

# UPCYCLE YOUR AUDIO: CREATING RECORDED AND LIVE WEB AUDIO YOUR AUDIENCE CAN'T REFUSE

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## INTRODUCTION

Whether preparing a podcast or a voice-over for a video demonstration, you should minimize the effect that recording has on your content. While what you say will be fixed and not extemporaneous, it should otherwise replicate as closely as possible a face-to-face experience with your audience. This might sound obvious and easy, but facing your computer screen instead of an audience introduces a suite of technical, pedagogical, and sometimes personal challenges. Students consider audiovisual elements important to online videos, yet content creators rarely devote enough attention to those aspects (Hibbert, 2014). Audio cues can have powerful benefits for student learning outcomes and long-term retention, so improving your audio is worth the effort (Bajaj et al, 2015). While this paper focuses on preparing your content (and yourself) for asynchronous, recorded delivery, many of the suggestions could also improve live delivery via the web.

## MAIN ASPECTS OF AUDIO QUALITY

Regarding quality, this paper addresses only “media level” and “content level” multimedia quality as described by Gulliver and Ghinea (2006). Although important, quality at the network level is generally outside the control of the content developer and thus will not be discussed. The question I hear most often from those who want to create recorded-voice projects is, “Which mic(rophone) should I buy?” While there are definite reasons some microphones cost more than others, the question of which microphone is of secondary or tertiary importance to many other considerations.

Almost any dedicated microphone that “talks to” a computer can create a faithful recording of what is said. My definition of “dedicated” simply means that the microphone is not part of a webcam or somewhere within your laptop. A freestanding desktop microphone is nice, but the mic in a

headset-mic combo absolutely qualifies as “dedicated.” Although I plan to retire it soon, I have recorded all my voice-overs with the same entry-level headset microphone purchased more than two years ago.

Recently, I tested a Blue Snowball microphone but reverted to my headset microphone, after much internal debate, for two related reasons. First, the test recordings had too much ambient noise regardless of which pre-set configuration I chose. As someone who learned audio editing mostly through trial and error, I surmise this is because I record in my main-level office and not a dedicated quiet area. Second, I was uncomfortable with the physical presence of the microphone on my desktop (instead of the unobtrusive headset mic). Since audio recording is a small part of my job, the desktop configuration was temporary and thus unfamiliar and awkward; unease does not an appealing voice-over make.

## Technical Quality

Not surprisingly, recording environment significantly affects technical quality. Unless you have access to a recording studio, you must find a reasonably peaceful recording area and try to minimize noise sources. Audacity can generally compensate for background sounds such as HVAC systems or CPU hum, so focus your preparation on intermittent or irregular noises.

- Silence (or briefly unplug) your office phone and other devices with audio notifications
- Post a sign nearby that indicates you are recording – a handwritten sticky note may suffice
- Close the door but consider leaving it unlocked or ajar so someone could enter without interrupting if needed
- If you must record in/near a public area, pick the time judiciously (or seize upon quiet times when they come along)

Do not let the lack of a fancy recording studio deter you from creating audio content. I have recorded all my audio in my office, which is on the busiest floor of our main library; some of it was even recorded during construction.

In setting up your recording area, place the microphone away from noise sources such as an air vent or CPU. While it should be close enough to capture audio, it should not be too close to your mouth. You can often amplify segments that are too quiet, but it is difficult and generally not worth the effort to adjust for input that is too loud. To test your input level, you (and/or whoever is speaking) should record a brief sample and take care to speak at a volume that feels natural. Try a test sentence or two so you can try out a good range of sounds. If the sound is distorted, move the microphone away from you or reduce your input level. Pay special attention to whether plosives – sounds such as the “t” in “title” or both consonants in “book” – sound normal. If they are frequently distorted or “blown out,” you can borrow, buy, or make your own pop filter. Assuming you can meet what you consider a basic quality threshold when recording, the second half of technical quality can be accomplished at no cost in Audacity.

### **Tone**

When planning instruction content, an outline is indispensable as it can help you identify the major concepts, determine associated tasks, and identify whether the quantity of information is appropriate. Based on your expectations for recording length, you may find the content needs dividing into smaller, more manageable chunks to decrease cognitive load (Cheng, Huang, Shadiev, Hsu, & Chu, 2014). While an outline may suffice for those gifted in extemporaneous on-topic speaking, scripts have multiple benefits. Scripting helps you address things *exactly* as your audience will experience them; if providing instructions, your words should match what students encounter at the point of need. A script also helps you after you record, since searching the file (via Ctrl or Command F) is a quick way to determine whether your project contains content that needs updating. Scripts are also a significant first step toward creating video captions. While a script is invaluable for instructional recordings, you must never sound like you are simply reading from it. Among the top determinants of educational film quality is what Doke and Pedanekar term “liveliness of speech,” so speak with enthusiasm and vary your tone (2016).

### **Audience**

Far too much online instruction seems devoid of any consideration that an actual person with a genuine information need (much less a pressing one) would have to sit through it. With synchronous content online via webinars and online classrooms, it can be difficult to predict your audience. For asynchronous content, this can be almost impossible; the target and actual audiences do not *necessarily* overlap if your content is hosted on the open web and can be found and watched by anyone. Regardless, you should always have an audience in mind as you plan and deliver your audio. It can help to develop

a user profile and imagine you are teaching them. While targeted toward website developers, Usability.gov has a helpful webpage that explains user scenarios and how to apply them (U.S. Department of Health and Human Services).

In general, I cater my instructional voice-overs to the most diverse and least interested audience reasonably imaginable. An international student with an imperfect mastery of English whose professor requires them to watch my video is a rough sketch of someone who would fit this description. In keeping in mind students with limited English proficiency, avoid colloquialisms and idioms (e.g., start from scratch, rule of thumb). You should also consider any regionalisms as well as your accent, since a heavy accent adds a new level of difficulty for anyone unaccustomed to it. Unless creating content *for* librarians, take care not to include library jargon (e.g., stacks), abbreviations, and acronyms unless they are essential for accomplishing your learning objectives. If you must assume considerable background knowledge to convey your message, consider adding to your plans an instruction object that covers what a database *is* and why it matters.

### **Formality**

While some expectations about formality may be set at a library or institution level, do not be stuffy. If you or your colleagues lead in-person classes, what is the tone like for those? If you are unsure, refer to your user scenario and think how you would address them during an instruction or reference interaction.

### **Supplemental Audio**

For ease of listening and clarity, especially for listeners with hearing impairment, avoid music and sound effects at the same time as speech. When done correctly, supplemental audio can add a professional touch. However, the added challenges for content planning, audio leveling, and rights management make it a poor time investment for most instruction-oriented audio.

### **Pacing**

More than a third of viewers who abandon educational videos do so within the first 3% of content, meaning the first few seconds can make all the difference (Kim et al., 2014). Skip the introduction, content outline, and learning objectives and launch directly into your content since the place you publish your project will almost certainly allow you to provide text to cover this information, if necessary. If you want to remind your audience they can pause or replay a segment as needed, you can also include it here. Children’s television aside, audio content has progressed beyond including time for the audience to respond or perform an action. Keep pauses brief and your delivery lively. If creating an instructional video with a slow-speaking presenter, consider increasing their recording tempo since higher words per minute can boost video popularity (ten Hove & van der Meij, 2015). Of course, this technique is not appropriate if you are recording an oral history interview or

other archive-oriented content. Finally, convey essential content early since some audience attrition is inevitable regardless of how concise and well-structured your recording (Ruedlinger, 2012).

## NOTES ON ACCESSIBILITY

A fundamental purpose of libraries is to increase access to information. If you have the resources to create an instruction object with audio content, there is no valid excuse not to make it accessible to those with hearing impairment. For audio-only recordings such as podcasts, provide a transcript. Running a speech-to-text program while recording is a great way to save effort and create a first draft; there are free options available in the Chrome Web Store. For videos, provide accurate closed captions. If your organization lacks the technology to host captioned videos, YouTube offers free hosting and excellent caption support. Its automatic captions can be a huge labor saver, but do not trust them for your final product. You will need to review and likely edit them. If you do not do it for your students, do it because legal complaints against Harvard and MIT that cite, among other issues, “inaccurate” captioning have been successful (NAD, 2015).

If you provide a learning object exclusively in video form, anything you show but do not speak is lost to those without sufficient vision. To design for maximum accessibility, your visuals can augment the audio but must not present anything completely new. When fully applied, this means you must speak phone numbers, URLs, and email addresses that you might otherwise only show briefly. Depending on your available resources, potential solutions include a descriptive audio track or a separate video version with descriptive audio; you may have noticed the AD))) logo in the corner of some primetime television broadcasts. In April 2015, Netflix announced on its blog that it would provide audio description for some streaming programs. As ever-increasing numbers of multimedia content providers work toward equitable access for those with visual disabilities, it is both pragmatic and ethical to consider these accommodations when designing tutorial videos.

## EDITING WITH AUDACITY

Audacity is an open-source program that is available for many platforms and has been around longer than most high schoolers, which is to say it has evolved into robust software with extensive available documentation. After installing this free download, users can record, edit, and publish audio files that may be distributed or combined with visuals in presentation programs such as Adobe Captivate. If you need help installing Audacity, someone on your IT staff is likely familiar with it. Why not just edit the audio within the video creation program (e.g., Captivate)? That is generally a secondary feature with limited options, so your effort would be more effective in a dedicated audio editing program (Grant & Finkle).

## Recording

Press the familiar red circle button or R on your keyboard to record. If two rows of sound waves appear, you are recording in stereo mode. Mono input is sufficient for voice-overs and will display only one easy-to-use row of content. Use the dropdown menu in the Device toolbar (if displayed) to switch from 2 (Stereo) Input Channels to 1 (Mono) Input Channel or go to Edit > Preferences to set the recording channels for your device.

## Noise Removal

When recording, leave one or two seconds of silence at the beginning or end to capture ambient noise. Afterward, go to Effect > Noise Removal and follow both steps to compensate for background noise within your recording.

## Adding Silence

Highlight the area to silence and

- select the button in the Edit toolbar that shows a flat line between two wavy line segments OR
- go to Generate > Silence and press OK

## Keyboard Shortcuts

Audacity responds to many keyboard shortcuts that are familiar to users of Microsoft Windows/Office. Remember Undo (Ctrl+Z or Cmd+Z for Mac) when you accidentally delete your entire track. Combine it with Redo (Ctrl+Y) to compare quality before and after applying a filter. For more advanced editing, you can copy, cut, and paste audio segments using the familiar keyboard shortcuts or the Edit menu.

## Low Pass Filter

Only after my recent exploration (and rejection) of the Blue Snowball microphone did I notice a quality defect in my recordings. The best way I can describe it is a shallowness characterized by a fuzzy hiss most noticeable in sibilants such as the “s” sound. To compare for yourself, play a Clemson Libraries tutorial from before March 2016 and then a more recent upload. If you find that your recording has a similar flaw, try Effect > Low Pass Filter.... My largely unscientific recommendation is to tinker with a Cutoff frequency off 500.0 or 1,000.0 Hertz until you achieve improvement without muffling.

## Exporting

As in many multimedia editing programs, saving your file means preserving the native project file(s). Export your project to create that final mp3, wav, or other file. To export, go to File > Export... or press Ctrl+Shift+E. The first time you export to mp3, you will be prompted to download a plug-in. If you have trouble with this, the Audacity manual has systematic instructions for Windows, Mac, and other OSs. To limit the

archive size for each finalized project, I keep only the mp3 and delete the Audacity project file (.aup) and data folder.

## CONCLUSION

Much of the content-level discussion in this paper is intended as suggestive rather than prescriptive. When designing instructional audio or audiovisual content, your finished product will be shaped most by the particular information need of your students and the time and resources you are able to invest. Despite the detail provided here, I assure you that higher-quality recordings are possible for even those with basic technological skills. After familiarizing yourself with recording in Audacity, you may even discover processes or features that improve your own media-level quality.

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## REFERENCES

- Bajaj, J., Harlalka, A., Kumar, A., Puneekar, R. M., Sorathia, K., Deshmukh, O., & Yadav, K. (2015). Audio cues: Can sound be worth a hundred words? In P. Zaphiris & A. Ioannou (Eds.), *Learning and Collaboration Technologies: Second International Conference, LCT 2015, Held as Part of HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings* (pp. 14-23). Switzerland: Springer International Publishing.
- Cheng, P. Y., Huang, Y. M., Shadiev, R., Hsu, C. W., & Chu, S. T. (2014). Investigating the effectiveness of video segmentation on decreasing learners' cognitive load in mobile learning. In *New Horizons in Web Based Learning* (pp. 122-129). Springer International Publishing.
- Doke, A., & Pedanekar, N. (2016, March). *Lights, camera, but no action: Exploring affective audio-visual features of educational videos*. Poster presented at the 47th ACM Technical Symposium on Computing Science Education, Memphis, TN. doi: 10.1145/2839509.2850535
- Fishman, E., & Currier, A. (n.d.). Understanding audience retention. Retrieved from <http://wistia.com/library/understanding-audience-retention>
- Grant, A., & Finkle, D. (2016). *Take your library workshops online!* Lanham: Rowman & Littlefield.
- Gulliver, S., & Ghinea, G. (2006). Defining user perception of distributed multimedia quality. *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMCCAP)*, 2(4), 241-257. doi:10.1145/1201730.1201731
- Hibbert, M. (2014, April 7). What makes an online instructional video compelling? *EDUCAUSEreview*, Retrieved from <http://er.educause.edu/articles/2014/4/what-makes-an-online-instructional-video-compelling>
- Kim, J., Guo, P.J., Seaton, D.T., Mitros, P., Gajos, K.Z., & Miller, R.C. (2014). Understanding in-video dropouts and interaction peaks in online lecture videos. In A. Fox, M. Hearst, & M. T. H. Chi (Eds.), *L@S 2014: Proceedings of the first ACM conference on learning @ scale* (pp. 31-40). New York, NY: ACM. doi:10.1145/2556325.2566237
- NAD sues Harvard and MIT for discrimination in public online content. (2015, February 12). Retrieved from <https://nad.org/news/2015/2/nad-sues-harvard-and-mit-discrimination-public-online-content>
- Ruedlinger, B. (2012, May 7). Does length matter? [Web log post]. Retrieved from <http://wistia.com/blog/does-length-matter-it-does-for-video-2k12-edition>
- ten Hove, P., & van der Meij, H. (2015). Like it or not. What characterizes YouTube's more popular instructional videos? *Technical Communication*, 62(1), 48-62.
- U.S. Department of Health & Human Services. (n.d.). *Scenarios*. Retrieved from <http://www.usability.gov/how-to-and-tools/methods/scenarios.html>