



Supporting Deaf and Hard of Hearing Students Online

Australian Disability Clearinghouse
on Education and Training (ADCET)

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ACKNOWLEDGEMENTS

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DISCLAIMER AND PERMISSIONS

These guidelines have been initiated by the Australian Disability Clearinghouse on Education and Training (ADCET) and the National Disability Coordination Officer (NDCO) program and developed in collaboration with a team of disability, education and technology specialists with experience in, or who are, Deaf and hard of hearing. We sincerely thank everyone involved for their generous contribution, support and assistance.

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INTRODUCTION

Background

The coronavirus SARS-CoV-2 (COVID-19) pandemic led to multiple challenges across all levels of education. Many of these challenges centred around the provision of accessible and inclusive online education for people with disability.

In July 2020, the Australian Disability Clearinghouse on Education and Training (ADCET) surveyed disability practitioners from the tertiary sector to understand the impact of COVID-19 on their delivery practices, the students they support and on teaching and learning. There were 18 recommendations. These form the basis of the resulting report.

In the survey, a number of participants identified the challenges and struggles that many students who are Deaf or hard of hearing were experiencing. To address these concerns, three experienced practitioners – themselves Deaf or hard of hearing – were asked to design a webinar focusing on the online learning needs of this particular cohort of students.

The ADCET webinar *Online learning for Deaf and hard of hearing students, learnings from COVID-19* was hosted by Cathy Easte, Manager Student Disability and Accessibility, Griffith University; Bobbie Blackson, Senior Disability Advisor, Griffith University; and Garry Kerridge, National Disability Coordination Officer, Centre of Disability Studies. It discussed the rapid changes, challenges and advocacy that had been required to support students who are Deaf or hard of hearing. It also explored the accessibility and inclusion strategies that have been successful across four platforms – Microsoft Teams, Zoom, Collaborate and Echo360.

These guidelines have been written by a team of disability, accessibility and education design specialists working at the coalface during COVID-19, many of whom are Deaf and hard of hearing themselves.

The disability rights movement term ‘Nothing about us without us!’ defines our philosophy and is based on the conviction that people with disability and lived experience know what is best for them (Charlton, 2000).

If you are a disability practitioner, educator (e.g. teacher of the Deaf, lecturer) or student who is Deaf or hard of hearing, these guidelines have been produced for you. We encourage readers to be mindful of the ever-shifting landscape and new technologies as they emerge beyond the scope of these guidelines and recommend you explore new offerings as they come to light.

View the ADCET webinar *Online learning for Deaf and hard of hearing students, learnings from COVID-19*

<https://www.adcet.edu.au/resource/10400/adcet-webinar-online-learning-for-deaf-and-hard-of-hearing-students-learnings-from-covid-19/>

CONTRIBUTORS

Cathy Easte

Cathy Easte has worked with Griffith University since 2010, first as Disabilities Service Officer, Coordinator and now Manager, Student Disability and Accessibility. She has also worked for a number of Queensland TAFE colleges, private training organisations and disability services for well over 20 years prior. Cathy has personal interests in assistive technologies and e-learning and the ways in which these can enrich the experiences of students with disability. She thrives on the creative challenges such technology will create. Training is Cathy's other passion. She aims to increase the knowledge of academic staff, trainers and teachers to be able to meet the needs of their students without interaction from 'others'. She actively works on ways to embed accessibility and inclusion principles into curriculums whenever she can. Cathy is Deaf and was one of the first Deaf persons to graduate as a Teacher of the Deaf in Griffith's Deaf Student Support program over 33 years ago.

Bobbie Blackson

Bobbie has worked at Griffith University since 2006 as a Senior Disability Advisor. Her role includes coordination of Auslan interpreter services for Deaf students within Griffith University and across S-E Queensland universities, including TAFE. She is also Chairman Emeritus at Deaf Services and a highly respected member of the Deaf community. Bobbie is a co-founder of Australian Communication Exchange, which provided the National Relay Service from 1995 to 2019. She has served on state and national disability advisory boards and has been involved in the disability sector for over 30 years. She is a strong advocate for the rights of Deaf and hard of hearing people.

Gary Kerridge

Gary has been in the disability sector for 30 years. He has spent 14 of those years as a National Disability Coordination Officer (NDCO). Recently, he was part of the NDCO leadership team that responded to the transition to online learning brought about by COVID-19 to provide support and information to disability practitioners around Australia.

Joe-Anne Kek-Pamenter

Joe-Anne is an educational/digital designer ([JUSJO Creative](#)) with a keen interest in accessibility and visual communication. Jo has an extensive background in education and educational design, having worked for over two decades in the higher education and vocational education (VET) sectors, and for both local and state government. She is employed within [The Hopkins Centre](#), [Menzies Health Institute Queensland](#), [Griffith University](#), is a citizen researcher and moderator of the [Dignity Project](#), project officer for [HabITec](#) and [Griffith Inclusive Futures](#) and has recently joined the board of [Enabled.vip](#). Jo has sensorineural hearing loss, acquired at age 16. In 2009, she graduated with a Bachelor of Multimedia Studies (BMmst) completed fully online – achieving straight high distinctions, a perfect GPA of 7 and a faculty medal for outstanding academic achievement. Jo is an advocate for the positive benefits of studying online, particularly for people with disability.

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SUPPORTING DEAF AND HARD OF HEARING STUDENTS

Overview

According to the most recent World Health Organization (WHO) estimate, ‘approximately 466 million people (or 6.1% of the world’s population) were living with disabling hearing loss’ (WHO, 2020). In Australia, one in six people are affected by a variety of forms of hearing loss. There are 30,000 Australian Sign Language (Auslan) users (AND, 2020).

At the onset of the COVID-19 pandemic, many governments and educational institutions adopted the public health measures recommended by WHO. The measures aimed to prevent the virus spreading and ensure the safety of citizens. Many universities, colleges and other institutions of higher education closed their physical campuses and responded by moving to an online campus (WFD, 2020).

Despite initial panic, the rapid shift to online learning environments and the use of digitalisation and innovative technologies to deliver the best possible education has often been positive. Online learning can be highly accessible for many students. If implemented correctly, it has the ability to foster an inclusive educational environment – one where diversity is respected, valued and supported. Irrespective of disability, it is possible for staff and students to participate fully using online learning and – most importantly – thrive.

Understanding the needs of Deaf and hard of hearing students

Statistics related to people who are Deaf and hard of hearing generally do not tell us about the range of obstacles and social/attitudinal barriers faced by individuals. Students experience many challenges. Some of these challenges are related to their disability, while others result from societal barriers that lead to inaccessibility.

The World Federation of the Deaf released *Guidelines on best practice for access to higher education for Deaf students during the COVID-19 pandemic* (WFD, 2020).

Important key points:

- Deaf students must be considered in all planning and implementation efforts during the shift to remote and online education during the COVID-19 pandemic.
- Educational institutions should foresee the provision of national sign language interpretation for online and remote classes.
- All course materials must be accessible to all students at the time of release.

Other recommendations:

- Consult the Deaf/hard of hearing student on their preferred reasonable adjustment requirements.
- Provide access to online lectures with certified professional national sign language interpreters and note takers.
- Auditory and filmed course materials should be professionally subtitled/captioned and transcripts provided, or made accessible for all viewers/learners.
- Education institutions, not the Deaf students, are responsible for coordinating reasonable adjustment provisions.
- Interpreters should have access to the teaching resources and other preparatory materials prior to the class, to provide quality and smooth interpretation for Deaf students.
- The size of the interpreter screen must represent at least 25% of the screen space, with slides and other materials used by the instructors clearly visible for the students who are Deaf and hard of hearing and also the national sign language interpreters.

Fostering an accessible and inclusive learning space

The new global education agenda *Education 2030 framework for action (2015)* calls for 'bold and urgent action to transform lives through a new vision for education' – specifically Sustainable Development Goal 4 (SDG4) – to 'ensure inclusive and equitable education and promote lifelong learning opportunities for all' (UNESCO, 2015, 2017).

Further, the UN Convention on the Rights of Persons with Disabilities (CRPD), adopted by the United Nations General Assembly in 2006 and ratified by 181 countries, recognises the rights of persons with disabilities, including people who are Deaf and hard of hearing.

The CRPD recognises the rights of Deaf persons to have professional sign language interpreters to participate fully in all aspects of life and equal access to information. This includes the right to exercise their freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas in their national sign language(s). Moreover, and in terms of tertiary education, the CRPD recognises the right of Deaf students to receive reasonable accommodation when requested (WFD, 2020).

In Australia, the *Disability Discrimination Act 1992 (DDA)*, of which the Disability Standards for Education 2005 (DSE; the Standards) are a part, protects people with disability against discrimination in areas of public life, including education. This covers areas such as enrolment and study in courses at a private or public school, college or university. The Standards aim to ensure students with disability have opportunities and choices comparable with those offered to students without disability (Australian Government, 1992, 2005).

As a consequence, now is the ideal time to ensure equal access to education by removing all barriers to learning and facilitating choice and self-determination, and by providing inclusive educational environments that expand opportunities for all students, including those who are Deaf and hard of hearing.

Preparing students for online learning

Online learning must be accessible for everyone. Students, teachers and educational staff all benefit from the provision of highly accessible, inclusive and carefully designed online learning environments. People with disability, students with diverse learning styles, and international or First Nations students with English as a second language also gain from accessible online learning opportunities.

The focus of creating online learning and accessible resources, therefore, should be on 'good design' for all users. Students can read rather than listen, or listen rather than read, and follow what works best for them according to their own individual needs and style of learning.

To support students who are Deaf or hard of hearing with online learning, provide an environment that is a level playing field for all students – make sure no one is left behind. Regardless of whether you are delivering a workshop streamed online, an interactive class or tutorial, it is important to offer flexible solutions for learning.

Recommendations:

- Consider provision of support for use of captioning, Auslan interpreting for classes, note taking, transcripts and technology access.
- If possible, before the official commencement of learning, check that the student is able to successfully access all online content and that they have the required technology and are comfortable using it (if not, discuss how this can be achieved and arrange for support, if available, on your campus).
- Encourage interaction within the class cohort to ensure all students are equally included. Keep the focus on teaching technologies and strategies related to online learning.

Reasonable adjustments

Disability support staff assist students with disability to access the reasonable adjustments they require for their studies. They work with students to develop a Learning Access Plan (LAP) or Reasonable Adjustment Plan (RAP) that outlines the learning supports to be put in place. These can be reviewed or adapted in line with your institution's policies and practices.

ONLINE LEARNING IMPACTS AND CHALLENGES

Listening/concentration fatigue and energy levels

Many students who are Deaf and hard of hearing experience listening and concentration fatigue relating to:

- struggling to hear
- intense focus on listening
- monitoring visual cues of multiple speakers
- lip-reading and understanding speech patterns
- reading captions
- watching Auslan interpreters
- note taking.

Focusing on multiple forms of communication simultaneously is physically challenging and exhausting, and while listening fatigue is not unique to Deaf persons, it does set in earlier. The brain is tired from working extra hard trying to decipher messages not fully heard or watching interpreters and captions while trying to keep track of other visuals and speakers as well. Students who are not Deaf or hard of hearing can write while looking away and still receive the content messages auditorily, but this is a luxury not everyone has.

'It's all about the energy involved in lip-reading and being attentive all day long. Processing and constructing meaning out of half-heard words and sentences. Making guesses and figuring out context. And then thinking of something intelligent to say in response to an invariably random question. It's like doing jigsaws, sudoku and scrabble all at the same time.' (Noon, 2013)

The impact of listening and concentration fatigue and its effect on energy levels is not as widely acknowledged as it should be in educational environments, especially in relation to students who are Deaf or hard of hearing.

Deaf students who rely only on interpreters and captioning do not concern themselves with listening or lip-reading. The impacts, however, are just as great. It is very hard to focus on multiple forms of communication simultaneously.

Recommendations:

- Take regular/extended breaks in your class (even short ‘thinking space’ breaks).
- Structure educational activities over shorter durations.
- Be mindful of back-to-back classes/sessions.
- If demonstrating step-by-step instructions, ensure written notes are available (beforehand, preferably) so the student can become familiar with the steps before watching the demonstration.

Micro distractions

In the online learning context, micro distractions – things that divert attention for a short period of time – can occur when trying to follow content on an alternative format (e.g. new technology, multiple active windows or screens).

Specifically, micro distractions include:

- interruptions to thought and processing patterns, resulting in additional energy needed to refocus and maintain understanding of communications and content
- visual disruptions, including someone walking into a room, causing the viewer to stop watching captions and look at something else, thus missing content on the screen
- errors in automatically generated captions distracting the viewer from the topic they are following, forcing the viewer to decipher the message quickly or skip over important content
- errors in human-generated captions, such as incorrect spelling of names.

While these disruptions might be seen as minor, they can have a major effect on comprehension and the ability to maintain the flow of communications. Anxiety can increase, further reducing the ability to understand what is said after the distraction.

Note taking

As students who are Deaf or hard of hearing need to focus on lip-reading or watching interpreters or captions or any combination of the three while watching the screen, they are unable to simultaneously look down to take notes. As such, the process of note taking takes longer, as it needs to occur after the class or as soon as the written transcript is provided.

Please note that captions are not transcripts. If students have access to captions or Auslan interpreters, they still need transcripts to make notes – this is a separate need.

Recommendations:

- Encourage all students to take notes for online learning, either during or after class.
- For students who are Deaf or hard of hearing, this can be achieved with transcripts of all audio/video classes.
- Student can edit transcripts after classes to make their own notes.
- While it may take a student who is Deaf or hard of hearing longer to make their own notes from transcripts, it does get them actively engaged in the learning process and helps them review content.

It is rather hard to explain why one cannot watch and listen at the same time, but this older video gives a good simulation:

<https://www.youtube.com/watch?v=Eav2Vh6MDoQ>

Interactions with peers

Interactions with peers can be difficult or much easier online. Fellow students may not be familiar with how to communicate effectively with a person who is Deaf or hard of hearing, so they may be reluctant to join a group discussion, study team or a collaborative project. There are many little things that take more energy, and needing time out to re-energise can be misinterpreted by others as not listening, or not wanting to be a contributing member of the group.

Recommendations:

- Establishing online 'chat' – typed chats – in class environments enables students who are Deaf and hard of hearing to be on equal footing with the rest of the student cohort.
- Making time in class for written chat reinforces the idea that not all chat has to be auditory.
- Students can 'chat' in live classes, when they have a break from watching the content on the main screen, encouraging engagement and participation.
- Set ground rules – only one person to talk at a time and speakers to introduce themselves by name every time they speak (this helps the person watching the captioned text attribute content to speakers). It also helps the interpreters as they are unable to interpret multiple overlapping speakers at the same time.

GUIDE TO USING CAPTIONS AND TRANSCRIPTS FOR ONLINE/BLENDED DELIVERY

‘Our students always get the content they need in the format that serves them best.’

– Cathy Easte, Manager of Student Disability and Accessibility, Griffith University

Overview

During COVID-19, educational institutions have had to rapidly switch from a more traditional face-to-face mode of class delivery to a fully online or blended model. This model relies heavily on videoconferencing technology to effectively communicate with students. This has presented challenges for staff and students who are Deaf and hard of hearing who are not able to listen to, or participate in, important online discussions without the kind of support they are used to receiving during face-to face learning.

In a direct response to COVID-19, many major software companies have rapidly adapted their software to incorporate accessibility features into their platforms.

These features include:

- captioning
- speaker attribution
- chat features
- non-verbal communication tools
- digital whiteboards
- recording ability
- transcripts.

It is important to note that captions and transcripts were originally developed to be an aid for people who are Deaf and hard of hearing but are now considered very useful in reinforcing recorded lesson content for all students.

Captions

Captions transcribe the audio portion of a video, including descriptions of non-speech audio elements. They are designed for viewers who are unable to hear the full audio track in a video and can be either 'open' or 'closed'.

- **Open captions (OC)** are always in view and **cannot** be turned off by the viewer.
- **Closed captions (CC)** can be turned on or off by clicking a button.

Closed captions are more widely used and accepted in videoconferencing applications, as they give the viewer the alternative to use captioning or not.

The designations OC or CC relate to how the captions are 'seen' by the viewer and are not related to the accuracy of the captions.

While captions can be automatically created, human-generated captions are likely to be more accurate.

A note on terminology:

Do not be confused by the terms 'live' and 'auto' in relation to captioning. Some videoconferencing programs use the term 'live captioning' when referring to 'automated captioning'. This is confusing, because live captioning can also refer to 'third-party-generated captioning'. Microsoft Teams uses the term live captioning to describe the type of captioning offered within the program.

Transcripts

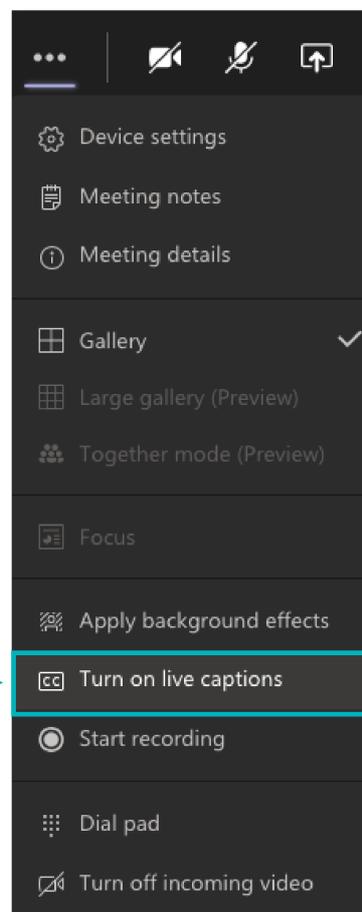
Transcripts are an expanded text-based version of the audio or caption content produced in video. Depending on the software, transcripts can also be interactive, highlighting phrases of text as they are spoken, or allowing the viewer to select a phrase in the transcript and automatically move to that point in the video timeline. Transcripts can also be downloaded and viewed offline without the need to watch the video as it is played back. Transcripts can be automatically generated or the result of human-created captions.

VIDEOCONFERENCING APPLICATIONS THAT SUPPORT CAPTIONS AND TRANSCRIPTS

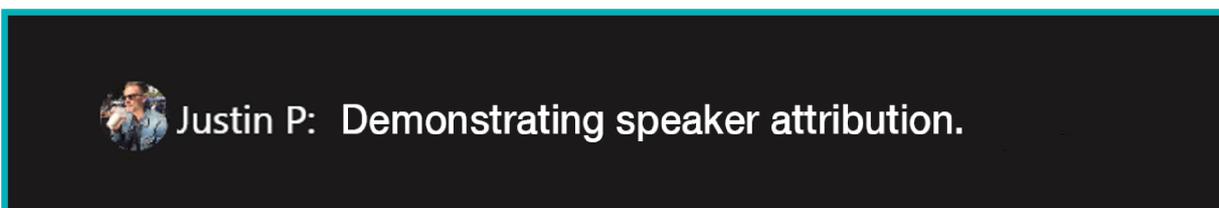
Microsoft Teams

Microsoft Teams is a communication platform belonging to the Microsoft 365 family of products (Education, Business or Enterprise license plans only). It offers an online course workspace for chat and videoconferencing. Microsoft's automatic speech recognition (ASR) technology enables students in a Teams class (described as a 'meeting' within the Teams platform) to detect what is being said by a teacher/presenter in an online classroom as it presents those spoken words as live captions.

To make the live captions appear in a Teams meeting, click on the 'More options (...)' button in your meeting control bar, then click on 'Turn on live captions', as shown in the image. As each presenter speaks, you should now see the live captions displayed, making it easier to follow along.



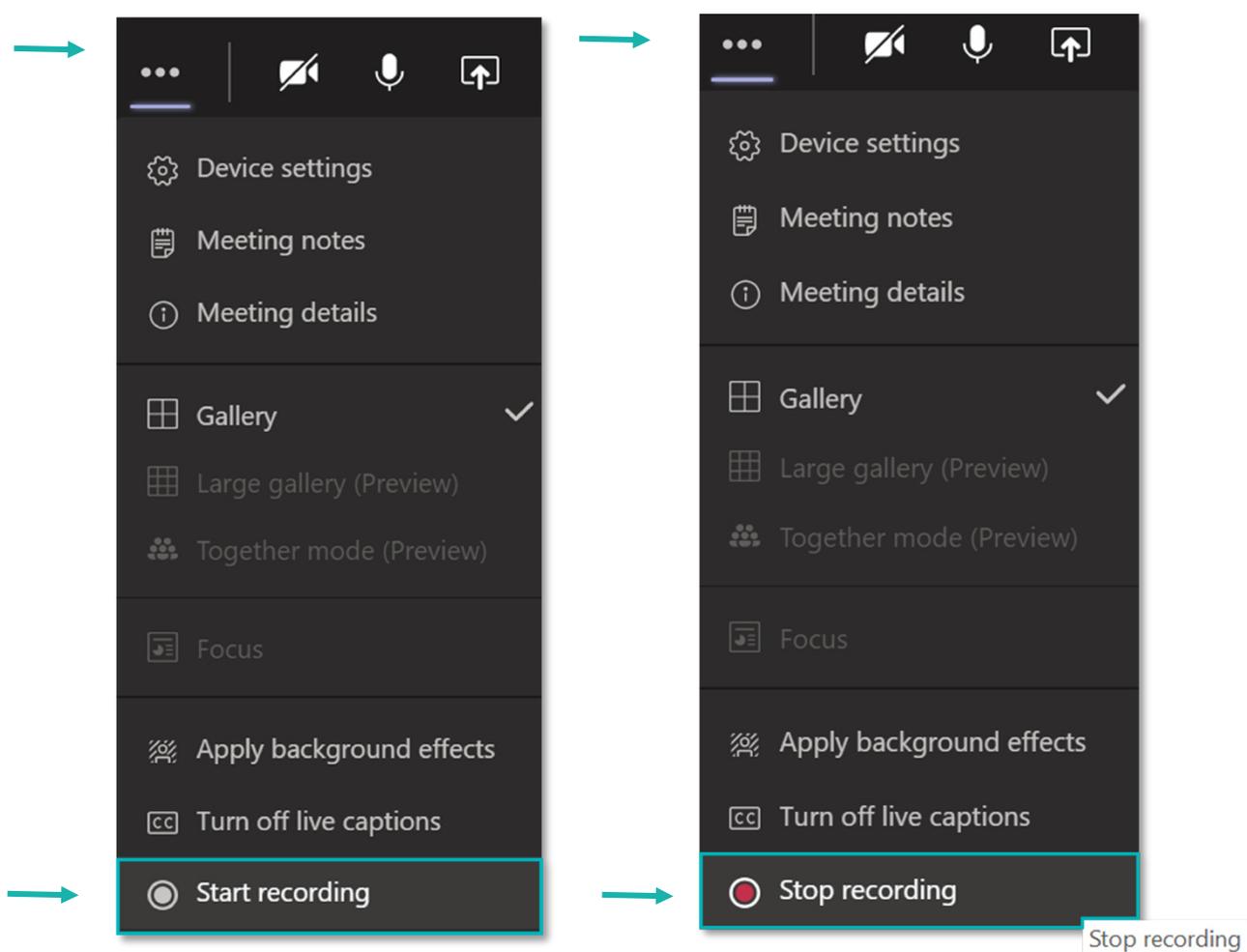
Speaker attribution is a feature that has been recently added to live captions to make it easier to identify exactly which presenter is speaking, by displaying their name, as shown in the image below.



To make sure your live captions are as clear as possible, ensure that you speak clearly and slowly while talking directly into your microphone. The further away you are from your microphone, the less accurate your live captions may be. It is helpful to have a plug-in microphone (either a high-performance microphone or one integrated with a headset), as this increases the sound input and thus the correctness of the automatically generated captions.

If you are the Teams organiser, you can also choose to record the class for later viewing. (Recording the class allows access to a transcript file in [Microsoft Stream](#) for notes as well.) To do so, click on the 'More options (...)' button in your meeting control bar, then click on 'Start recording'.

To stop the recording, click on the 'More options (...)' button in your meeting control bar, then click on 'Stop recording'.



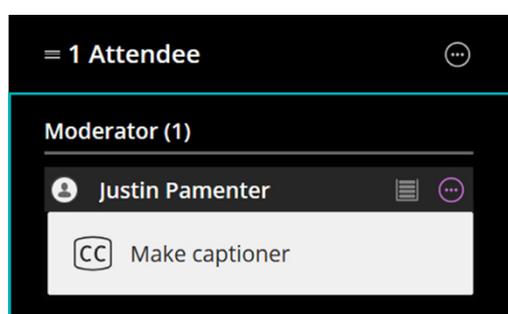
The recording happens in the cloud and is saved to Microsoft Stream. You can find the recorded class meeting in the class Teams page.

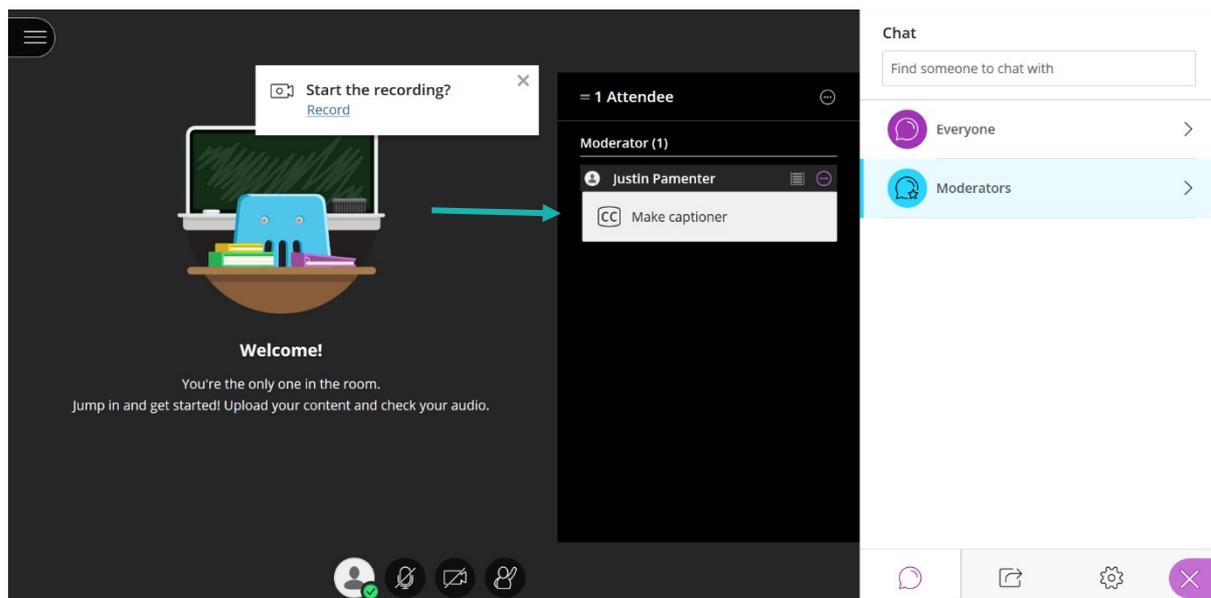
When you choose to open a recorded class in Microsoft Stream, you will find that you can now view the meeting with the transcript moving along interactively beside it. You also have the option to correct any words that were not transcribed correctly, as well as having the ability to download the transcript as a Web Video Text Track (.vtt) file. You can use Happy Scribe (an online speech-to-text transcription platform) to remove the time codes from the .vtt file and have a pure text transcript for note making. See the Happy Scribe section following for more detailed information.

Blackboard Collaborate Ultra

Blackboard Collaborate Ultra is a real-time videoconferencing tool found within the Blackboard learning management system (LMS) used by many universities around the world. Collaborate Ultra does include a third-party captions feature; however, it does not automatically generate captions through any speech recognition software such as the ASR used in Microsoft Teams.

Collaborate instead relies on a third-party captioning service provider (a human) to be made the captioner in the class/meeting room. This person must manually type what is being said by each presenter throughout the online session. While automatic captions are not currently a feature of Collaborate Ultra, Blackboard is currently working on adding this feature in future releases to bring their software into line with other videoconferencing applications.

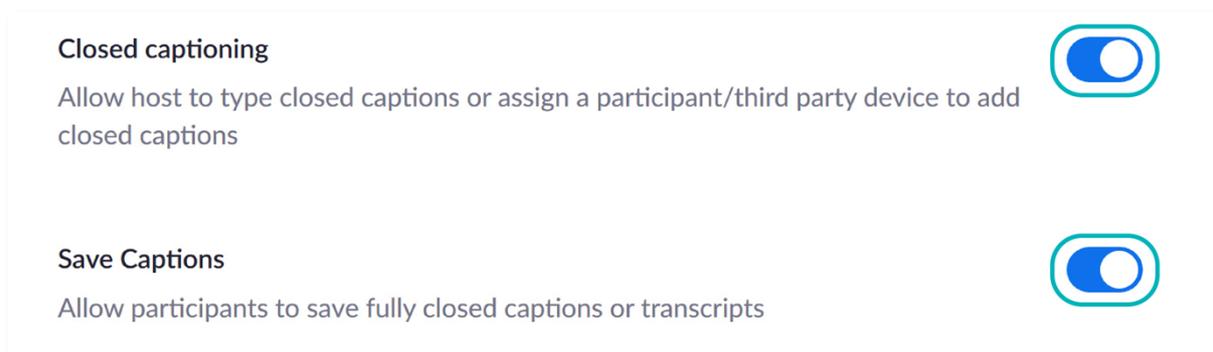
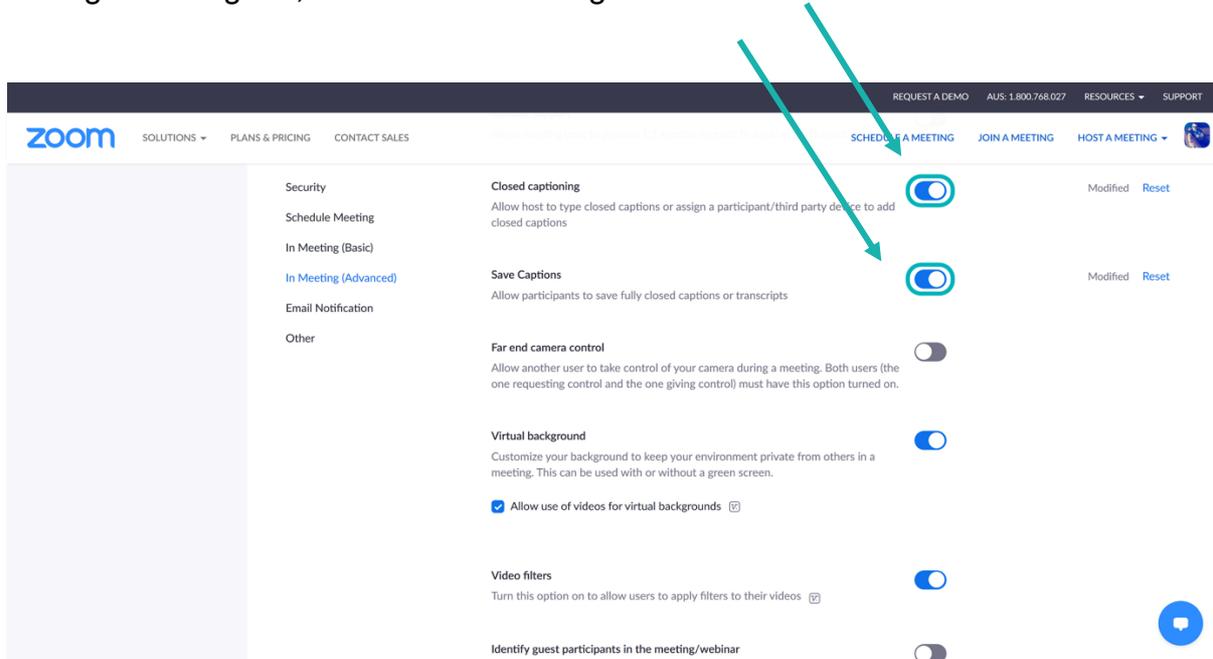


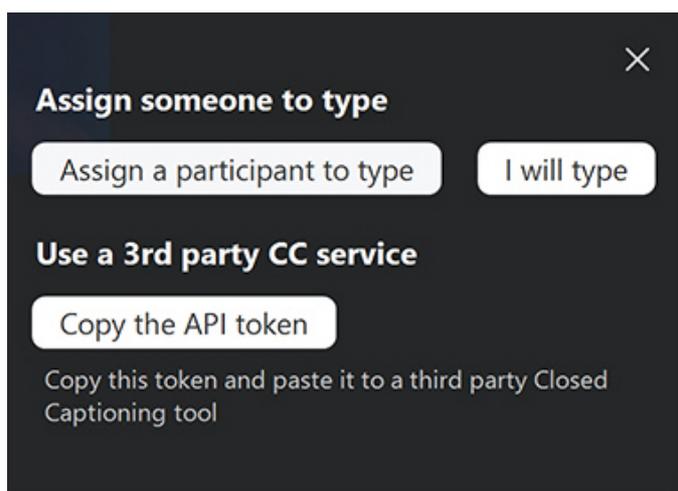


If a moderator of a Collaborate class has enabled session recordings, these will include captions. The transcripts are not in a usable format for downloading for note taking or review. It is therefore recommended to upload Collaborate recordings into another platform, such as Echo360, where a more usable and accessible transcript can be downloaded. (NB: Happy Scribe will only remove the time codes, not repeated lines.)

Zoom

Zoom is another online videoconferencing tool that allows you to interact with other users in place of in-person classes. To ensure that closed captioning is available for all of your online classes, you must first log into your Zoom web portal and ensure that 'Closed captioning' and 'Save captions' are enabled under your Settings/Meeting tab, as shown in the diagram below.





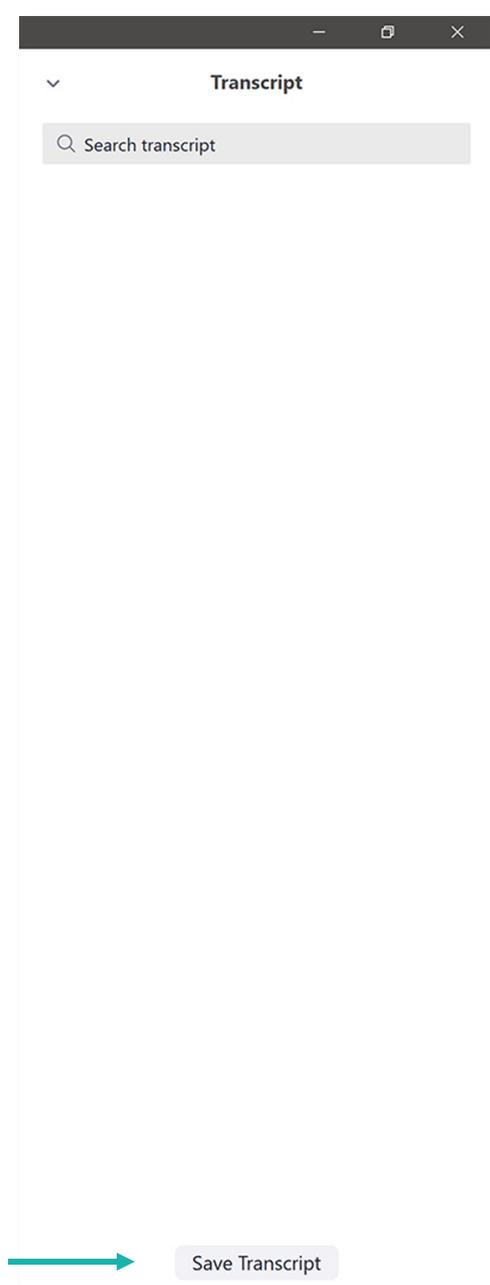
Once your closed captioning setting has been enabled, anyone attending your scheduled class may be assigned the role of captioner by the host, as shown in the image below. This requires the assigned captioner to type what each presenter is saying directly into the closed captions window. Each participant then has the choice of viewing the captions, which will be displayed under the main meeting window. Note that the font size of these captions can also be adjusted under your Zoom application Accessibility settings.

If you are the host, you can also add closed captioning to your scheduled class via a third-party captioning service. This is achieved by providing the captioning service with the caption URL for your class (click on the 'Copy the API token' button shown in the closed captions window in the diagram above). The third party will then stream the text from their captioning software directly into your Zoom class for all students to see by turning on closed captions. Note that using a third-party captioning service will incur additional costs.

Please note that Zoom currently does not automatically generate live captions through any speech recognition software such as the in-built ASR. Zoom does allow integration with third-party caption suppliers who have automatic caption applications (e.g. Rev.com).

Zoom can automatically transcribe the audio of a recorded class after it has been saved to the cloud. A transcript will then be available for the recorded session next to the main window, as shown. The transcript may also be edited for increased accuracy and downloaded as a .vtt file.

The only caveat to using automatic audio transcriptions in Zoom is you must have either a paid Pro, Business or Education subscription with cloud recording enabled. The free basic Zoom account does not support the generation of automatic transcripts.



LECTURE CAPTURE TECHNOLOGY THAT SUPPORTS CAPTIONS AND TRANSCRIPTS

Echo360

Echo360 is a video capture system that enables the recording of lectures or meetings in any Echo360-capture-enabled room. The system can capture everything that is presented from your computer during a lecture, as well as video of the presenter, if your institution has this capacity. These recordings can then be made available for all students to watch in their own time, accessed directly within a supported LMS such as Blackboard.

Echo360 also allows live streaming, enabling access for students or others who are not present in the lecture theatre. This is a useful tool for streaming the audio feed live to a third-party captioning service. It increases access and allows live, human-generated captioning to occur, with students viewing the captions on their own devices (laptops, tablets or smart phones) in the lecture theatre or elsewhere. Students are provided with an individual link by the captioning providers to access captions.

Echo360 integrates Amazon Transcribe's ASR service, which uses a deep learning process to quickly convert speech to text, providing automatically generated transcripts and a multimodal learning experience that allows students to also read along with the spoken content.

The transcripts provided in Echo360 are interactive, thus enabling all learners to find any section of the lecture by text and start viewing from that moment without replaying the whole lecture. More importantly, Deaf students can download a transcript file for note taking.

ASR has to be activated for the Echo360 recordings – this then enables all students to view and download transcripts for notes creation, as well as an interactive transcript to review content at specific points (thus saving review time and increasing learning options).

Both captions and ASR transcripts can be viewed at the same time, if captions were also generated by a third party. Captions appear at the bottom of the recording and transcripts to the right.

FREE CAPTIONING AND TRANSCRIPTION ONLINE SERVICE

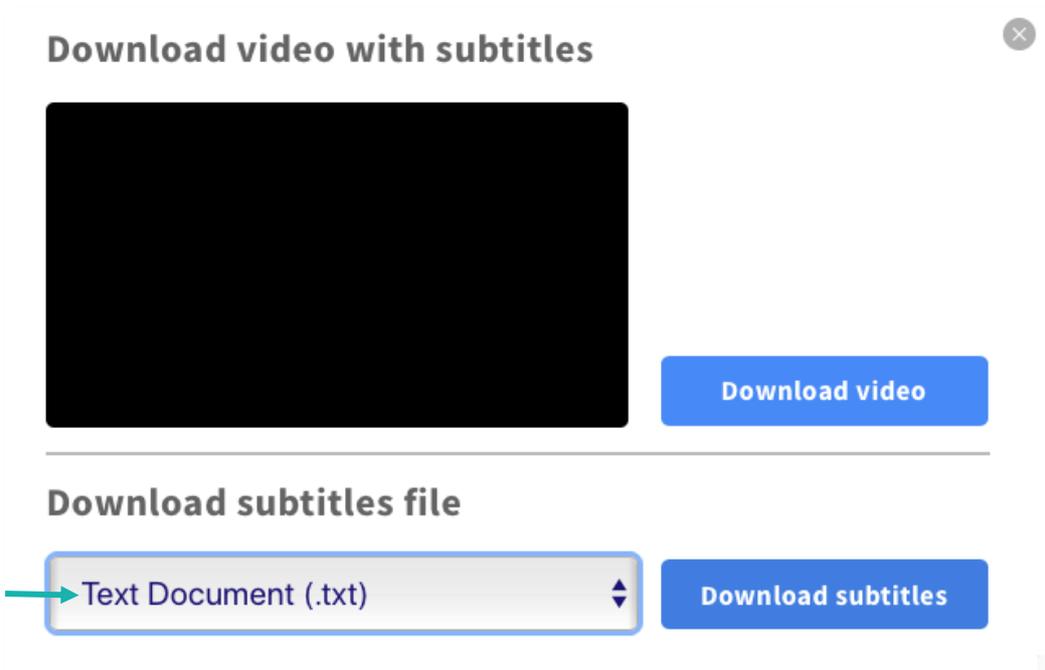
Happy Scribe

Happy Scribe is a free online platform that automatically transcribes speech to text. It comprises an automatic subtitle and caption generator, with an easy to use online transcription editor to tweak the accuracy of the generated text before downloading. It can also generate subtitles and captions in over 119 languages. Simply upload your video and follow the online prompts.

The screenshot displays the Happy Scribe web interface. On the right, a video player shows a man in a blue shirt speaking. Below the video, there are playback controls including a play button, a progress bar, and options for playback speed, undo, redo, and settings. On the left, a transcript editor shows a list of time-coded text segments. The current segment is highlighted, and the text is displayed in a large font. The transcript includes the following text:

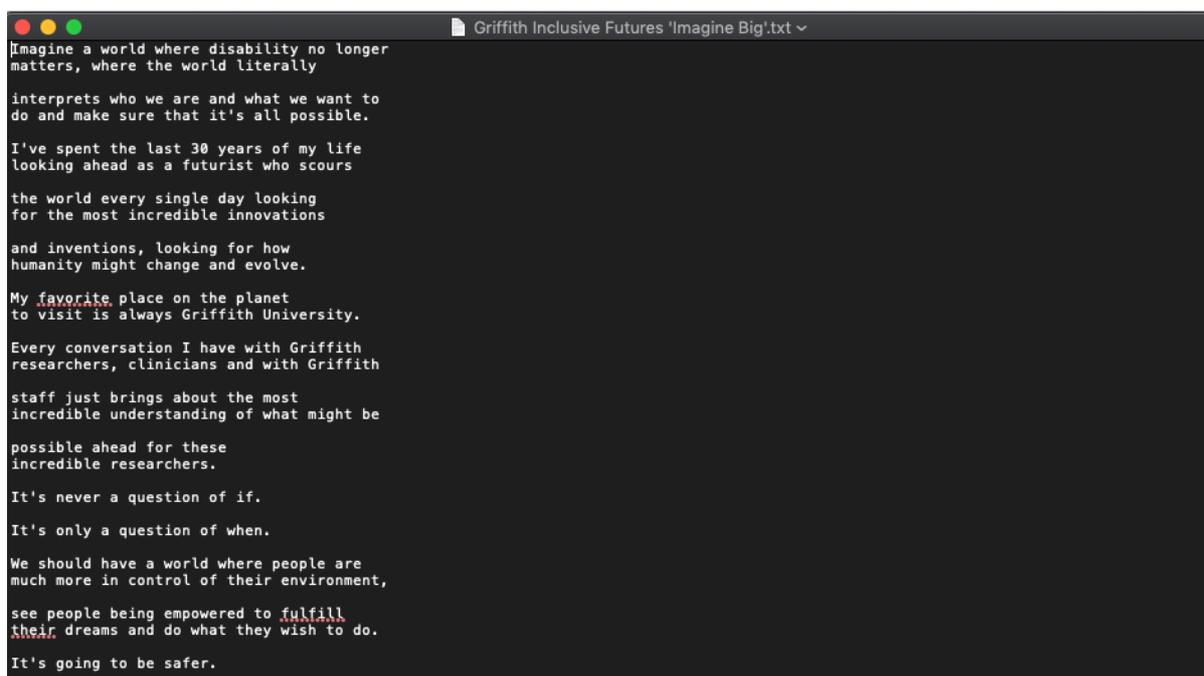
- It's an avatar which looks just like you, but it goes from your cells all the way
- to the outside of your body in the real world.
- And it can be used for treatment, design,
- monitoring, for rehabilitation, godding rehabilitation.
- For the first time in history,
- we've seen people move their limbs again after chronic paralysis.
- It's been really exciting for me.
- So it's working with young children with autism in an early intervention
- service, and I was collaborating already with a lot of Griffith researchers.
- So, for example, looking at eye tracking, looking at attention to faces,
- emotion recognition, word development, but it's also upskilling.
- People in observational measures have able to identify both strengths and needs

The most useful feature of Happy Scribe is the conversion of a .vtt file to text.



Downloaded transcript files from Echo360, Teams or other services can be uploaded to Happy Scribe and within seconds the content will be converted to a pure text file with all timecodes removed for note taking or other purposes.

No log-in or account is needed – anyone can use this free online tool.



Features	Teams	Collaborate	Zoom	Echo360
Time limit (free)	As per your institutional licence	N/A	As per your institutional licence	User defined
Accessibility	Virtual hand-raising	Adjust font size and positioning of captions	Virtual hand-raising Private chat Adjust font size and positioning of captions Non-verbal feedback features and meeting reactions	Live stream capacity
Recording tools	Cloud based	Cloud based	Cloud and local third party	Cloud and local third party
Captioning	Live auto closed captioning	Allows host to type closed captions or assign a participant/third party to add closed captions	Allows host to type closed captions or assign a participant/third party to add closed captions Third-party auto captions capacity	Auto captioning through interactive transcript that can be downloaded
Transcripts	Available via Microsoft Stream after recording Cloud based	Available after recording Cloud based	Available after recording Cloud based	Available after recording Cloud based

Pros	<p>Customisable for different visual, cognitive, learning and language needs</p> <p>Compatible with assistive technology</p> <p>Features are evolving rapidly in response to COVID-19 work-from-home scenarios</p>	<p>Friendly interface that allows a user to become quickly familiar with the environment</p> <p>Integrates directly within Blackboard course sites</p> <p>Moderators control participants' tools</p>	<p>Customisable for different visual, cognitive, learning and language needs</p> <p>Compatible with assistive technology</p> <p>Free basic account and ease of use makes it a good entry tool</p> <p>Widely accepted</p>	<p>Echo360 Universal Capture allows video content to be created from home without the need for classroom-enabled capture technology</p>
Cons	<p>Does not currently support real-time captions (requires use of a separate platform)</p>	<p>A Blackboard Learn account is needed to fully utilise Collaborate Ultra beyond a 30-day free trial</p>	<p>Inability to delete inappropriate comments</p> <p>HD video is not the standard</p> <p>Auto captions only through third-party providers at cost</p>	<p>More suited to institutions that have Echo360 capture technology enabled</p>

SPEECH-TO-TEXT AND MOBILE TRANSLATION APPLICATIONS

While captions inside videoconferencing applications is the preferred option, particularly for caption placement and ease of viewing, there are a number of free auto captioning applications with speech-to-text and translation capabilities that might assist in certain circumstances.

These applications are run using wi-fi internet connections and use artificial intelligence (AI) based on millions of voice samples and algorithms to provide speech recognition technology. They enable the user to record notes, translate content and help with communication. For those who are Deaf or hard of hearing they can serve as a vital communication tool and may be a useful backup in classes, meetings and conference calls, as well as face-to-face conversations or when other technologies fail. Appetite for these applications is very personal. Some people cannot tolerate them, and their appeal depends on their accuracy and quality.

Once downloaded to a mobile device, speech-to-text apps 'listen' and display dialogue and familiar sounds as written text, allowing people who are Deaf and hard of hearing to follow the conversation. While not an option to replace access to closed captions, auto captioning applications provide immediacy of access and can therefore be a great backup option for when built-in captioning fails. They are best used on a separate platform, such as a mobile phone, tablet device or a different browser set to receive audio from the computer.

The quality of these applications is largely dependent on audio clarity, since the apps 'listen' in order to generate the captions you receive. As such, the majority rely on a built-in or stand-alone microphone to work. They are not always accurate, particularly when attempting to translate heavy accents, although applications are continuously improving due to advances in AI and deep machine learning technology, which uses a growing archive of audio recordings to train the software to improve translation capabilities.

Current examples of speech-to-text apps and tools:

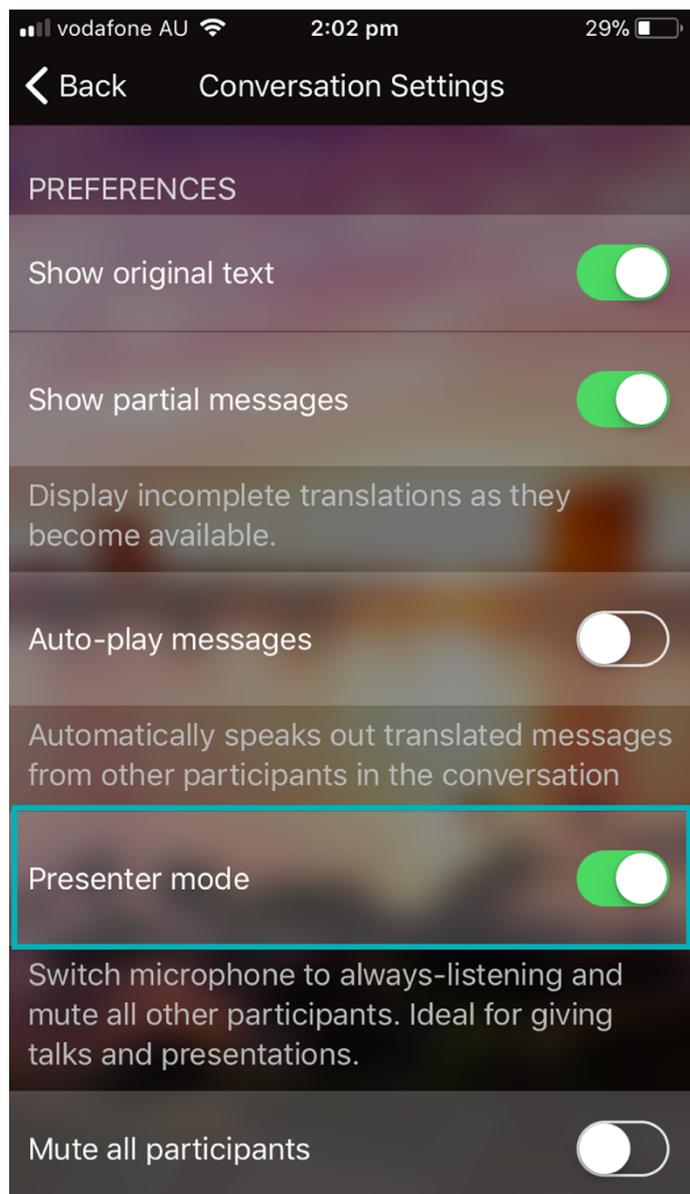
- [MS Translator](#) (mobile application for Apple and Android devices)
- [Google Live Transcribe](#) (Android devices only)
- [Web Captioner](#) (browser-based Web Captioner)
- [Otter.ai](#) (600 minutes free use, after which a paid subscription is required)
- [LiveScribe](#) (browser-based captioner)
- [Microsoft Word Dictate](#) (speech-to-text feature which lets the user record, write and edit transcripts using voice recognition, available for both PC and Mac)

Please see the following table for our recommended options.

Features	MS Translator	Google Live Transcribe	Web Captioner	Otter.ai
Platform and operating system	Android, iOS, Windows Desktop and PowerPoint 365	Android 5.0 Lollipop and up	Web based	Android, iOS and web based
Browsers and devices	Microsoft Edge, Google Chrome, Mozilla Firefox, Safari, Amazon, Apple, Windows	Google Chrome	Google Chrome	Google Chrome Mozilla Firefox Safari
Readability	Adjust size/format Scrolling features Can slow down translation speed	Large and clear easy-to-read text Dark and light theme Adjust text size	Change font, colour, text, size and other elements	Can adjust size Scrolling features
Accuracy	Good	Reasonable – can drop off and stop at times	Reasonable Accepts word replacements	Good
Synchronised	Good	Near real time	Good	Good
Caption flow and movement	Good	Good	Good	Good
Transcriptions	No ability to save transcriptions on mobile apps (if use MS Translator online, can save transcript)	Save transcript for three days only; not possible to export; can copy and paste into another application	Yes	Yes

Pros	Split-screen translation Can translate text in photos offline Phrasebook	Easy to use Bilingual support Punctuation and capitalisation Captures nuances Vibrate feature to alert listener	Readability and formatting Censor options	
Cons	Internet Explorer is not supported Filters out profanity Portable – good for unplanned one-on-one conversation	Not available for Apple devices Not able to save and export the transcript Portable – good for unplanned one-on-one conversation Can drop out and stop midway and difficult to restart	Only works with Chrome User will need two apps/screens Scrolling is difficult	Paragraph spacing Only available for English 600 minutes free only – then subscription required Portable – good for unplanned one-on-one conversation

Tip for using MS Translator: Must be used in two-person conversation mode. When in conversation, go to the settings wheel and switch to presenter mode – this will enable continuous stream captioning.



ADAPTIVE TECHNOLOGY AND EQUIPMENT

To access videoconferencing and captioning, education staff, students, interpreters and captioners will require various forms of equipment and technology. Each person's equipment will vary based on what role they play and the needs of the student they are supporting.

Recommendations for enabling basic access:

- Personal computer or laptop (PC or Mac) with processor speed sufficient to be able to decode video for smooth playback
- Dual screen monitors in medium to large size are ideal to enable multiple programs to be open at once; this allows viewing of captions/interpreters on one screen and the teaching presentation on the other screen; if this is not possible, an iPad or a tablet can be used as one of the two screens; mobile phones are not recommended due to the small size of the screen
- As much random access memory (RAM) as your system will allow, or as much as you can afford; the more you have, the better you can utilise your processor and work with multiple applications open at the same time
- A fast hard drive that can deliver data quickly
- A webcam and microphone (built-in or stand-alone)
- Headphones are beneficial, or good quality speakers, if audio content is needed
- Phonak Roger accessories (these work with Bluetooth technology to assist with listening and sound quality)

Internet/wi-fi considerations

Videoconferencing and online learning requires broadband internet access.

Additionally, if you are relying on an ASR service (such as the one used by Microsoft Teams) for your live captioning or translation, then you will need to maintain an uninterrupted internet service. This type of ASR service is cloud based and requires access to the speech data of a large volume of users to process the speech being fed to it via your videoconferencing software.

Audio technical set-up considerations

If your videoconferencing contains poor audio quality, then your chosen ASR service, dedicated human transcriber and/or note taker will find it more difficult to capture all of the spoken words, resulting in transcripts with many inaudible or red-flagged spots.

When recording or participating in video classes or meetings, try to avoid using (or turn off) built-in microphones on video cameras, workstations and laptops, as they tend to capture unwanted background noise, making it harder to separate sound from the person speaking.

A good quality pair of headphones coupled with a professional-grade microphone can make all the difference to ensuring captions and transcripts are represented as accurately as possible. Wearing headphones during online videoconferencing can help you monitor your own audio levels. Depending on your recording needs, you may require a different microphone for different situations.

Consider closing the door if you have the luxury of a separate office in your home. Ask family members to refrain from using movie or game streaming services in order to give you as much bandwidth as possible.

Workstation set-up for captioning access

Auto captions are very helpful and are good enough to follow lectures. However, sometimes accuracy is compromised if the speaker's first language is not English, they have a heavy cold or their speech is not clear (e.g. lisp, accent, disability affecting speech). Speakers with poor microphone technology can affect captioning quality.

If real-time captions are needed, this must be arranged on a separate platform as Microsoft Teams does not currently have this capability. This can challenge the technology set-up for students and requires the use of two open windows with two monitors.

Alternatively, open the caption screen on a mobile device (phone/tablet) and view the online class on a computer screen. In this case, positioning is important to enable accessibility.

If possible, hook the mobile device over the computer screen or prop it up nearby so the line of sight enables easy viewing of both the videoconferencing/chat window and the captions.

The light and portable stand shown below holds a mobile device (phone/tablet) or small laptop, for viewing only. It is also easily transported.



Standby options: when technology fails

‘Technology fails when it ignores the ecosystem that comes with it.’

– Dr Camila Shirota, The Hopkins Centre, Griffith University

There will always be limitations to technology. Not all technology has the same features, the internet can drop out, the screen can freeze and the connection between the host, interpreter, captioner and student can be lost and so on. Success is also dependent on student and staff experience with technology, because everyone has varying levels of expertise.

Recommendations:

- Provide all course materials upon the commencement of learning. This should include unit overview, lecture notes, PowerPoint slides, assessments, tutorials and captioned video files.
- For students who live remotely or in areas with unreliable or restricted internet services, provide materials prior to course commencement to allow for downloading at optimum internet access times.
- Consider other cloud storage and sharing services such as Dropbox, SharePoint or MailBigFile.
- Provide the option of printed copies of materials (where required, particularly where technology is not available or access is limited; i.e. for students who are in hospital, in transit or incarcerated).
- Devise a backup plan. This is best provided in writing and should be made available to everybody. Outline clearly who to contact and how, in the event that online classes are disrupted by any type of failure. In this scenario, contact can be made using the chat window, email, social media applications (e.g. WhatsApp groups) or mobile phone (text messaging).
- During widespread failure of technology or internet, bulk SMS messaging works well and is generally accessible for all students (remember to include support staff, captioners and interpreters in the audience for this information).

OTHER TOOLS AND CONSIDERATIONS

Captioning/transcripts: immediacy of access

Transcripts allow students to gain immediate access to the lesson content, giving the opportunity for the student to use the transcription as the foundation for their own note taking. Using the transcript also challenges the student to be engaged in the learning process – they are active, not passive.

Timing of access is important. Transcripts and/or captions should be made accessible to all students at the time the video recording of the class is released. Understand, however, that this is not always possible for live recorded content. It takes a professional transcriber/captioner at least five to ten times the duration of a video to properly generate a transcript. An untrained transcriptionist can take longer, resulting in a lengthier turnaround time.

Most third-party suppliers in Australia can guarantee a turnaround within four days for supply of captions for videos and recordings. This enforced wait is four days of lost learning. It is not equitable, as other students can make use of recorded content almost immediately. Access to ASR-generated transcripts can fill this void temporarily if you have no choice.

Immediacy of access directly affects a student's ability to compete on the same level as other students. Think about assessment timeframes for each unit and the way in which scheduling can impact on class quizzes, mid-semester exams, group discussions and other formative and summative assessment items that might be held close together. This can become an area of concern if captioning or other support arrangements are not being met within the same period, meaning students are disadvantaged.

Where timing of access is an issue, consult the student directly regarding their reasonable adjustment requirements. Enforced wait periods can have a cumulative impact on student's time management, particularly if each piece of assessment falls due at the same time. This can also have a detrimental effect on mental health.

Note taking

Note taking is a challenging task for students who are Deaf or hard of hearing and those with English as a second language, as while watching a lecture or screen with video, captions and/or an interpreter, they cannot look down to write or type.

Note taking can happen in several ways, either supported by a third-party provider, assisted by a peer or managed independently by the student. Supported note taking is easily accessible for students who are Deaf or hard of hearing or those with English as a second language, as it can provide a complete and accurate summary of key points which are easily absorbed. It promotes improved accessibility, inclusion and comprehension by unlocking content into carefully summarised and formatted notes.

There are a number of note-taking methods ranging from paid note takers to technology options. Technology options are becoming more prevalent due to the ability to engage students in their own learning and the increasing difficulty encountered when recruiting note takers. Also, someone else's notes are just that – someone else's thoughts on what is relevant – not your own.

Students should be engaged in the process of note taking to aid learning and retention of information. The transcription apps mentioned previously can assist but not replace note taking. Downloaded transcripts may be used to generate notes, if the transcripts are of reasonable standard. Even Microsoft Word Dictate can be used to transcribe audio and generate a transcript that is already in Word to edit and create notes or dot points to enable review of content.

Watch the video *Deaf note taking in classroom setting – simulation* (2014) for a simulation of how easy it is for students who are Deaf or hard of hearing to miss important content when taking notes. Towards the end of the video, you will see some tips for rethinking your approach to note taking.

<https://www.youtube.com/watch?v=Eav2Vh6MDoQ>

Chat window

Most online teleconference applications have a chat window. This feature can be used to share written content, images, documents and hyperlinks, either with the whole group or privately. Use the chat feature to make summary/shorthand notes about what people are saying and topics being discussed. In most applications, contents of the chat window can be copied, saved or printed for later reference.

Other communication tools

- SMS and text-based alerts (while SMS messages and text-based alerts are helpful, tone may be misinterpreted)
- Email
- Google Meet
- Apple FaceTime
- Facebook/Messenger
- WhatsApp groups
- Class blogs
- Chatrooms

SIGN LANGUAGE AND INTERPRETERS

Auslan: Australian Sign Language

Auslan is the sign language used by the Australian Deaf community. It is a visual–spatial language and a recognised Australian community language. Sign languages around the world are recognised as possessing a set of complex grammatical rules and parameters, just like spoken languages. Using the HOLME principle (Handshape, Orientation, Location, Movement and Expression), people can, and do, communicate very visually and richly in sign.

Professionally trained interpreters should be provided for all situations where the parties involved do not have a common language. This applies equally to Auslan. Interpreters are valued for both face-to-face and online learning, in addition to special on-campus or education-related events.

Viewing Auslan on a two-dimensional screen is not the same as seeing it in person. For this reason, it is important to understand how to adapt the way we are communicating and improve visibility for the online audience. In terms of visibility, it is critically important for interpreters and students to be able to see each other clearly for the communication exchange to be effective.

There are two different means of interpreting: simultaneous and consecutive. The former is more common in situations such as the Australian National Anthem, where the words do not change (known as ‘frozen text’), thus signing is done at exactly the same time as the spoken or sung words. The latter, consecutive interpreting, is more common in live situations and results in lag time. The interpreter needs to listen to the speaker, video, audio or other presentation and process this cognitively themselves prior to relaying the information or message to the viewers in Auslan. It is vital for the interpreter to have preparation materials prior to the class so they are able to comprehend what the content is ahead of time.

Interpreters and their role

- Auslan interpreters are accredited practitioners under the National Accreditation Authority for Translators and Interpreters, and they abide by a code of ethics that places confidentiality central to their practice. There are three levels of accreditation: Conference, Certified and Certified Provisional. There are a number of interpreters who have completed their training but are not accredited. Booking unaccredited interpreters is not recommended within the tertiary or VET sector.
- Accredited interpreters are in high demand and should be booked early. They can be booked in a number of ways, through several organisations, or may even be engaged as staff members.
- Most institutions have set protocols for engaging accredited interpreters and captioning services to support enrolled students.
- The cost of engaging interpreters varies, depending on the terms of employment and engagement. Interpreters can be engaged on a long/short contract or per session. Sessional staff engagement includes a fee for pre-reading and preparation, in addition to interpreting time.
- Engaging interpreters for the full semester is preferred, to create regularity and familiarity for staff, interpreters and students.

Booking an interpreter

- Book an interpreter as early as possible beforehand; ideally, once the days/times/venues are locked in.
- It is common to have two interpreters per class/lecture. This is generally arranged for the duration of a semester to create familiarity with the interpreters' style and ensure consistency across the entire course.
- Having regular interpreters is preferable to engaging casuals and has been shown to benefit everyone involved – the body of knowledge that builds throughout the semester is very important.
- It is far easier and less stressful to book in advance and then cancel if needed, than to try to book someone at the last minute. Take cancellation fees into consideration when making bookings.

- One interpreter may be acceptable if the class is highly practical or is short in duration (one hour or less) and the speakers are speaking at an acceptable pace. Two interpreters will be needed if the speaker is very fast or if the content is very dense. Review this early in the semester and maintain or adjust as necessary.

Equipment for online interpreting

- Equipment required for online interpreting includes a computer/laptop, microphone, headphones, high-quality camera, high-speed internet and access to the videoconferencing platform.
- The interpreter will generally be required to supply their own equipment.
- Background should be static or very minimal (e.g. no one moving around behind, no obvious traffic). The background does not have to be a plain wall, but the viewer must be able to see the interpreter without distraction.
- Using background effects, such as a fake office view, is not recommended, as the interpreter's arms may 'disappear'.

Interpreting access to classes

- Supply all pre-reading, class materials and access to the LMS beforehand, so there is time to prepare and become familiar with the content. This procedure should also be followed when engaging replacement (sometimes referred to as backfill) interpreters, where possible. Sometimes interpreters are replaced on the day, making preparation impossible. If the class normally has two interpreters, the interpreter who remains can assist the replacement person with content knowledge and sign choices as needed. It is important to note that the student can be just as knowledgeable about the content and sign choice (particularly when it comes to terminology specific to their course) and can also be a resource for the interpreters.
- Timing of access is important. Interpreters are commonly enrolled into courses at an instructor level, which means they are able to see teaching materials ahead of these being released to the students.

- Set up interpreter access to the online conferencing portal and provide a procedure for communication using the chat window. Prepare backup procedures. Test the camera and audio equipment at each end.
- Run a test with the student, interpreter and academic beforehand to make sure everyone can see each other and to check that the lighting and positioning of the screen is adequate.
- Interpreters generally do not share personal information, such as private phone numbers, with a student. Chat within the video platform is the preferred method of contact. However, texting via a mobile phone is sometimes necessary; for example, if one person cannot sign in and they need to inform the other. Rigid barriers sometimes have to come down as a result of unforeseen events.
- If an interpreter is engaged by the university as a staff member, then the provision of a staff email address is highly recommended.

Interpreting display and pinning speakers

- A third of the screen should be used to display the interpreter. The Auslan window should also be unobstructed from any captioning displays.
- Communication quality is determined directly by the size, resolution and positioning of the interpreter on the screen.

Encourage students to 'pin' the presenter and interpreter during their online meeting or class to ensure uninterrupted access. Two screens is best for this, as sometimes pinning results in the interpreter filling the whole screen, thus cutting off the other participants or the PowerPoint presentation.

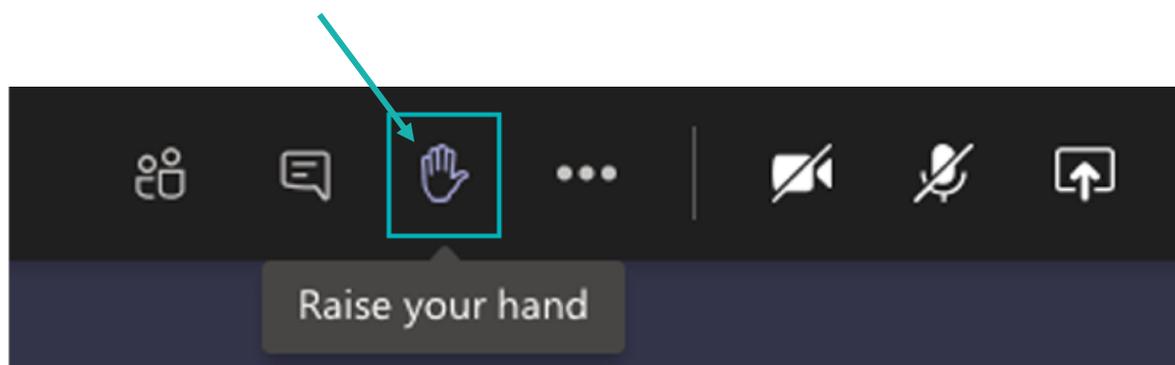
Things to consider

- Interpreting from one language into another is never word for word. This is equally true of spoken and sign languages. A good interpreter will strive to ensure that the meaning of the content is conveyed faithfully in both directions.
- In a teaching situation, when there is a lot of dialogue to be relayed, interpreters use a variety of strategies to keep up. This may include variation in fingerspelling (usually less than more), more use of depicting signs, and more use of signs or abbreviated fingerspelling that is agreed to by the interpreter and students only for the purpose of the class, particularly if the content is very technical or specific terminology is involved. (There is a growing body of scientific and other signs that have been developed worldwide by Deaf researchers. One good example is the Scottish Sensory Centre, which has developed a range of signs for maths, physics, astronomy, biology and so on.) These agreed signs are generally not used in the wider Deaf community.
- When fingerspelling results in misspelling or unclear words or phrases, it can impact on the student's ability to understand the context being conveyed.
- Asking for clarification in face-to-face settings is easier than when online. In an online class (e.g. lecture, webinar or conference), there may be many more participants (some hidden from view) and the speaker or session cannot be interrupted.
- The chat feature is generally used for private messages between the meeting host, teacher, interpreter, captioner and participants/students, particularly when raising concerns about the interpreting process or to ask for clarification or a pause.

TEACHING ETIQUETTE, TIPS AND TRICKS

Fostering respectful communication

- Set participation protocols and make as many of these as visual as you can through the consistent use of non-verbal symbols. Ensure everyone follows the same protocols (i.e. one speaker at a time).
- If there is sufficient internet capacity, all speakers should have their videos turned on.
- To minimise outside noise, all others – unless speaking – should turn their microphones off.
- On Microsoft Teams, participants should use the ‘hand’ emoji to indicate their wish to speak then wait until it is their turn, or until invited by the presenter. The hand emoji is also a useful signal for Deaf and hard of hearing participants to indicate they are not following and need a text-based recap or short pause in discussion.
- With clear rules and expectations in place, all participants will be better prepared to join in confidently and appropriately.



Body language and visual cues

The impacts of hearing loss are broad and can be profound. Students who are Deaf or hard of hearing rely heavily on visual cues for effective communication, including facial expressions and lip-reading. Emphasis on clear lip-reading and regular pace of speech is important. Be mindful not to talk too fast or too slowly.

- Show more than your head – visual cues are important for Deaf and hard of hearing learners. They want to see you and your body language.
- Ensure your mouth is clearly visible and well lit. Being able to see lip patterns and facial expressions is vital for those who communicate by lip-reading or through Auslan.
- Do not obscure your face (face mask, hand, microphone, cup/mug).

Audio, voice, tone, pitch and pronunciation

- Ensure your classes cater to all students.
- External microphones are recommended over built-in computer microphones. This affects caption quality.
- Speak directly into the microphone to ensure audio is clear.
- Reduce background noise and mute microphones when not in use. Minimising background noise will be especially appreciated by participants using assistive listening devices.
- Speak in a normal voice but slowly and clearly.
- Pause – have one or two minutes of silence – every now and then. This creates thinking time, so all students have an opportunity to catch up, scroll through missed chats or to take notes. This pause time is beneficial for all.
- Sometimes new terminology is challenging for a student who is Deaf or hard of hearing to repeat – they may need assistance with pronunciations.

Pace, talk time and talk speed

- Pace the discussion – do not race. Slowing the pace allows time for everyone to process verbal and visual information and for messages to be absorbed and understood before moving on with the lesson, next topic or speaker.
- Pace is also important to allow the captioner or interpreter to keep up.

View modes

When attending multi-person video classes or meetings, use the speaker view instead of gallery view (where available). This can help give a more 'natural' sensation, focusing on one main person at a time instead of displaying participants in a 'Brady Bunch' style and attempting to process multiple environmental visual cues all at once.

Virtual whiteboard

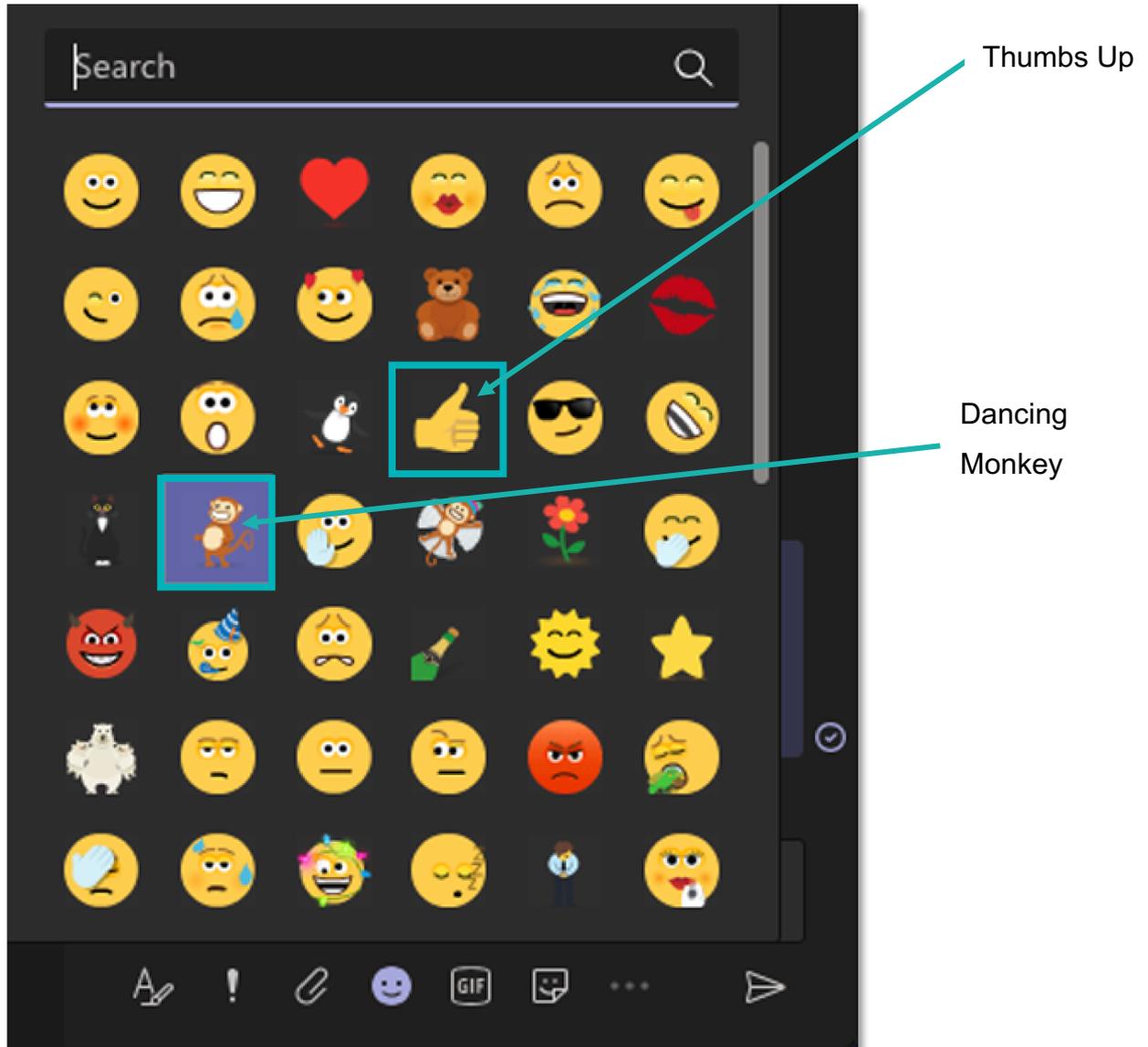
- Use the videoconferencing virtual whiteboard (where available) to share notes online. These can be saved and shared with participants.
- It is important to check whether the virtual whiteboard notes are recorded in the videoconferencing program you are using.

Tutorials/breakout groups

- Breakout rooms are available on most online conferencing platforms. They are used to split participants into separate smaller rooms/groups and are useful for encouraging participation and interaction.

Chat feature and non-verbal feedback

- Use the chat window to communicate using the written word or non-verbally with the whole group or privately.
- Use non-verbal feedback to express opinions by clicking on icons in the participants panel. Examples include thumbs up 👍 or dancing monkey (understand/agree/right to keep going) and hands up to speak 🙋.
- Reactions allow participants to communicate without interrupting by responding with an emoji that shows on their video or within the chat window. Reactions in video disappear after ten seconds. In some programs, participants can customise their emoji or change the skin tone in settings.
- Use the chat window for terminology, to ask questions, share images, links to documents and hyperlinks to external sites/resources so they are available to everybody.
- When an online class/meeting concludes, so does the record of discussion. Use the chat window to communicate additional information.



Tips for teachers

- When planning materials to share on the screen, such as documents and slide presentations, ensure they are accessible, with large, clear sans serif fonts. Documents with too much detail are hard to read.
- Pre-organise captioner and/or interpreters (where required and in collaboration with the student, taking into account their needs).
- Provide content (pre-reading, agendas, handouts, copies of presentations, details of terminology/jargon) ahead of class so students and/or interpreters and support people can familiarise themselves and be well prepared. Familiarity with the content increases engagement and reduces listening fatigue.
- Distribute electronic copies of videos/PowerPoint presentations prior to the class starting. When screen sharing, these can sometimes appear blurry or pixelated and are difficult to read for those with low vision. This also allows students who are Deaf and hard of hearing to set up their own learning spaces online with separate monitors for access to speakers/captions/interpreters and learning materials.
- Set up your own workspace prior to the start of classes, and start earlier for this reason. Let your Deaf and hard of hearing students and captioner/interpreter know you are doing this so they can sign in earlier and customise their own access.
- Inform all students that captions are available.
- Be aware that non-Deaf students can still listen in while walking to the kitchen to make a cup of tea and give themselves a mini break at the same time. Deaf students are unable to do this – if they move away, they may miss something important. Therefore, consider allocating set breaks during the class; for example, five minutes every hour rather than the usual ten to fifteen minutes in the middle of the class.
- Think about allowing online classes/meetings to be recorded and transcribed (where possible). This will enable all students to review and take notes.
- Reduce as much background/ambient noise as possible. Turn off non-essential computer sounds and switch your mobile phone to silent mode.
- Do not check the student's progress in front of others. The likely answer will be that they are fine (when really, they may not be). No one likes being singled out.

- During the session, use the private chat window to check in with your student who is Deaf or hard of hearing to make sure they are following. Use of emoticons and icons is a great quick way to do this (e.g. smiley face, thumbs up/down, dancing monkey). Check captioning quality yourself, where possible, to ensure students are able to keep pace with you. Slow down if need be.
- Set aside student consultation time. This can be helpful for many reasons, particularly for students who have questions and prefer to seek clarification in a safe space outside class time. It is also a good time to get gain insight into any struggles the student may be having, as well as what might make their educational experience better.
- If teachers need to set up one-on-one meetings with students for personal reviews, it is possible to schedule a private online meeting in Microsoft Teams. Captions can be enabled and will appear when the teacher speaks. The student who is Deaf or hard of hearing can choose to type in the chat field to participate in the conversation. Be aware that the captions may not be as accurate if the student chooses to speak.

Tips for students

Students should:

- be encouraged to disclose any disability and liaise with both the university and lecturers at the commencement of every semester to arrange required supports
- find out what online LMS and resources are used for courses, and ensure they know how to access and use these; arrange for training and support, where required
- check they have suitable technology and internet access/speeds
- prepare for classes by pre-reading resources, textbooks and other recommended materials
- attend all classes as indicated by the teacher/lecturer; if students cannot attend a class, interpreters/captioners must be informed so their services can be cancelled; ensure students are aware of processes
- check that captions are working; if there are difficulties, students should use private chat to notify the lecturer and/or the captioner to see if the problem can be fixed on the spot

- participate in class discussion boards, blogs and social media groups, particularly where group assessments are part of the curriculum
- negotiate with the lecturer (before classes commence, if possible) about scheduling short breaks; this is sometimes forgotten
- prearrange necessary reasonable adjustment for assessment tasks, if required
- be proactive in finding resources for completing assessment tasks, including how to access online library resources and scholarly materials.

Tips for support people, interpreters and note takers

- Check responsibility for equipment provision. You will likely be required to provide your own equipment, particularly when working remotely.
- Ensure you have access to all information, class materials and resources ahead of time so you are able to do reading and preparation before classes commence.
- Arrange your designated email address, if appropriate. (Support staff who are engaged by the educational institution should be issued with official email addresses to facilitate private communication and the sharing of information and resources.)

Additional support

- Student services
- Disability support staff
- Learning support and/or IT staff
- Transition support staff
- Concierges
- Counsellors
- Student mentors/mentor programs
- Study buddy/support person (can be hearing, if in the same year or higher; or Deaf, if in a higher year)
- OHS support staff and fire wardens (if on campus)

EVENT PLANNING GUIDELINES

Planning inclusive student events

Events are held throughout the academic calendar, including orientation; fire, emergency and evacuation drills; conferences, webinars and meetings; special/social events and graduations. Regardless of whether they are face-to-face on-campus events or online, they need to be inclusive – full access for all students, family members and guests ensures everyone can participate and enjoy the occasion.

Recommendations:

- **Planning:** Know your audience and determine their needs early so access can be provided. Use enrolment and registration procedures to identify any special requirements and liaise directly with attendees to ask about their preferences or reasonable adjustment needs (where possible).
- **Venue:** Use accessible venues for all events, both online and face to face. This includes venues which cater to a range of special needs. Online platforms should also be fully accessible and cater to a wide range of special needs.
- **Audio visual (AV) requirements:** Liaise with professionals to prearrange AV and other technology requirements (e.g. wi-fi connectivity at the venue).
- **Captioning:** All online meetings and video content should be captioned. Book this service well in advance – at the same time the date and venue has been locked in is ideal. Final decisions and any adjustments should be made in response to the needs of your audience; information about the individual needs of participants can be gathered during enrolment/registration. Determine how captions will be displayed for the audience (online and face to face).
- **Visuals:** Use presentations with clear images and text that is large and easy to read. Video and PowerPoint needs to be in the same line of sight.
- **Video:** Live meetings and events can be recorded (where possible) with video provided afterwards. Determine if video will be displayed in real time and how it will be captioned (real time or in post-production).

- **Interpreters:** As with captioners, interpreters should be booked well in advance, as soon as the date and venue are confirmed. Final decisions and any adjustments should be made in response to the needs of your audience; information about the individual needs of participants can be gathered during enrolment/registration.
- **Marketing:** Promotional materials should highlight the event's accessibility.
- **Materials:** Program outlines, agendas, run sheets and other materials need to adhere to accessible design guidelines and should be available for all.
- **Emergencies:** Consider emergency and evacuation procedures at your venue, and ensure all people with disability will be taken care of. People who are Deaf or hard of hearing will often not hear a fire alarm or siren, and they will also not be able to hear directions over loudspeakers. Some venues have hearing loop capacity, but not all people who are Deaf or hard of hearing can use this facility. It is best practice to prepare a suitable emergency plan that takes these factors into consideration.

OTHER RECOMMENDATIONS

National Disability Insurance Scheme (NDIS) funding support for students

Depending on NDIS eligibility and individual plans, students may be able to access their NDIS funding to pay for accessibility/education supports. It is always best to consult with individual NDIS coordinators for accurate and current information on supports. JobAccess supports are available for staff. See Useful Links at the end of this document for further information.

Face masks

During the COVID-19 pandemic, masks, visors and hoods are being used as a strategy for easing lockdown restrictions and keeping people safe. As Auslan is a visual language that incorporates facial expressions, and those who are hard of hearing rely on visual cues, the wearing of regular face masks impedes lip-reading and will cause communication difficulties. This, coupled with social distancing, poses a problem for people who are Deaf or hard of hearing, who need to be able to communicate effectively with others.

If masks are to be worn, and to help ensure better inclusion for people with hearing loss, it is advisable to:

- provide closed captions and written materials (ahead of time, whenever possible)
- provide see-through masks (such as those commonly used by medical practitioners who care for the Deaf) to others in direct contact with staff and students who are Deaf or hard of hearing
- provide Auslan interpreters where appropriate and requested; use alternative technology for communication (such as off-campus video connections) when see-through masks cannot be obtained
- use lens cleaner solution or antifog quick-drying pre-moistened wipes to prevent see-through masks from fogging up.

In one-on-one situations, consider the possibility of the person who is Deaf or hard of hearing wearing a mask while the other person is mask free. This facilitates better lip-reading.



Self-advocacy

Many staff members within the education sector have a sound understanding of deafness and hearing loss, but others may have limited insight. To support students in their online studies:

- encourage them to self-advocate about how deafness or hearing loss impacts their learning
- be clear on student rights
- encourage open discussion about individual needs.

USEFUL LINKS

3PlayMedia

3PlayMedia has an excellent article on [how to get the perfect audio recording for captioning](#).

Adobe Premiere speech to text

At the time of writing, Adobe announced that speech-to-text capabilities would be added to its video editing program **Adobe Premiere**. This is good news for improving the turnaround time for video content with closed captions, or where captioning is added in post-production. This feature is currently available in beta, with full program updates being released in early 2021. Find out more via the links below.

<https://pages.adobe.com/premiere/en/speechototext/>

<https://pages.adobe.com/premiere/en/speechototext/form>

Australian Disability Clearinghouse on Education and Training (ADCET)

ADCET aims to contribute to inclusive teaching and support practices within the post-secondary education sector in order to facilitate successful outcomes and improve the educational experiences of students with disability.

<http://adcet.edu.au/>

Blackboard Collaborate Ultra

Features of Collaborate Ultra are rapidly evolving. Visit the support site regularly to stay up to date with the latest changes.

<https://help.blackboard.com/Collaborate/Ultra>

Disability Discrimination Act 1992

Under the Disability Discrimination Act 1992 (DDA), it is unlawful to discriminate against a person with disability in relation to areas of life including employment, education, accommodation and provision of goods, services and facilities.

<https://humanrights.gov.au/our-work/disability-rights/overview-dda-disability-discrimination-act>

<https://www.legislation.gov.au/Series/C2004A04426>

Brief Guide to the Disability Discrimination Act: brief outline of the DDA, generally and as it applies to a number of areas of life.

<https://humanrights.gov.au/our-work/disability-rights/brief-guide-disability-discrimination-act>

Disability Standards for Education 2005

The Federal Government created the Disability Standards for Education in August 2005. The Standards cover the rights of students and the obligations of education providers in relation to assisting students with disability to participate fully in educational courses and programs. For further information visit the Disability Standards for Education website.

<http://ddaedustandards.info>

<https://www.legislation.gov.au/Details/F2005L00767>

Echo360

Features of Echo360 are rapidly evolving. Visit their support site regularly to stay up to date with the latest changes.

<https://echo360.com/video-accessibility/>

Happy Scribe

The most useful feature of Happy Scribe is the conversion of a .vtt file to text. Visit the Happy Scribe site to find out how.

<https://www.happyscribe.com/subtitle-tools/convert-vtt-to-text>

JobAccess

JobAccess provides access supports for people with disability, their employers and service providers. Created by the Australian Government, JobAccess brings together information and resources that can 'drive disability employment'. It comprises:

- a telephone advice line (1800 464 800)
- the Employment Assistance Fund (EAF) for workplace modifications and support
- an employer engagement service – the National Disability Recruitment Coordinator (NDRC)
- the Complaints Resolution and Referral Service
- the National Disability Abuse and Neglect Hotline.

<https://www.jobaccess.gov.au/home>

Listen Hear! The economic impact and cost of hearing loss in Australia

Published by Access Economics, 15 February 2006

<https://apo.org.au/node/2755>

Microsoft PowerPoint

For information on setting up PowerPoint slides with captions and subtitles in Windows, Mac and web versions, visit the following support site for current updates.

<https://support.microsoft.com/en-us/office/present-with-real-time-automatic-captions-or-subtitles-in-powerpoint-68d20e49-aec3-456a-939d-34a79e8ddd5f>

Microsoft Teams

MS Teams is constantly improving various features and services. Visit this support site regularly to stay up to date with the latest changes.

<https://support.microsoft.com/en-us/teams>

National Disability Coordination Officer Program (NDCO)

The Australian Government's National Disability Coordination Officer (NDCO) Program works strategically to assist people with disability to access and participate in tertiary education and subsequent employment, through a national network of regional NDCOs. Your NDCO may be able to assist you with enquiries related to good practice and training in educational inclusion. To find your regional NDCO go to:

<http://education.gov.au/national-disability-coordination-officer-program>

National Disability Insurance Scheme (NDIS)

The following links provide up-to-date and accurate information on NDIS supports for students.

[Guidance on whether a support is most appropriately funded by the NDIS](#)

(Refer to the tables on 'School education' and 'Higher education, vocational education and training')

[Understanding/NDIS and other government services/education](#)

[COVID-19/parents and carers children remote learning](#)

[Understanding/NDIS and other government services/hearing supports](#)

United Nations Department of Economic and Social Affairs (Disability)

Article 24: Education

<https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-24-education.html>

United Nations Educational, Scientific and Cultural Organization (UNESCO)

Education 2030 Agenda, Goal 4: 'Ensure inclusive and equitable education and promote lifelong learning opportunities for all'. Read more here:

<https://en.unesco.org/themes/education2030-sdg4>

World Federation of the Deaf

The global organisation World Federation of the Deaf works to advance human rights and promote the use of sign language worldwide.

<https://wfdeaf.org/our-work/human-rights-of-the-deaf/>

Zoom

Zoom is regularly improving various features and services. Visit this support site to stay up to date with the latest changes.

<https://support.zoom.us/hc/en-us/articles/207279736>

GLOSSARY

AHRC – Australian Human Rights Commission. This organisation helps people with disability when they make a complaint about an education provider failing to comply with the Disability Standards for Education 2005.

ASR – Automatic speech recognition is a technology that enables computers to recognise and translate spoken language into text.

Disability discrimination – A situation where a person is treated less favourably or is harassed because of their disability, where no exception applies.

Disability standards – See entry on DSE.

DDA – Disability Discrimination Act 1992 (Commonwealth) – The DDA applies everywhere in Australia and is looked after by the Australian Human Rights Commission (AHRC).

DSE – Disability Standards for Education 2005 (Commonwealth) – The DSE (also known as the Standards) seeks to ensure that students with disability can access and participate in education on the same basis as other students. The Standards clarify the obligations of education and training providers, and the rights of people with disability under the DDA.

Education provider – Any organisation that educates or trains people.

Examples are:

- preschools and kindergartens (but not childcare centres)
- public and private schools
- public education and training places, such as TAFE institutes
- private education and training places, such as private business colleges
- universities
- organisations that prepare or run training and education programs.

Education standards – See entry on DSE.

Exceptions – Situations where an education provider can discriminate against a student with disability without breaking the law. Exceptions included in the DSE are:

- unjustifiable hardship
- protection of public health
- court orders or acts done under special laws
- special measures.

Impairment – Impairments include physiological functions of the body systems and/or body structures that, when combined with environmental and attitudinal factors, cause the individual to experience activity limitations and participation restrictions (WHO, 2011).

Measures for compliance – Things that education providers could do when trying to meet their obligations. They are not legal requirements. An education provider may be able to meet its obligations in a number of different ways that are not necessarily listed in the measures for compliance.

Obligations – Things that education providers must do to respect the rights of students with disability. They are legal requirements, and disobeying them is against the law unless an exception applies.

Prescribed laws – Special laws that allow discrimination. The government has to identify these laws and make them public. Currently there are only a small number of such laws.

Reasonable adjustments – Action that is taken to help a student with disability take part in an education program on the same basis as other students. An adjustment is reasonable if it meets the needs of the student with disability without impacting too much on the other people involved. To determine whether an adjustment is reasonable, an education provider must consider:

- the barriers, needs or challenges that face a student with disability
- the views of the student or their associate
- whether an adjustment will impact on the academic standards or requirements of the course
- what advantages or disadvantages the adjustments may create for the people affected by it
- the costs of making the adjustment.

Rights – What a student with disability can expect from an education provider. The most important right is that a student with disability has the opportunity to participate in education on the same basis as students without disability.

Special measures – Actions or services taken to assist or help people with disability. These services will usually only be available to people with disability and no other people. Special measures are sometimes called positive discrimination.

Unjustifiable hardship – An exemption that allows an education provider to refuse to make an adjustment because the cost involved and the impact on the education provider and other people would be too great. The education provider must prove that an adjustment would cause unjustifiable hardship. To do this, the education provider must look at:

- the benefits or disadvantages that would result from making the reasonable adjustment
- the effect of the disability of the student in question
- its own financial position and the costs of making the reasonable adjustment.

United Nations Convention of the Rights of Persons with

Disabilities (CRPD) – Adopted on 13 December 2006, the CRPD upholds the human rights and fundamental freedoms of persons with disabilities, identifies areas where adaptations must be made and where protection of rights must be reinforced.

‘The UN Convention on the Rights of Persons with Disabilities (CRPD), adopted by the United Nations General Assembly in 2006 and ratified by 181 countries, is an international legal instrument recognising persons with disability, including Deaf and Deaf youth, as rights holders.

The CRPD recognises the right of Deaf and Deaf youth to have professional sign language interpreters to participate fully in all aspects of life and equal access to information. Moreover, Deaf and Deaf youth have the right to exercise their freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas in their national sign language(s). When it comes to tertiary education, the CRPD recognises the right of Deaf students to receive reasonable [adjustments] when requested.’ (WFD, 2020)

Voice writing – Speech recognition software used for different languages, also called respeaking.

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