

IELA AWARD WINNER

# Uncommon Sense Teaching: A 3-Course Online Specialization on the Coursera Platform to Share Advances in Effective Teaching

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## ABSTRACT

This paper gives an overview of the creative process and construction underlying the three-course Coursera specialization *Uncommon Sense Teaching*, encompassing 16 hours of video and roughly 50 hours of total dedicated study time for students. In the year since its launch in September of 2022, this specialization has received a 5.0 out of 5.0 rating with 119 reviews and over 2,300 enrollees, attesting to learner satisfaction with the quality of the instruction. Careful planning and attention to detail were behind the success—this paper gives an overview of the specialization’s planning, creative, and implementation processes, including a discussion of costs.

## KEYWORDS

online, MOOC, video, education, pedagogy

## 1 INTRODUCTION

The three online courses created for the *Uncommon Sense Teaching* specialization on Coursera were designed to knit together and explain practical insights about teaching, growing from a solidly researched neuroscientific foundation.

A typical comment from a learner about the course is “It is the best course I have taken on Coursera and many other face-to-face ones. The instructional design is wonderful. You took me by hand at every step with appropriate techniques and excellent-quality content.” The learner reviews to date average 5.0 out of 5.0 with 119 reviews.

The audience is K-12 teachers, university professors, business trainers, vocational instructors, coaches, and parents. Each of the three courses entailed roughly five hours of carefully edited video. As shown in Table 1, each course is laid out in four modules (weeks). Each weekly module contains roughly ten 5- to 10-minute videos. Figure 1 shows the key characteristics of the specialization, as described on the landing page.

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Fig. 1. The landing page for the specialization shows learners what they can expect when enrolling in the specialization

Table 1 shows an outline of each week’s courses, main topics, and the total run time of the videos for that week. Each week’s materials also contained a list of relevant non-mandatory references for reading. Those who wish to work toward a certificate with honors can also complete peer-evaluated projects along with the standard multiple-choice quizzes.

Table 1. Courses and modules within the three course specialization

Courses and Modules	Hours of Video	Reading
<b><i>Uncommon Sense Teaching: Part 1, The Foundations of Inclusive Teaching (15 hours total expected study time to complete the course)</i></b>		
<b>Week 1:</b> Active Learning for All	1.6	0.55
<b>Week 2:</b> Helping the Brain Build Better Links for Learning	1.1	0.33
<b>Week 3:</b> Practice, Passion, and Procrastination	1.7	0.33
<b>Week 4:</b> How Human Brains Evolved—and Why This Matters for Your Teaching	1.1	0.50
<b><i>Uncommon Sense Teaching: Part 2, Building Community and Habits of Learning (13 hours total expected study time to complete the course)</i></b>		
<b>Week 1:</b> Motivation, Stress, and Character Change	1.5	0.55
<b>Week 2:</b> How to Reach and Teach Both Declarative and Procedural Pathways	1.4	0.33
<b>Week 3:</b> Intellectual Humility, Critical Thinking, and Bias	1.4	0.33
<b>Week 4:</b> Neurodiversity, Student Groups, and Charting Your Course to the Finish Line!	1.2	0.50
<b><i>Uncommon Sense Teaching: Teaching Online (14 hours total expected study time to complete the course)</i></b>		
<b>Week 1:</b> Schemas, Motivation, and Teaching Online	1.0	0.55
<b>Week 2:</b> Popcorn Time! Lessons from the Neuroscience of Movie Watching	1.3	0.33
<b>Week 3:</b> Retrieval & Spaced Repetition in Online Learning	1.2	0.33
<b>Week 4:</b> Preparing Now and for the Future through Great Online Teaching	1.4	0.5

Videos served as the backbone of the courses, and for good reason—students focus on videos. This is all the more so when the videos are made with attention to humor and eye-catching effects and build on solidly researched and innovative teaching insights [2]. A sense of what learners see when they first log into the course is provided in Figure 2.

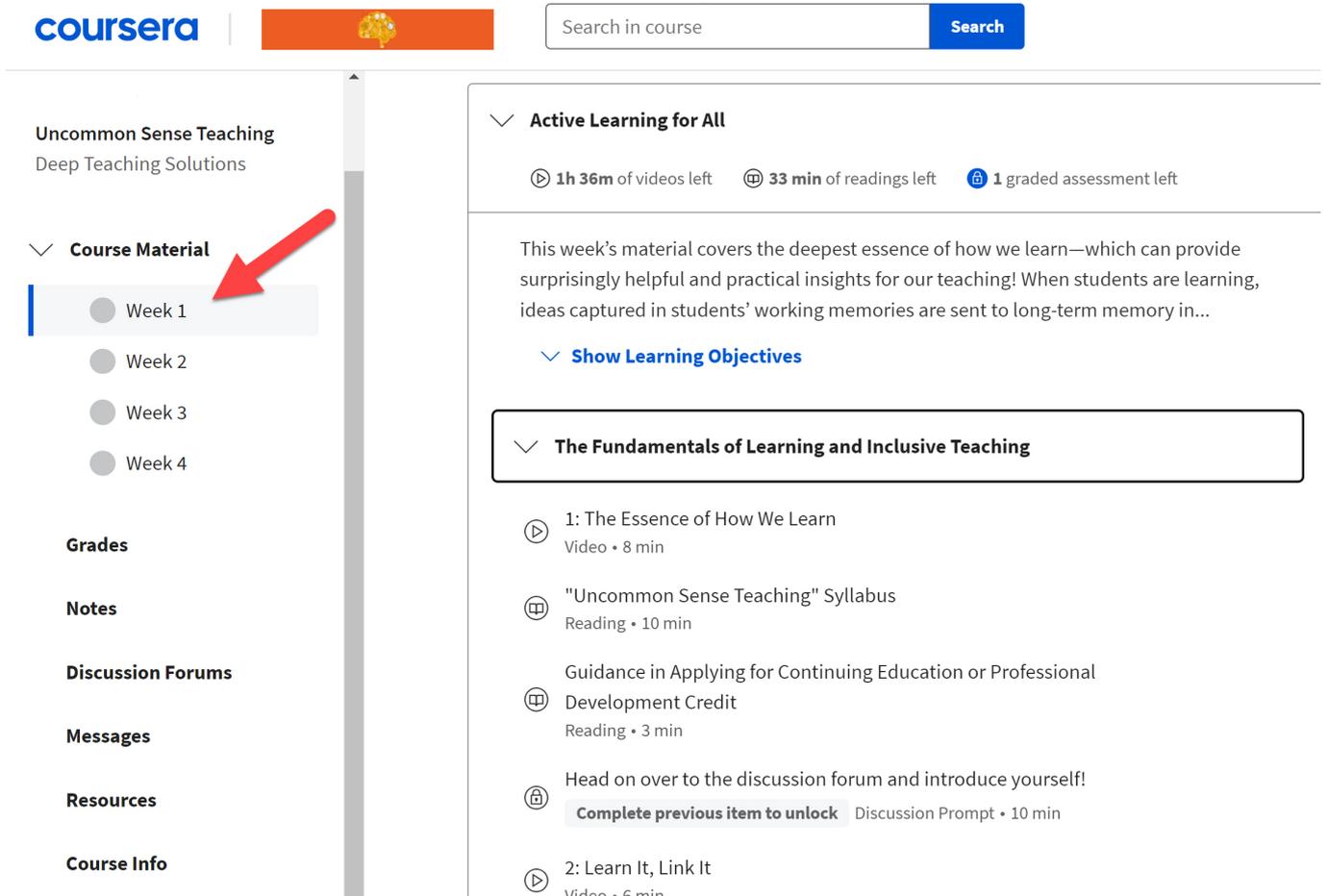
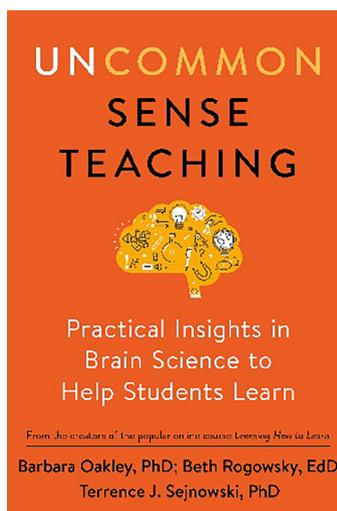


Fig. 2. A snapshot of the learner dashboard view of Week 1 of the first course in the specialization. The red arrow is superimposed to show how a learner can easily use the navigation toolbar on the left to skip around in the course

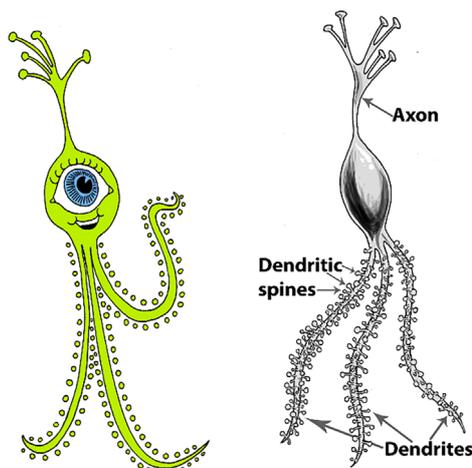
## 2 OVERVIEW OF THE PROCESS OF COURSE CREATION

We should point out that before creating the specialization, we wrote the *Uncommon Sense Teaching* book used as the foundation for the online coursework [1] (Figure 3). This two-year book research and writing process was invaluable in allowing us to grapple with the key ideas of the specialization. Each of the three MOOCs (massive open online courses) in the specialization course covers roughly a third of the material in the book. (The book is not in any way necessary to complete the online courses.) Great care was taken to provide novel insights in both the online courses and the book, so that one medium was not simply a stale repetition of the other.



**Fig. 3.** Writing the underlying book before creating the specialization allowed us to organize our thoughts before even beginning the scripting process for the MOOCs [1]. The book was designated a Top 10 Pick for Learning Ladders’ Best Books for Educators

A challenging aspect of this cross-disciplinary project was that it bridged neuroscience, teaching (from K-12 through higher academia, including vocational teaching, business, and special education instructors), and broad overviews of teaching in the humanities, social sciences, and STEM—all put into terms that even a non-teacher could understand. Disciplinary jargon formed a unique problem often addressed through metaphor (Figure 4). Interestingly, neuroscientists seem generally aware that theirs is a jargon-filled discipline. On the other hand, those in pedagogy often have little sense of how complicated their jargon can be for outsiders to parse. (Take, for example, the seemingly simple terms “formative” and “summative” assessment.) Pedagogy and neuroscience can even have contradictory definitions. For example, “procedural learning” means *declarative, step-by-step learning* to most teachers, whereas “procedural learning” means very different *habitual, basal-ganglia-related learning* to many neuroscientists. Ensuring that the key ideas from these two disparate fields were understandable to a layperson—for example, a parent with no background in neuroscience or teaching—was difficult.



**Fig. 4.** Metaphor was often used as a whimsical way of introducing key concepts in neuroscience. For example, neurons and their function were introduced using analogous “legs,” “toes,” and “arms” of a space alien

Using the foundational ideas described in the *Uncommon Sense Teaching* book, each of the three online courses was constructed in the steps shown in Table 2.

**Table 2.** Tasks Underlying Course Creation for Each Course in the Uncommon Sense Teaching Specialization\*

Task #	Task	Duration (for One Course)
1.	<b>Creating scripts</b> for the instructors, annotated with imagery suggestions for the video editing team. As the video scripts were developed, relevant key concepts, credits, and references were also developed. See Figures 5 and 6.	4 to 5 months
2.	<b>Filming</b> the numbered snippets of the scripts in two different locations: An auditorium at the Salk Institute in San Diego, California (Terry), and in the garage of one of the instructors (Barb) in Belle Fourche, South Dakota. See Figures 7–10.	1.5 months
3.	<b>Editing</b> by the video editing team of five remote workers based mainly out of Barranquilla, Colombia, headed by the Senior Team Leader, co-author Juan Manuel Aristizabal Pineda. See Section 3.	3 to 4 months
4.	<b>Loading</b> the videos and PowerPoints with imagery for use by learners onto the Coursera platform; creating online quizzes. See Figure 11	2 months
5.	<b>Cleaning up</b> the generated transcripts. See Figure 12.	3 weeks
6.	<b>Launching the course.</b>	Several days working through the Coursera checklist.
7.	<b>Fixing incidental glitches</b> , such as incorrect phrasing or answers on quizzes or problems with the captions.	About two hours of work in the first few months of launch.

*Notes:* \*The processes sometimes proceeded in parallel. These tasks were often part-time, such as when the instructors worked on scripting while also completing their regular professorial duties.

The first course of the specialization was launched on July 16, 2021, the second on April 15, 2022, and the third and final course, which also allowed for the accompanying launch of the entire three-course specialization, was launched on September 4, 2022. As of July 20, 2023, individual learner enrollments are 26,488, 4,726, and 2,598 for Part 1, Part 2, and Teaching Online, respectively. Learner completion-related information related to the specialization is described in Section 4.

The creative process of script development often initially involved simply getting the words out. Later, imagery and other notes (in red) were added to the scripts, and snippets were labeled, with scripting divided out amongst the instructors with annotations like “**3A-2.4: Beth,**” meaning the fourth snippet of Video 2 of Week 3 of MOOC A (the first MOOC) of the specialization, featuring Beth.

Each course had three instructors—Barb and Terry throughout, Beth for the first two more “face-to-face” oriented courses, and David for the final “Teaching Online” course. We tried to feature two and, when possible, all three instructors in most videos of each course. This is because an overlong focus on one instructor can become tedious—also, alternating instructors can help signal a shift to another aspect of the key concept or concepts being conveyed in the video.

For example, Terry Sejnowski is a leading neuroscientist—his appearance in a video immediately signaled that the learner would be taking a foray into the brain

science underlying the key concept being discussed. Beth has deep experience in K-12 education, while David is an expert in online instruction. Barb, as an engineering professor and popular writer, was a jack-of-all-trades, good at translating both neuroscientific and pedagogical jargon into more everyday terms. It should be noted that each instructor brought their unique brand of humor into the mix, making the course overall more enjoyable for learners.

**• Week 2, Lesson 2: Mental Models & Online Learning**

**2C-4: Talk to the Hand—the Power of Gesture to Help Form Mental Models**

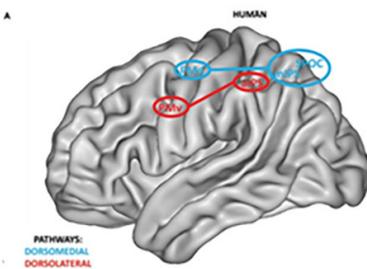
**Key Concepts**

- Mental models are the thoughts we are holding in working memory. We develop mental models related to concepts, ideas or events we are trying to follow or understand.
- Our gestures and movements can help us develop mental models because they activate a rich network of neurons—our schemas—of remembered experiences that allows us to think more deeply about the ideas we are considering.
- When people watch another person move or gesture, their neural networks and schemas are subtly activated to mirror the person they are watching. This is called the “mirror rule.” These mirrored activations help with both mimicking and the development of an mental model.
- Whenever you have a success, your brain learns from it and programs that learning into your neural networks to help you repeat that success. This has been termed the “success rule.”

**2C-4.1 David:** (Sitting in front of a laptop which shows my head too low on-screen. David is turned away from the laptop, toward the camera, which is at ¾ behind/beside him.) There’s a weird phenomenon when you’re on a teleconference with someone whose camera is positioned strangely: you find yourself wanting to adjust your own screen to compensate. You know that adjusting your screen isn’t going to move them, but you find yourself wanting to to anyway. (Looks at the video of Barb apparently on Zoom on his laptop—her head is low on the screen—gopher effect. (file is here: <https://www.dropbox.com/s/mxuiho90bacnec/1%20Barb%20too%20low.mp4?dl=0>) David shakes his head and shuts his laptop.) There is a reason we do this, and it has to do with a concept called “mirroring.”

**2C-4.2 Barb:** As it turns out, when I do something, like, say, (hold still and have someone put a coffee mug in my hand) grasp a cup, part of my brain activates. This activation in part involves my brain’s signals to my body, telling it to grasp the cup. (Juan, have a brain slice (use one of our side brain images) appear to come out of my head and turn sideways beside me. Just show the four spots (which are in the red and blue spots on the drawing) appear to be firing—that is, pulsating—in orange. Above the brain say “Barb’s brain”.)

**2C-4.3 Barb voiceover** (Barb in voice-over, keep my side-slice brain on screen, but have a “schema” lattice emerge from the pulsating parts of my brain to be beside the brain.) In fact, when I make any kind of gesture, I activate areas of my brain—in some sense, schemas—related to my many remembered past experiences and expertise with motor movement and space. This rich network of remembered experiences allows me to think more deeply about the ideas I’m trying to understand and convey. In other words, my hand gestures may seem trivial, but they are intimately tied in with my neural schemas regarding space, time, and motion.



**Fig. 5.** The beginning of a video script, including the key concepts (which were appended after finishing the script). Suggestions for imagery and example images were inserted into the text to help guide the video editors in their creative work. Where necessary, the instructors created gifs (often using PowerPoint’s gif export feature), which were inserted into the scripts to give video editors a sense of the movement in proposed animations

up for—and sometimes much more than more than make up—for any perceived deficits. This means that where typical common-sense teachers may see only deficits, you, as the uncommon sense teacher that you are, are on the lookout for your students’ hidden gifts.

We’ve seen what happens with dyslexia and related disorders, and their potential to strengthen certain declarative ways of learning. But what happens when some students might instead have reason to rely a super-charged procedural system? Follow us to the next video to find out!

```

    graph LR
      A[Declarative] <--> B[Long-term memory]
      B <--> C[Procedural]
    
```

I’m Barb Oakley,  
 I’m Beth Rogowsky,  
 And I’m Terry Sejnowski,  
 Learn it, link it, let’s do it!

**Credits:**

- Daniel Radcliffe, Emma Watson & Rupert Grint (left to right) at the world premiere of Harry Potter & The Deathly Hallows Part 2, 2011, photo by Ilona Higgins, [https://commons.wikimedia.org/wiki/File:Daniel\\_Radcliffe,\\_Emma\\_Watson\\_%26\\_Rupert\\_Grint\\_colour.jpg](https://commons.wikimedia.org/wiki/File:Daniel_Radcliffe,_Emma_Watson_%26_Rupert_Grint_colour.jpg)
- Beckham warming up with Real Madrid in August, 2006 by Jesse Michael Nix [https://en.wikipedia.org/wiki/David\\_Beckham#/media/File:Beckham\\_warmingup.jpg](https://en.wikipedia.org/wiki/David_Beckham#/media/File:Beckham_warmingup.jpg)
- Original image of focus-diffuse with attentional problems based on image by Oliver Young, developed for *Learning How to Learn* by Barbara Oakley and Terrence Sejnowski, Penguin Random House, 2018.

**Broader references about the various syndromes as well as biographical resources**

- Barnett, K. *The Spark: A Mother’s Story of Nurturing Genius*: Random House, 2013.
- Frith, Maxine, “[Beckham reveals his battle with obsessive disorder](#),” The Independent, 2006.
- Huberman, Andrew, “[ADHD & How Anyone Can Improve Their Focus | Huberman Lab Podcast #37](#),” Sep 13, 2021. We enjoy all of Andrew Huberman’s work, and this insightful podcast is no exception.

Fig. 6. The end of a typical video script, including credits and references. Each reference was linked to the abstract or, if available, a full version of the paper



Fig. 7. The spacious garage studio in South Dakota where the vast bulk of videotaping was done. The 24” on the diagonal teleprompter allowed the camera to be set five meters back from the talent. The talent, in turn, stood 2 meters from the greenscreen wall, which minimized shadows



**Fig. 8.** The teleprompter was operated by videotaping director Phil Oakley (Barb's husband). The couch in the background allowed instructors to take quick breaks and also allowed one instructor to have a perch to view the filming of the other instructor. This allowed the non-filming instructor to catch occasional slipups in pronunciation of the instructor being filmed and to provide encouragement



**Fig. 9.** Looking into the front of the teleprompter in the South Dakota studio. (The large cylinder in the left corner is a tornado shelter.) The camera and teleprompter are on a dolly, which makes wheeling the camera easy. The set of scenes being videotaped while this photo was being taken were in connection to the *Teaching Online* course. The camera was being maneuvered by instructor David Joyner and Phil Oakley further away from the talent (Barb) to reveal how differently the face and eyes of the talent can look for viewers depending on how close the talent is to the camera



Fig. 10. Terry filmed in the main auditorium of the Salk Institute, which was set up temporarily with a greenscreen, lights, and teleprompter

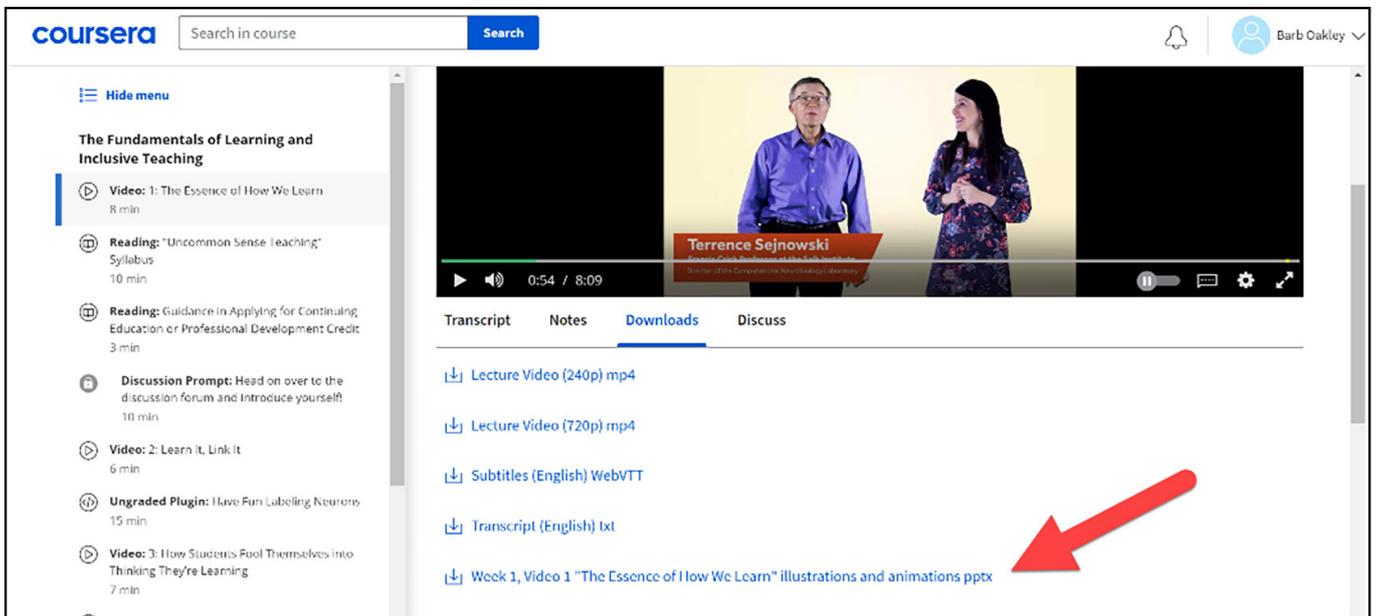
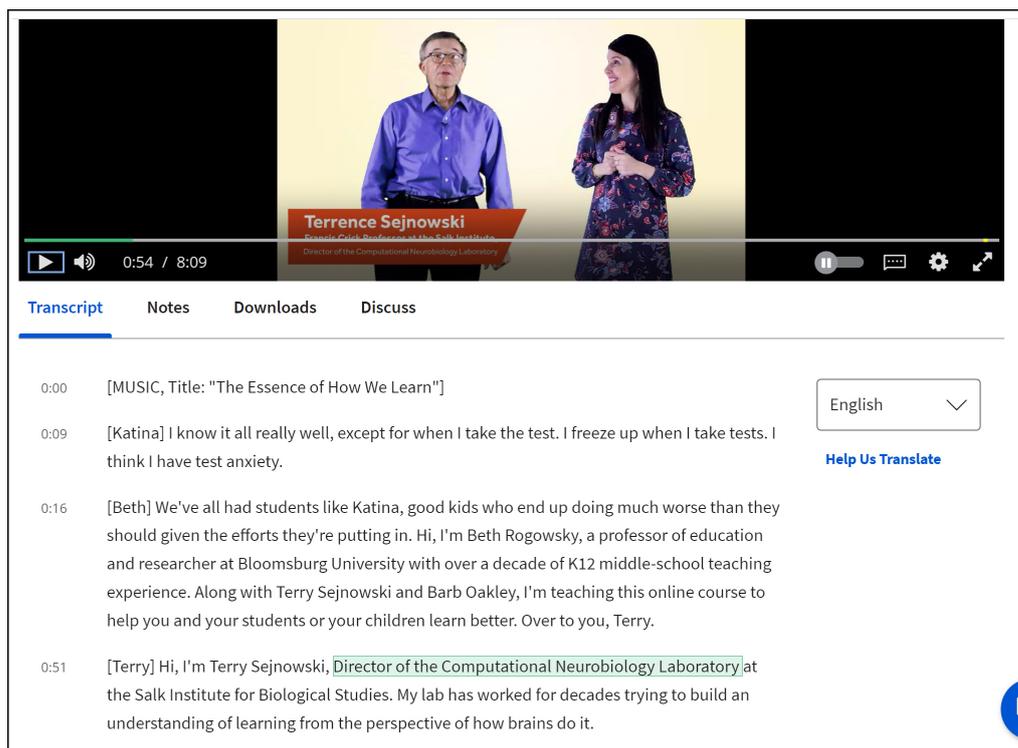


Fig. 11. The videos, transcripts, and PowerPoints (red arrow) containing many animations and visuals used within the video were available through the Downloads tab



**Fig. 12.** The video captions underneath the first video of the specialization on Coursera. After correcting errors in the raw generated transcripts, paragraphing and annotations (for example [MUSIC, Title: "The Essence of How We Learn"]) were added to make the scripts easier to read and follow

### 3 VIDEO SHOOTING AND EDITING WORKFLOW

Since video editing was vital to successful course creation,[3] it's worthwhile to step carefully through our process workflow. Production values were high, but at the same time, this was not a big-budget television production. Compromises were sometimes taken with imperfect shots and flubs from instructors. (Flubs were also a great source of fun outtakes.) Occasionally, a video snippet was shot on the first take. More often, a snippet might take an instructor two or three times to get right—sometimes, even five or more takes if the snippet was particularly demanding or the instructor was tired. Some instructors could film eight hours in a day, knocking their sections out quickly—others could only film two or three hours before their videotaping ground to a weary halt. Incidentally, in the videotaping industry, the person in front of the camera is often called the “talent,” a term we will often use in the remainder of this paper.

On a side note, “shooting scripts” were created from the original annotated-for-video-editor scripts just before filming. For these scripts, most instructions and all imagery was removed, leaving only the most straightforward and briefest instructions to the talent, such as “gasp” or “point right.” This simplified shooting script was then loaded into Teleprompter Pro. As is the usual teleprompter convention, the text became a white font against a black background—side-note instructions such as “point left” were changed to yellow, making it easier for the talent to see the difference between text and instructions.

All instructors found the most challenging part of filming to be when they needed to look away from the teleprompter script to point beside them at something that would be added later in post-production. Although looking to their side was a frequent flub source, adding realism was important. Few things look more contrived to learners than an instructor standing like a fence post, pointing to something at

the side even as they face the camera (Figure 13). This violates a cardinal principle of good multimedia teaching, where, as multimedia expert Richard Mayer notes: On-screen agents should display humanlike gestures and movements [4], [5].



**Fig. 13.** Barb's startled reaction when she finally turns to "see" what she's pointing at (the frog, inserted post-production) makes the humorous point that it's not a good idea to point without looking at what you're pointing toward

Since each snippet of script by each instructor was carefully numbered during the videotaping process, later integration of the snippets was a snap. This was despite the fact that individual snippets featuring the different instructors might be filmed in different months, in studios thousands of miles apart from one another within the US, and then shipped thousands of miles from the studios to the video editing team in Colombia. Videos were transferred using the Dropbox platform, which allowed for easy syncing of assets.

### 3.1 Editing in Premiere Pro

The various sequentially numbered scripts were imported into Premiere Pro. The video editors followed both the written script and the footage of the snippets while editing. Suggested visual ideas from the scripts were incorporated in, as well as creative ideas originating from the editors themselves. The instructors' mistakes, as for example, pausing and restarting after mispronouncing a word, were edited out. The editors masked the resulting discontinuities by switching the instructor from one area to another on the screen at that point as if it was an intentional move. Occasionally, the instructor was removed, replaced by visuals, and allowed to continue speaking in voice-over. Judicious use of motion was a vital part of the editing process [2].

Premiere Pro allows for the saving of presets of its effects. The Senior Team Leader applied the chroma key, color correction, and basic audio settings and saved them as a preset so that all the five editors on the team could use them. This allowed each editor to drag & drop the preset over any given video clip. After applying the preset (Figure 14, top and bottom left) for each instructor, the background color was added (bottom right).

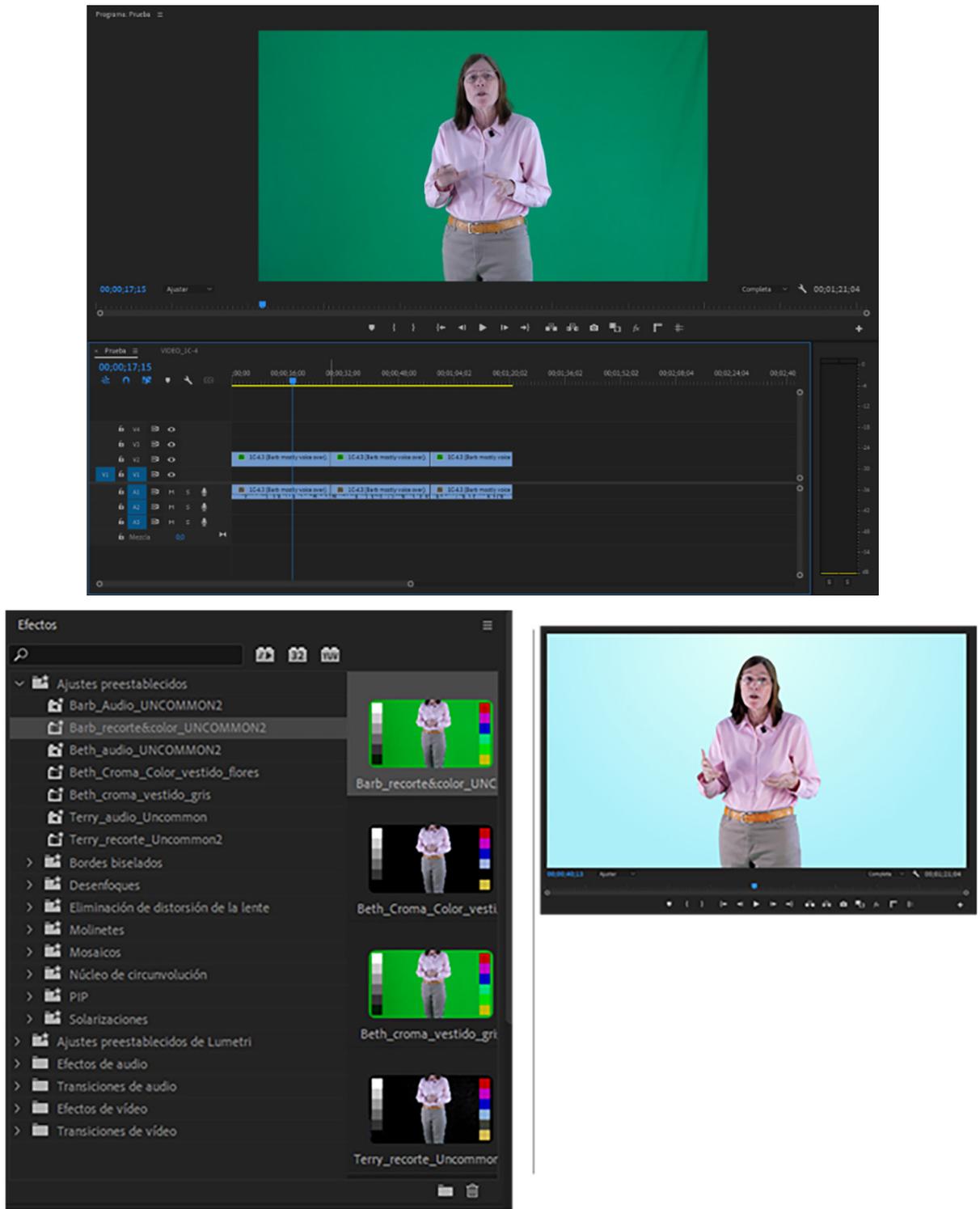


Fig. 14. The use of presets (lower left) helped make the editing job of any given raw video snippet (top) faster and easier for each of the editors on the team. Bottom right shows the finished video

### 3.2 Reframing, zoom, and talent movements

The footage was recorded in 4K, and the final output of the video was FullHD (1920 × 1080). This allowed us to reframe, move and zoom the talent when necessary (Figure 15).

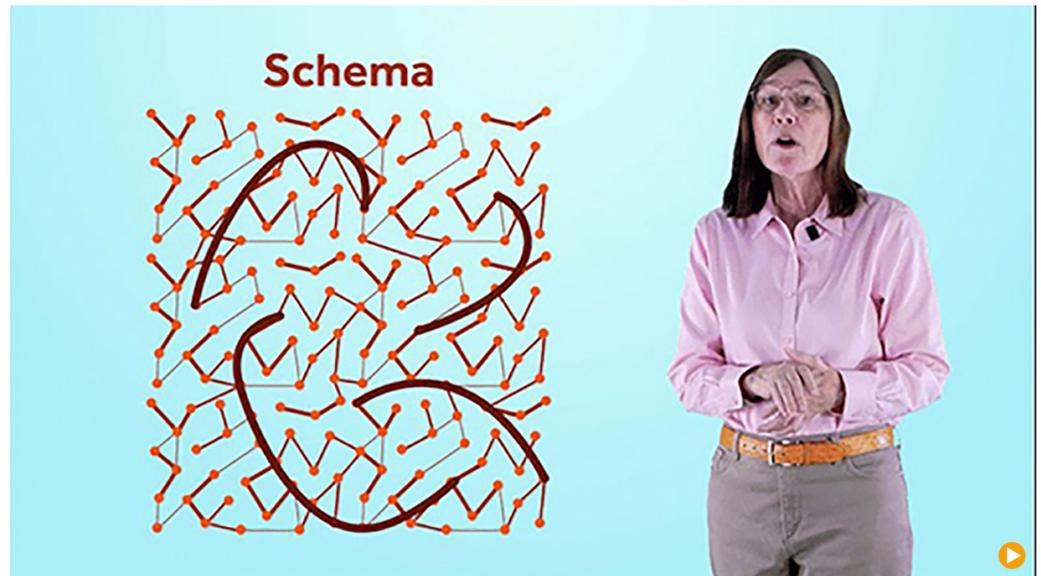


Fig. 15. Reframing, zoom, and talent movements

### 3.3 Animations in After Effects linked with Premiere Pro

The most time-consuming part of the process was the creation of the animations needed to explain neuroscience concepts (Figures 16–18). Several different types of Adobe software were used. Adobe Illustrator was used to create the illustrations (unless the image was taken from those made for the book). Next, the illustration was taken into Adobe After Effects and the trimmed video clip in Premiere Pro. An Adobe CC tool was used to link the work done in After Effects with the video timeline in Premiere Pro.

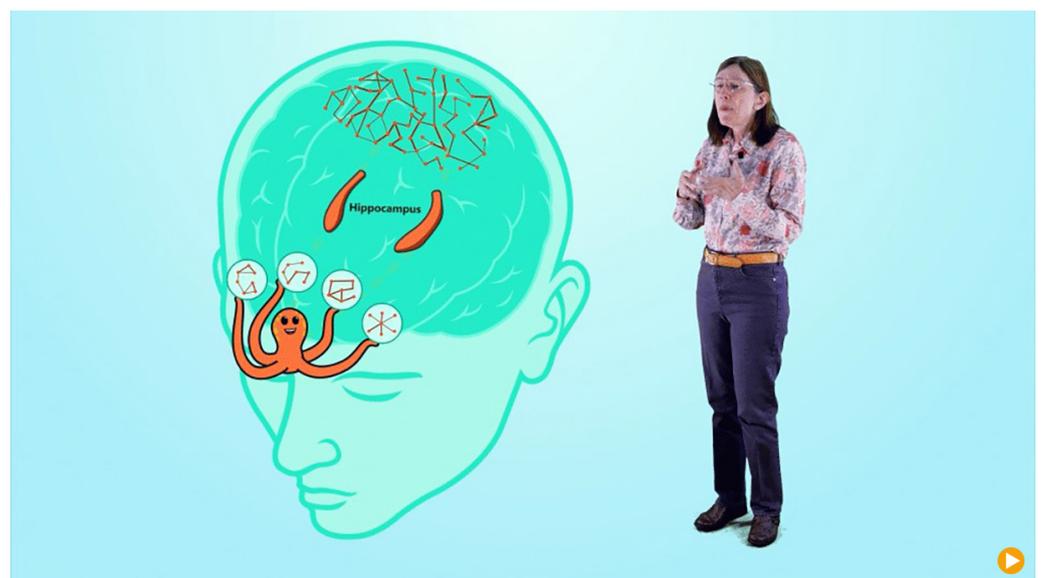


Fig. 16. Creating the animations was the most complex and time-consuming part of the video editing process

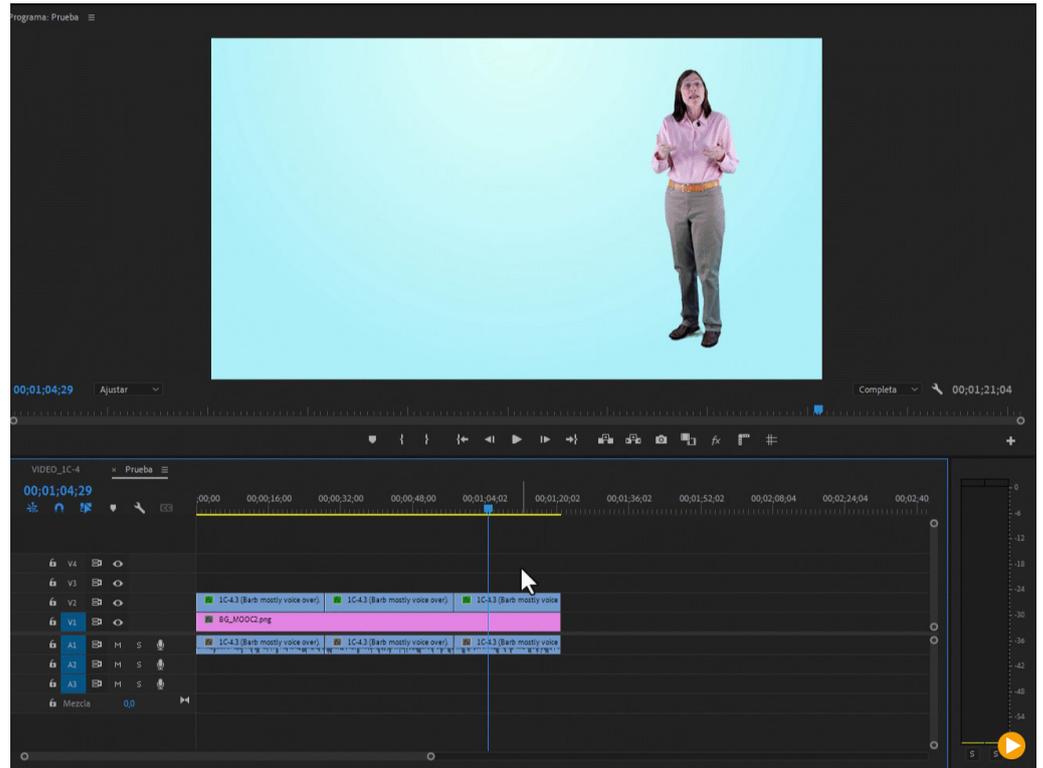


Fig. 17. The illustrations were then taken to Adobe After Effects along with the trimmed video clip in Premiere Pro

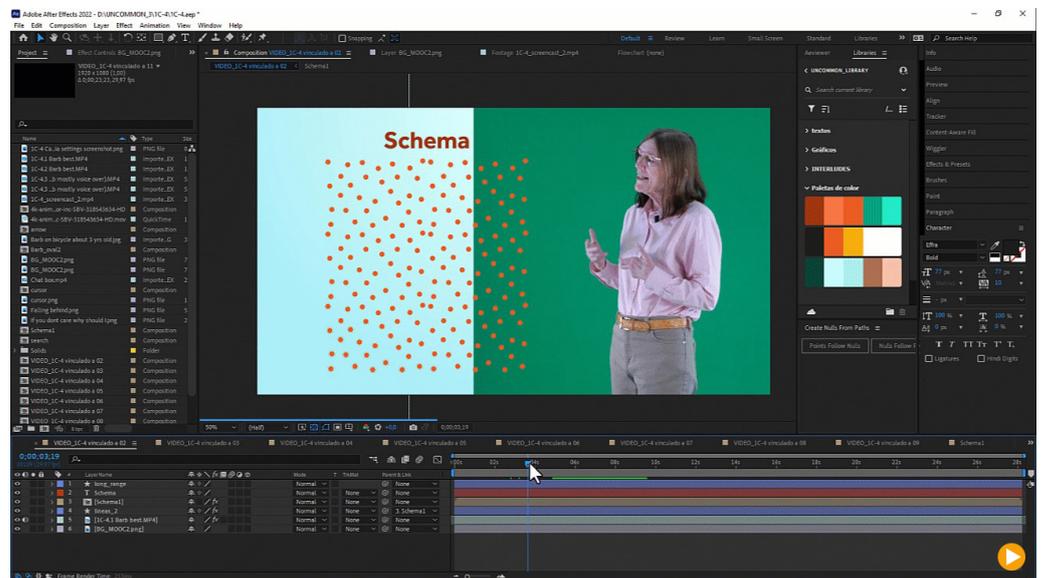


Fig. 18. All adjustments made in After Effects are reflected in Premiere Pro. When the animation is finished, the talent and background video layers are deactivated so that only the animation remains with a transparent background in Premiere Pro

### 3.4 B-roll assets

Working with green screen allows us to add different assets along with the talents. The assets can be placed to the side, behind or full screen, covering the talent. Storyblocks.com and Wikipedia supplied many of the b-roll assets (Figure 19).

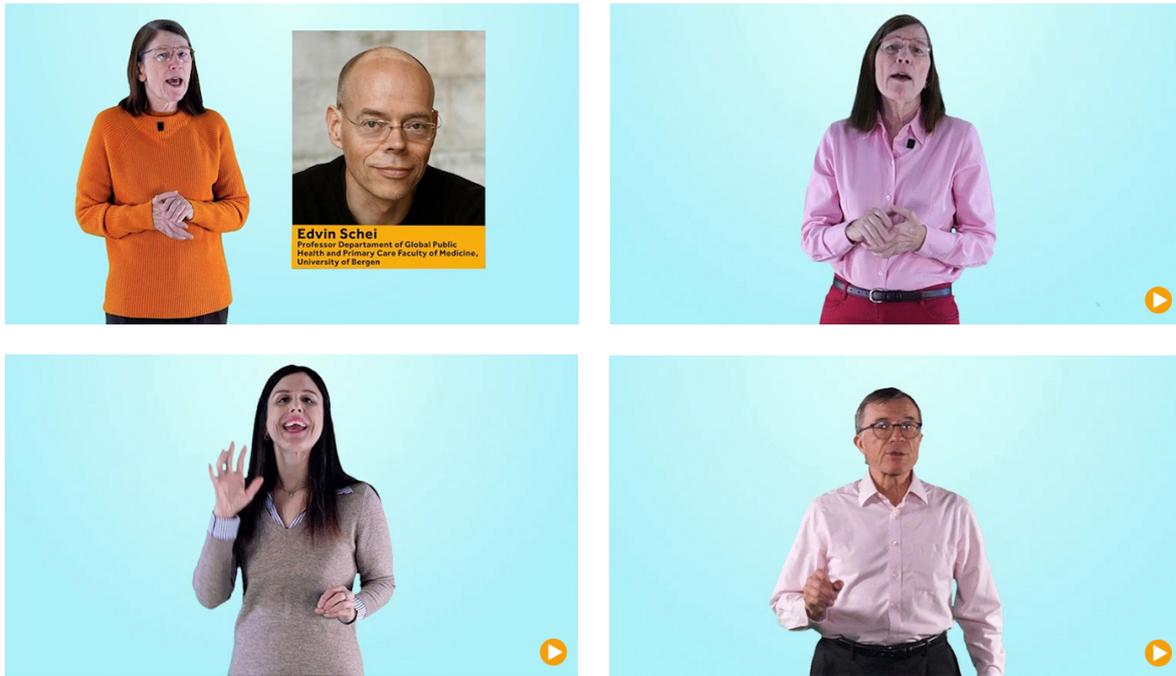


Fig. 19. Various approaches to using B-roll assets

### 3.5 Adding text; intro & interlude templates

Although our text animations were simple, in some cases, we took advantage of the hand movements of the talents to create an effect of interaction with the texts. Different sizes and colors were used, depending on the importance of each one. Easily reusable templates were created for intros, outros, and interludes (Figures 20 and 21).

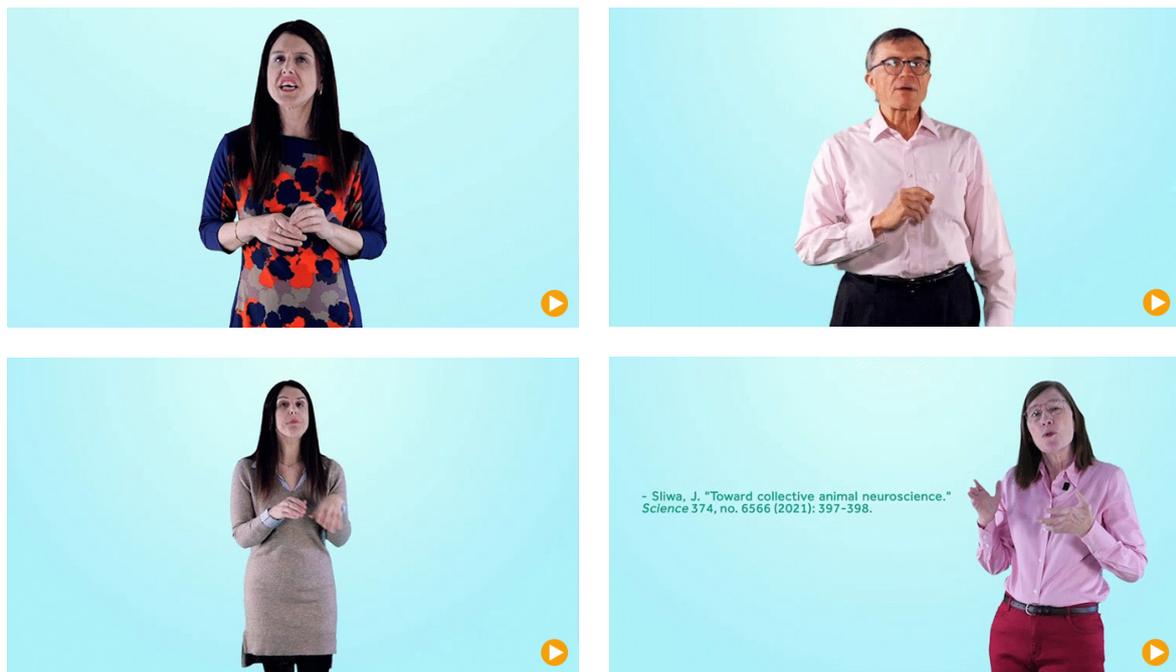


Fig. 20. Various examples of how text was added to the videos

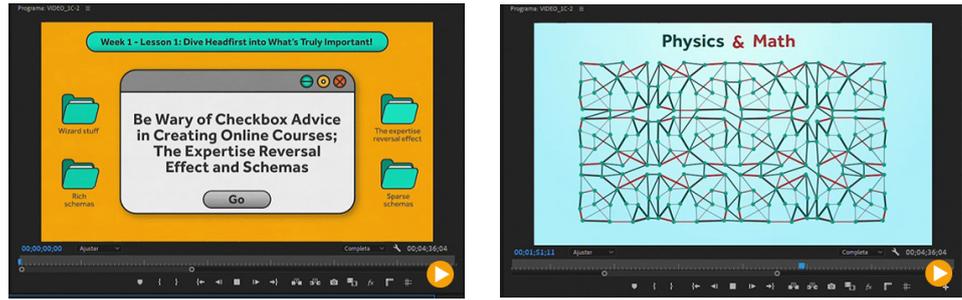


Fig. 21. We created simple and practical templates for intros and interludes that could be easily modified

### 3.6 Finalization and audio post production

Once the video production team edited the first draft of a video, the draft was sent back to the “instructor-talents” for review using Frame.io, a platform that allows for easy video marking up (Figure 22, top and bottom). Sometimes a complicated video with complex hand motions and animations might be reviewed half a dozen times or more. It could at times be difficult for the instructors to see how to visualize specific ideas—this is when the creativity of the video editing team was invaluable.

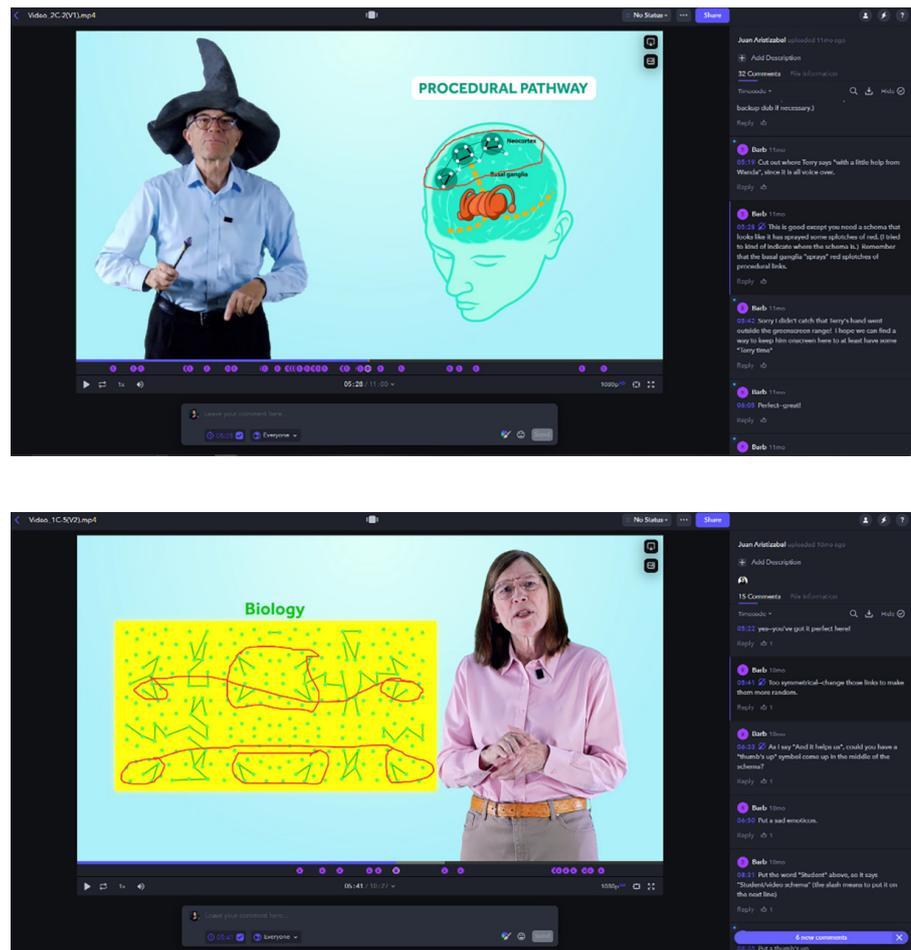


Fig. 22. (upper and lower). Frame.io allows an instructor to put annotations at specific points in a timeline, providing guidance by drawing by hand using a scribe on the screen and typing comments on the side. A video editor can then jump to each particular comment point (indicated by the purple dots on the timeline) to make changes as needed

Once the video editing was approved, the almost-final audio was sent to the Audio Post Producer. At this stage, the audio volume of the various talent’s audio microphone recordings was adjusted, and filters were applied to improve the sound and remove noise. The final, cleaned-up audio was then added to the video timeline in Adobe Premiere Pro, ready for export and delivery. When finished, the entire timelines for a video were often quite complex (Figure 23).

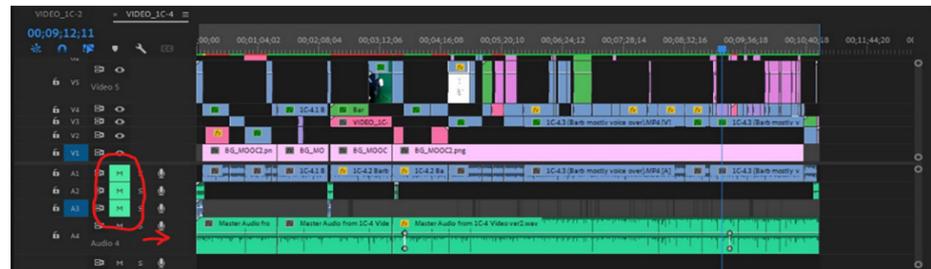


Fig. 23. The finished timeline of a video resembles an immense puzzle

#### 4 RELEVANT DEMOGRAPHIC AND STATISTICAL INFORMATION

For learners, completing an entire three-course specialization over three months can be difficult, and this is reflected in the 8.5% completion rate for all learners, including those who audited (did not pay). For paid learners, the completion rate was 15%. We were unable to find typical completion rates for entire specializations. However, the usual completion rate for individual courses (MOOCs) is below 5% [6], [7]. As seen in Figure 24b, each of our MOOCs achieved more than double the typical completion rates. A sense of where the drop-offs occurred is given for the first *Uncommon Sense Teaching* MOOC in Figure 25.

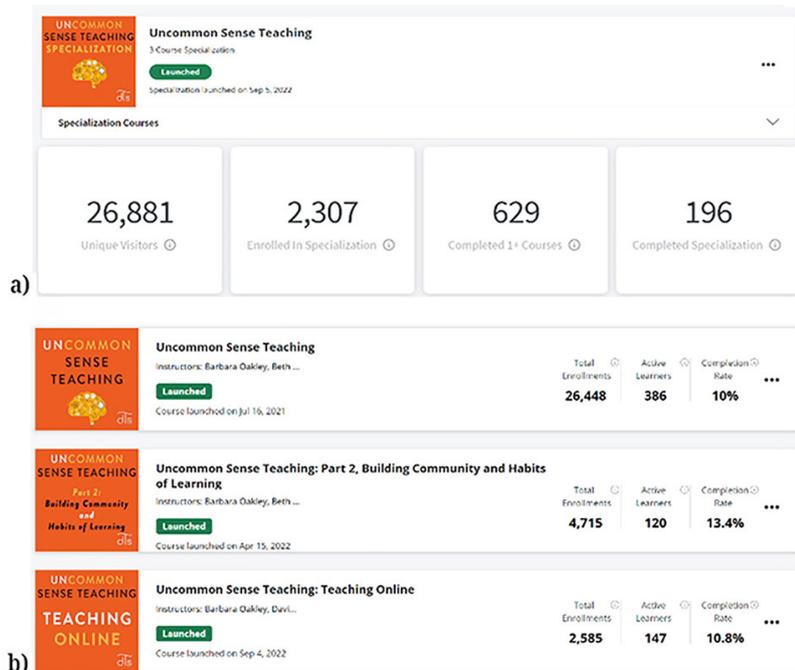


Fig. 24. [a (above) and b (below)] Above (a) are the statistics for enrollees in the complete specialization since its opening on September 5, 2023, through July 16, 2023. Below (b) are enrollment data for the courses within the specialization, which opened on different dates, as noted in the imagery

**Uncommon Sense Teaching: Part 1, The Foundations of Inclusive Teaching** 2,547

	User Category	Total
	Checkpoint Desc	Drop Rate
1	Enrolled in Course Branch	0.00%
2	Module 01-Started Item	36.95%
3	Module 01-Completed Item	4.04%
4	Module 01-Started Assessment	30.90%
5	Module 01-Completed Assessment	7.94%
6	Module 01-Completed Module	0.00%
7	Module 02-Started Item	4.31%
8	Module 02-Completed Item	0.90%
9	Module 02-Started Assessment	6.36%
10	Module 02-Completed Assessment	0.97%
11	Module 02-Completed Module	0.00%
12	Module 03-Started Item	2.61%
13	Module 03-Completed Item	0.67%
14	Module 03-Started Assessment	4.05%
15	Module 03-Completed Assessment	0.70%
16	Module 03-Completed Module	0.00%
17	Module 04-Started Item	0.71%
18	Module 04-Completed Item	0.00%
19	Module 04-Started Assessment	1.07%

**Fig. 25.** Drop off points for the first MOOC (Part 1) in the *Uncommon Sense Teaching* specialization. Most drop-offs occur at the beginning—a typical pattern

## 5 FEEDBACK

The overall feedback for the courses and specialization is remarkably positive. Individual courses received an overall rating of 4.9/5.0. The specialization as a whole (which only began accumulating ratings after it was activated on September 4, 2022) has received a perfect score of 5.0/5.0. Here are a few sample comments, which also testify to the course’s international nature.

- The course is incredibly well-organised, and it’s a great example of how I can use Directed Instruction to make my lessons far more effective. Just wanted to say a huge thank you to all three of you for helping me learn and grow as a teacher through this brilliant course! Thank you!
- I enjoyed every minute of your lecture as well as your marvelous sense of humor.
- I am Novita from Bali, Indonesia. I am a Kindergarten teacher in an international learning center in Bali. I love the way you are teaching in this online course.

It gives me a lot of insights about teaching that I haven't learned and known. I learned many new things about how learning is and started to apply it little by little into my classroom and my teaching method ... Thank you for sharing valuable knowledge to teachers around the world!

- I have been working as a teacher for more than 20 years, but we were never—neither at the university nor in continuing education—explained to us how memory works, what neural connections are underdeveloped during learning. However, during the planning of the educational process, this aspect must also be considered when choosing the appropriate teaching system and methods.
- Superb! A must for all teachers— aspiring and veterans. This course is filled with practical insights to experience an effective teaching journey. I believe teachers who practice the principles stated in this course will easily develop students' desire to learn and make the desire a reality by equipping students with quality tools that will aid life-long learning.
- I'm an elementary school teacher in Nigeria, and your course has been so insightful that I plan to review it every month to ensure I internalize the principles taught and apply them effectively in my classes.
- Uncommon Sense Teaching is truly an exceptional course!
- I really appreciate the time you took on preparing all the materials and the way you structured and explained everything.
- My name is Olamide ... from Lagos, Nigeria. I am a key stage one classroom teacher. I did enjoy the course, Uncommon Sense Teaching. I loved the way you used personal experiences to explain the concepts being taught. I was definitely encouraged and I now understand better why I shy away from some subjects myself [like calculus!] better yet, I understand better how to learn more effectively, personally speaking, and of course how to be a better teacher/guide for my students.
- A rich learning experience that layers excellent content about online learning with concrete actionable guidance I can implement in my courses right away. This combined with a wealth of resources including online tools and an in depth reading list. Then it is all brought to life by the course structure and delivery— Dr's Oakley, Sejnowski, and Joyner don't just talk about how to teach effectively online, they do it. Thank you for creating a great course to cap off the other two courses.

## 6 COSTS

It is difficult to estimate the true costs of the specialization in that this work was a labor of love on the part of each of the four instructors, who ultimately received small royalties from certificate fees on the order of book author royalties. Studio costs for the production were virtually zero in that the existing studio materials at Salk and in South Dakota were already at hand.

From our perspective, the bulk of the expenses involved the video editing. Due to the extraordinary complexity of the many custom animations made for the course, video editing was budgeted at \$100 per finished minute of video. Editing for the entire 15-video-hour specialization thus came to roughly USD 90,000. Although this may seem high, budgeting in this way allowed the course creators to not worry overmuch about taking advantage of the team of video editors,

who not only had many animations to create along with their regular editing duties, but who frequently had to revisit their editorial efforts half a dozen times or more as each draft video and animation was reviewed and re-reviewed by the instructors. One instructor (Barb) was the final reviewer for every video, to ensure quality and consistency.

Aside from ensuring the video editing team was appropriately reimbursed, every effort was made to keep the course cost and related materials as low as possible. Coursera has been very supportive and supplied the bulk of the production funding.

From a learner perspective, the vast majority of the coursework, including all videos, can be accessed for free by “auditing” the specialization on the Coursera platform. If a student elects to pay for a course, this can be done for approximately \$50 per course—less in developing countries. Payment can allow for receipt of certificates upon successful completion of the course, which can in turn be used by those completing the courses to apply for continuing education credits. Scholarships are available from Coursera for those in need.

In an era when course credits and professional development can be expensive, the \$150 cost of the certificate for the three courses of the complete specialization is notable—it is less than the cost of many textbooks. The specialization’s accompanying non-mandatory textbook, *Uncommon Sense Teaching*, by Oakley, Rogowsky, and Sejnowski, Penguin Random House, 2021, is currently priced at \$14.00 on Amazon—a very low price for a textbook. It is worth reiterating that the specialization’s three online courses are independent of the book.

## 7 CONCLUSIONS

Our conclusion after making the specialization is that teaching online, in fact, can allow instructors to bring ideas to life in an animated fashion that is impossible to achieve through the still pages of a textbook, or even in straight “real life” classroom teaching.

The process of both book writing and online course creation can allow for genuinely novel and creative approaches to teaching that result in materials that can be invaluable supplements to any instructor’s everyday instruction. When it comes to teaching about pedagogy, the economies of scale supplied by a well-made massive online set of courses can allow teachers to understand new, neuroscientifically-based approaches to pedagogy despite the difficulties and costs of assembling a top notch team. But there’s more—teachers who take the online courses can also receive animations and PowerPoints that allow them to build out on these ideas and approaches, so they can also teach about these foundationally important ideas within their own communities.

In short, with care, current technologies can allow for outstanding online teaching materials that are useful to thousands. But creating such materials involves care, attention to detail, a top-notch team, and genuine passion for teaching.

## 8 ACKNOWLEDGMENT

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## 9 REFERENCES

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