware of the need to become more accessible. For example, the University of Zurich (Heusser & Guggisberg, 2023), the Zurich University of Applied Sciences (Kobi & Pärli, 2010), and the University of Basel (StoB, 2022), have documented their accessibility status in their respective reports. The results of the interview conducted for this study complement these reports by taking a student perspective and highlighting areas that still require improvement.

## Conclusion

In conclusion, this study sheds light on the barriers and facilitators encountered by students with disabilities in higher education institutions in Switzerland. The findings underscore the crucial role of awareness, both as a barrier when lacking and as a facilitator when present. Exam accommodations also emerged as a critical issue, again both as a barrier where experiences were unsatisfactory and as a facilitator where accommodations were received. The interviews emphasize the importance of providing study materials in advance, as well as the impact of course formats on inclusion, particularly the positive effect of online learning. These findings contribute to the ongoing efforts of Swiss higher education institutions to enhance accessibility. By considering these student perspectives and addressing the identified areas for improvement, universities can work towards creating more inclusive and supportive environments for students with disabilities.

## Declaration of Interest

The authors confirm no conflict of interest exists.

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