# Captioning Methods for Educational Videos*Script*

June 2023

## [Introduction]

Greetings, I'm Rick Jerz, and I'm delighted to be here to discuss "Captioning Methods for Educational Videos."

As technology for captioning continues to improve, video captioning methods also evolve. It's important to have high-quality captions in educational videos. Captioning educational videos presents unique cost and editing challenges that differ from motion pictures.

In 2015, my College asked me to consider captioning my online educational videos. `At first, I was hesitant because of the effort required to create captions. However, I now strongly advocate captions for educational videos.

I'm here to help you understand captioning options for your educational videos. You might be surprised to learn that my favorite method is relatively unknown.

“Let’s get started!”

## [Objectives]

`My objectives in this presentation are as follows.

1. To review the purpose of captions.
2. To briefly review some technical aspects of captions.
3. To demonstrate and summarize some various captioning alternatives.
4. To demonstrate my preferred method.
5. And to demonstrate how you use captions in Moodle and Canvas LMSs.

Disclaimer: I am not a captioning expert, but I do have extensive experience. Also, since I am half deaf, `I rely greatly on captions and appreciate quality. So let me know if you discover something I state incorrectly or can be improved.

I assume you are either an instructor or administrator wanting to caption videos.

Since this presentation includes technical information, I've made a separate web page with extra resources. When I mention "my web page" during the presentation, I'm referring to this specific page. `I'll give you the URL at the end of the presentation.

For example, I like this Caption Style Guide from Rev.com, so I share it on my web page.

I created a short, 1:45-minute demo video for this presentation, available on my web page. You might consider creating something like this for your own experimentation.

## [Purpose of Captions]

Captions were initially created for those with hearing disabilities. In education, the Americans with Disability Act and Section 504 of the Rehabilitation Act in the 1990s made it compulsory for most educational videos to include captions. `Failure to do so can result in lawsuits.

Captions benefit all students, regardless of accessibility needs or learning style. Captions improve understanding, engagement, and retention. They also assist with understanding technical terms and when English is a student’s second language. Captions become an additional learning aid.

Captions benefit instructors by providing a clear record of what was said and where, helping with directing students to relevant points, and serving as a useful starting point for video improvement. `During my Quality Matters certification, I utilized captions whenever auditors questioned whether I had adequately communicated information to my students, as in “I said that at 2 minutes 25 seconds in my Course Overview video.”

I firmly believe that captions are highly beneficial for educational use. However, the difficulty is in their creation.

## [Technical Terms]

I would like to clarify some terms associated with captions.

`When you turn captions on, like on Netflix or Prime, you are seeing “closed” captions. These closed captions use an auxiliary “sidecar” file. Yes, two files, one for the video and one for captions that get synchronized. In many video-serving platforms, you need to upload both files into it. I will show you what I mean later.

Permanently displayed captions are called 'open' captions and cannot be turned off.

`You will often see the words “captions,” “subtitles,” and “transcripts.” Some folks will use these words interchangeably, but there are subtle differences. A transcript contains what was said and is in “paragraph” form, like paragraphs in a book. “Captions” are these same words, but in shorter segments, typically one or two lines, and synchronized with the video. “Subtitles” are captions in different languages. `If you have only one language, then “captions” and “subtitles” refer to the same thing. In this presentation, I will use the word “captions.”

The captions should exactly match what the movie is saying. It is irritating when captions are out of sync.

## [Some Characteristics]

Different methods exist to create captions with varying cost, time, and quality metrics to consider.

Measuring cost and time is easy, but assessing quality is harder. `Quality means using the right words, formatting, punctuation, and alignment when conveying a message.

The motion picture industry can afford professional captioning services, as movies are one-time productions. An average Hollywood movie budget is around $65 million dollars. Schools lack these financial resources. Also, educational videos are not one-time productions. They should be continually improved and updated, like versions of a textbook. `When the video changes, captions must be revised.

I will attempt to describe the cost, time, and quality metrics associated with each alternative I discuss.

## [Some Alternatives]

Here are some of the alternatives that I will review. Yes, they vary in cost, time, and quality. They will also vary depending on whether your videos are scripted or unscripted.

I used to avoid scripts when creating videos, `but now I realize scripts lead to better-quality content. You can find the script I used for this presentation on my web page.

It's worth noting that motion-picture movies always have scripts and allows them to offer a lot of content in just 90 minutes!

I picked these alternatives to represent different categories. There are many options within each category. `For example, I mention Rev.com as a pay-for alternative, but you might prefer a different company.

I will also focus on creating a “closed” caption sidecar file for most alternatives.

## [Computer Operating System]

One alternative for captions is simply to use tools built into your computer’s operating system. Both Windows and Mac offer live captioning. Allow me to demonstrate.

I'm watching my demo video in Windows 11 with Edge and using live captions by pressing Windows-ctrl-L. `The text appears below the video as it's spoken.

To activate live captions on your Mac, go to System > Accessibility > Live Captions Beta. Then, watch the video, and the captions will appear in a separate box.

Although this alternative is free and requires no time, it has downsides. The quality of the captions for Windows and Mac is poor and does not meet educational standards. `Even Apple marks it as "beta." Furthermore, the captions do not synchronize with the voice, contain multiple errors, and lack proper punctuation. As someone with partial hearing loss, I cannot accept this alternative.

In the next five to ten years, this feature may be improved. I'm showing it to you to let you know that your computer has some captioning capabilities. `Later, I'll explain other alternatives that can create captions automatically.

## [Manual]

Explaining how one might manually create the closed caption file is a good place to show you what these sidecar files look like.

There are many forms of caption files, but the two most common in education are SRT and VTT files. In my experience, I use SRT files better than 90% of the time. `Some systems, like the Moodle learning management system, require a VTT file. Both types are basic ASCII-text files that can be created, viewed, or edited with any text editor or word-processing software.

On the left is an SRT file, and on the right is a VTT file. They look similar. They both contain lines with words and lines with time codes. `They differ in how time codes are represented, and a few other minor differences. The words are what you see when viewing captions in the video. The timecodes synchronize the words within the video.

You can either type or copy and paste the words from your script. Keep each line to under 40 characters.

Adding time codes to captions is extremely difficult due to the need for precise formatting and values. `Even a small mistake can make the entire file invalid. It's a challenging task that becomes almost impossible after a few attempts.

I judge this approach as impractical. I showed you this to give you a good idea of what an SRT and VTT file looks like. Fixing a few words in an SRT file can be done in any text editor. `Changing the timing is challenging.

## [Web-based Solutions]

By searching the Internet for “free captioning services,” you will probably find some companies offering “free” captioning. Typically, you upload your video to these services, and they return an SRT or VTT file. Quite honestly, I haven’t had good luck with these, but I wanted to mention it as an alternative for you to explore.

## [Rev.com]

At the other end of the spectrum, `why not pay a company to create your captions?

My university discovered Rev.com, a captioning company that many schools use. Rev.com charges $1.50 USD per video minute and has an under a 24-hour turnaround. So, a 25-minute-long video that might take me four hours to caption myself costs under $40 at Rev.com. It’s a very affordable option, and the quality meets educational standards. `My decision was simple because my university was willing to cover the cost.

Here is Rev.com. You upload your file and pick captions. Rev.com sends you an email when finished. Although Rev.com is quite good, I do recommend that you review their work.

Rev.com provides a great editor to adjust words and timing while watching your video. There are tools for spell check, searching, keyboard shortcuts, and more.

`Rev.com uses humans in its captioning process, which is better quality than any auto-generated method. They are the only captioning alternative that spelled my last name, Jerz, correctly. Rev.com can use your script to be even more accurate.

When your reviewing and any edits are complete, you then download your video in the desired format, and even in paragraph form.

Rev.com can translate your captions into different languages, `of course, at a cost.

My 1:45 minute demo video, cost me $3 to caption. On my web page, I give you my original script and the completed Rev.com unedited captions. The results are quite good.

One drawback of Rev.com is that if you revise your video, such as adding or deleting video segments, you must go through this captioning process again, and of course, pay again. `Another drawback was that since my university owned the Rev.com account, I couldn’t access the editor.

However, I have my own Rev.com account, which I am showing you.

So, Rev.com is a pretty good pay-for solution.

## [Captioning Software]

Another alternative to captioning videos is using specialized captioning software, like "MovieCaptioner," which I personally own. There are many similar products, but I chose MovieCaptioner for its features and affordable price, around $100.

`Here it is. You load your video into this area and then play it. As the video plays, manually type the dialogue. When you hit the Return key, the text will appear on the right side “with the corresponding timecode,” alleviating the timecode problem of using a text editor. Continue this process until you have captioned the entire video. When finished, you can export your captioned file in various formats such as SRT and VTT.

`This tool provides accurate timecodes. It may be more cost-effective than Rev.com, but keep in mind that manual typing is required.

I didn’t use MovieCaptioner since my school was paying for Rev.com. However, I have used MovieCaptioner to transform caption files into different formats, such as SRT to VTT. In general, it's a valuable addition to my collection of captioning software.

## [Camtasia]

`Camtasia, by TechSmith, is another alternative. Camtasia is fairly well-known as non-linear video editing software. I use Camtasia for screen recordings, and I am certified in Camtasia.

Camtasia has captioning tools that you can use with Camtasia-produced videos and external videos. To caption my demo video, I import it into Camtasia.

Then I select "modify," "captions," and "add captions." `A caption track appears, divided into 10-second segments. You listen to each segment and type the spoken words into this area, somewhat like MovieCaptioner. Having the captions appear in the movie timeline is a little more convenient.

To adjust timing, simply drag the borders of the segment to the left or right. `The ADA standard suggests 5 to 7 seconds for each segment. There are tools available to split or combine segments.

Camtasia for the PC includes voice-to-text, meaning no need to type words, which is very appealing. I find the results marginal but can train voice-to-text for better accuracy. As it stands, editing words and timing takes too long.

`I do like working with video and captioning in the same timeline environment. With Camtasia, you can export the captions as SRT files.

I have provided some examples on my supplementary web page.

As an educator, I pay about $100 USD for a yearly subscription to the Camtasia Suite, which comes with SnagIt for screenshots. I have been using these products for a long time for screenshots and screen recordings. Although I use Camtasia to create and edit screen recording, `I prefer Adobe Premier for final video composing.

## [YouTube]

YouTube provides a video hosting platform and captioning at no cost. When you upload a video to YouTube, in the background, YouTube automatically creates the captions. This is referred to as auto-generated captions.

Here is my demo video playing on YouTube, with captions turned on. Quality will depend upon content and the speaker’s voice quality.

`YouTube has some drawbacks, the major one being that you grant YouTube and the world, including your competitors, the right to use your videos. You can’t avoid this, it is YouTubes license agreement.

Another issue is that the YouTube website can distract students with irrelevant ads and videos. I don’t like this. To avoid this, you can embed YouTube videos into your LMS. `Here is my YouTube demo video embedded in Moodle, and here it is in Canvas.

Another issue is that YouTube's auto-generated captions typically do not meet educational standards. YouTube captions can be frustrating, embarrassing, or even comical at times. Watch my demo video, and I think you will agree.

To enhance the accuracy and quality of captions, you can edit them with YouTube’s great editor. `To use it, I select my demo video in YouTube Studio, then navigate to the "subtitles" tool on the left, then choose "Duplicate and Edit."

YouTube offers two interfaces: "edit timings" and "edit as text." The "edit timings" interface is useful to edit both text and time codes. Like Rev.com and Camtasia, you can also adjust timings by dragging the edges of the textbox in the lower area.

`If you need to fix just text errors, the "edit as text" feature can be helpful. You can even replace the entire text with your original script, and YouTube will attempt to re-sync it to voice. It is not perfect, you still need to make edits, but this is a pretty good alternative and illustrates the power of having a script.

`If needed, you can download YouTube caption files as SRT, VTT, and SBV. I downloaded the auto generated SRT file and make it available for you on my web page. Compare it with the original script.

Also, you can upload SRT files.. So, you might use Rev.com for its caption quality, and YouTube as a free video server.

Since YouTube is free, some schools and instructors are unconcerned with these drawbacks.

## [Vimeo]

`I use Vimeo instead of YouTube to host my educational videos. While there is a free option, I find that it is too restrictive so instead, I buy an option that costs around $250 USD each year. Vimeo has been around for a while, and I find it a very reliable video-serving platform. I have used Vimeo for around three years.

`By using Vimeo, I maintain ownership of my educational videos while also having greater control over the user interface. This includes the ability to limit ads and avoid displaying irrelevant videos.

Vimeo, like YouTube, automatically generates captions. And Vimeo also has an editor to correct words, but not timing. Vimeo’s auto-caption quality is good, but not as good as Rev.com. `In fact, Vimeo suggests using Rev.com for accurate captioning.

Vimeo allows you to download and upload SRT files.

You can embed Vimeo videos, like YouTube. However, one feature of Vimeo’s regular video player is that it can show both captions and a transcript, somewhat like LinkedIn Learning does. Students can search for words in the transcript, and Vimeo jumps to that point in the video. `Pretty nice. Also, Vimeo provides chapter markers to help students navigate a video. I find these features to be important for educational videos.

## [Adobe Premiere]

When it comes to making videos and captions, I personally recommend Adobe Premiere. Many people are familiar with Premiere for video editing. It’s been around for more than two decades, but not everyone knows that it has captioning tools, added a few years ago.

`Here is my demo video in Premiere. The timeline is where you add and edit various video assets such as graphics and audio files. To caption this video, I pick text, Captions, then Captions from the transcript. This dialog box adjusts captioning options. When I click “Transcribe and create captions,” Premiere translates the video first, then adds captions to the timeline.

Premiere’s voice-to-text engine is impressive, quickly producing captions better than YouTube and Vimeo. `However, not as good as Rev.com. I find Premiere so good that I use it to caption videos I download from the Internet, including YouTube videos! Premiere is not perfect, so I still recommend editing captions.

Premiere's editing tools are superior. You have search and replace, spell check, and professional timeline editing tools like ripple, rolling, trimming, slip, and split. `When you search for a word, Premiere highlights its appearance in the caption editing window, in the video preview window, and on the timeline. Here’s a screenshot showing what I mean. I searched for the word “complaint.”

Both Premiere and Camtasia provide editing of video and captions on the timeline, but Premiere’s tools are better.

Here’s an example. I created this video for review. `One reviewer suggested redoing some text, shown here in Microsoft Word with revisions turned on. Okay. First, I edit my audio file. Then, I locate this point by searching captions. I adjust the video to match the new audio. Finally, I edit the captions, replacing the old words with the new ones.

Wow, that’s not all that hard.

I have found a method that produces nearly 100% accurate captions in Premiere.

`The concept is to replace Premiere’s transcription segments with my script’s text, somewhat like I showed using YouTube’s transcription. I begin with Premiere’s initial transcription. Then in my script, I insert a unique character, the backtick, at Premiere’s transcription segment breakpoints. Then, I run a Word macro I made to reformat my script. Lastly, I copy and paste my script segments into the corresponding transcription segments. `With this method, the captions will accurately match my recorded script. Although this takes some time, it is faster and more accurate than editing auto-generated captions.

After I finish editing, I create the mp4 video and SRT caption files which I then upload to Vimeo.

Premiere can also create open-captioned videos. It’s an advantage of having both video and captions in one environment.

`Premiere is not free software. My subscription costs around $30USD each month as part of Adobe’s entire Creative Cloud Suite, which has over a dozen multimedia products, such as Photoshop, After Effects, and Acrobat. Captioning with Premiere justifies my entire Creative Cloud subscription cost, and I no longer use Rev.com.

## [Moodle and Canvas]

I want to demonstrate how to include captions in Moodle and Canvas. `If you link to YouTube or Vimeo, those platforms' video players will include captions. But suppose you have standalone video and caption files?

In Moodle’s editor, I click on the multimedia tool, point to the video file, and point to the VTT caption file. When finished, Moodle’s internal video player provides both video and captions.

In Canvas’ editor, I click on Insert, Media, and add the video. `I scroll down and add the SRT caption file. When finished, Canvas’ video player provides both video and captions.

Some schools use other video platforms, such as Panopto or Kaltura, which compete with Vimeo and YouTube.

## [Summary]

Rev.com is a great pay-for solution. YouTube is great if you don’t mind giving your content away. Overall, I like Premiere and now use it almost exclusively for captioning. And I have been quite satisfied using Vimeo to serve my videos.

With any of these alternatives, `I recommend that you always edit their results.

Here is the URL to the supplementary web page for this presentation.