Overcoming barriers to learning in large classrooms using simple technologies & techniques to facilitate learning for all
MP4 Video Transcript

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I'm gonna talk to you about overcoming barriers to learning in large classrooms. Using simple technologies and techniques in a large classroom setting to facilitate learning for all.

So if you don't know who I am, I'm an assistant professor up at Colorado State University in Fort Collins. I teach general microbiology and immunology, all semesters. My classes range in size from about 100 to 150 students.

My department, which is microbiology, immunology, and pathology, is part of the College of Veterinary Medicine and Biomedical Sciences. So there's a vet school associated with my college. And therefore, I have a lot of pre-vet students. I have a lot of pre-medical students, pre-med students, pre-PA, pre-dental, students who are going to go on and do research, either in industry or academia. So a wide variety of students. And they range from sophomores, juniors, seniors, some graduate students.

The general micro class that I teach is the first one that the major students are going to take. And then immunology is the second one they take. And these are prerequisites for all the rest of their classes.

So I also have students who are in biomedical sciences, not just microbiology majors. I have biology majors. I have some pre-nursing students. Although there's another class that we offer that's more applied. That kind of gives you an idea of the students I'm working with.

So I'm gonna talk about how there's a change in the landscape of higher education. And that we're not so much the people who now have to give all this

information to students, like it was in the old days when I was a student. And my professor just knew everything, right?

There's too much information nowadays. Students have gobs of it at their fingertips. And so our jobs now-- I think, or my job, the way I see it-- is to help them learn how to think, and how to think under pressure, and how to think critically like a scientist. Because they're going to go on to do these scientific kinds of careers. And so I'll kind of talk about how I try to achieve that in my classes.

Talk about some of these technologies like the lecture capture, i>clickers, things like that. And then some not-so-technical strategies that I use. And then I'll finish my talk by showing you how I use UDL, or how I've incorporated UDL into my courses. Like I said, I have a long way to go, for sure. Which is why I'm glad I'm here today.

So I always start my first lecture, first slide of the semester, with this. So I ask my students to look at this graph and ask themselves how do they learn. And I'll have them turn to the person next to them and rank these types of learning shown there on the right side of the slide on this graph. I give them two minutes. I was going to have you do it. But for the sake of time, I'll hurry up and we won't do that.

But what I have them do is just to rank those types of learning on this graph according to if you have average retention rate there on the y-axis, and then the types of learning on the x-axis. All right. So we do that and see that teaching practice, discussion, and demonstration are the top four ways of really learning and retaining information.

And so I try to incorporate activities into my classroom that are going to hit on those top four ways of learning. And I make the students aware of this is really how you're going to learn the information is you need to teach it to somebody else. If you really want to learn it, you're going to probably retain up to 90% of what we talk about in this class if you teach it to someone else.

I tell them that constantly throughout the semester. And I give them opportunities to do that, practicing discussion and demonstration as well. And then we see at the very bottom of that graph, lecturing. 5% of what we lecture to the students is retained. And yet, lecturing persists. And I'm guilty. I lecture a lot.

So I would asks you this clicker question. I'll just let you read that.

So what do you think the answer is? E. Right? Right. Kind of an easy one.

Yeah, so I think lectures persist because we feel more comfortable lecturing. I know I do. That's how I learned. It worked for me.

Lectures aren't all bad. Right? There are things that it's just is easier to tell them. And I think there are some things that just need to be delivered that way.

Lectures are cheap. You really don't need any props or anything special to do that. In fact, you really don't even need a chalkboard. You could just get up there and blab.

Most campus classrooms are set up for lecturing. All of my classrooms are set up for lecturing. They're stadium seating. Some of them don't even have desks. It's really annoying.

And then I would also add another point here is time. We're constrained by time, right? I have a 50-minute lecture.

So it's hard for me in a class of 150 students to do activities every single day. It takes time to pass stuff out, to collect it again, to go through with the directions and what they need to do. What else? Yeah. I think that's good.

OK. So the technical stuff. i>clickers, I use those a lot. Lecture Capture. And then this annotated PowerPoint, which I'm going to show you here in a second.

I use i>clickers a lot. Do you guys use them? Or use something like it? Who uses some sort of response system? Some people. OK.

That's really great. I use them a lot to-- you know, I'll lecture for a few minutes. And then I'll stop and I'll ask a series of questions based on what I just talked about. And if it looks like the students are getting the right answers, then we'll move on. And if they're not getting it, we stop and we go back. And we explain it in a different way if we can.

I also use it for just immediate feedback on how my course is going. So when you talk about formative assessment, that you're going to want to collect before the end of the semester arrives, you can do this throughout the entire semester. And

it's anonymous if you want to make it anonymous. You tell them this is an anonymous clicker question. And I think that helps get really honest feedback.

So I'll ask, how's my pace? Is this going OK? And then I get good feedback on that. For instance.

Or do you like how we're using technology? That's not the question I would ask. But something like that, so I can get a handle on how do they feel about how things are going for them.

I use clickers for quizzes. So I'm gonna talk to you about group exams that we give the students. And then I use the clickers in conjunction with those group exams to make sure that everyone's working on the group exam. They're not just slacking off.

So I'll explain this later, but basically they're going to sit there and answer up to 15 questions on their own using the i>clicker. It's super awesome because it's graded for me basically. And I can upload it right into my grade book. 150 students. That's pretty awesome.

And then I like to do think-pair-shares with my students. So if I were to ask a question and get responses like this where it's just-- let's say C is the right answer. But it looks like that. Or maybe even B is the right answer. And it looks like that. We stop. And I say turn, to the person next to you and explain to them why you have the right answer.

I give them about one to two minutes to do that. And then I re-poll them. And it almost always goes to the right answer. Occasionally it doesn't. Occasionally we go to a completely different answer. And then we talk about it. We talk about misconceptions that maybe led to them selecting the wrong answer.

So then I would pose this question to you. Making recorded lectures available to students always decreases class attendance. Who thinks that's true? Who thinks that's false?

OK. So in medical schools-- many of them. I've read papers on this, that oftentimes they will see a decrease in class attendance if lecture captured videos are made available to the medical students. They have so much to do, right? And so they'll stay home and they'll watch the lectures.

So we were afraid when we started using lecture capture up at Colorado State University, that students would stop coming to class. Right. If they can watch the lectures at home, are they going to come?

And so we did this little experiment. We looked across six to seven-- I think it was seven-- semesters, different classes, and looked at attendance before and after lecture capture is made available. And you can see that before lecture capture was available-- oops. Before lecture capture was available, on the left there, we had about 83% of our students showing up for class every day.

And then after we started making our lectures available by video, 83% of students came to class. So attendance really did not change, which was awesome news.

Yes.

Did you do any studies about what the grade difference was?

Nope.

OK. You don't actually know whether--

No. Nope. I haven't looked at learning connected with this. But that would be interesting.

So we use Echo360 software up at CSU in Fort Collins. We used to use Panopto. I don't know why we quit. I don't know if that was ever disclosed to us.

And before CSU adopted these softwares, I used to use my own Camtasia, which was I think a couple hundred bucks. And it was really awesome, actually. That one had more capabilities for editing and whatnot. But it kind fills up your computer. It takes up a lot of space.

OK. So annotated PowerPoint. How many people use something like this? Anybody tried this in class?

So I have a tablet PC. So this is a touch screen. And it allows me to write on my PowerPoints. You can also do this on Word documents.

So you just select your-- and it has a pen. And I can write on it and draw pictures. So I'm an immunologist. So here's a CD4 T cell that's TCR. And it interacts with--

and I'm not an artist. Maybe it interacts with a dendritic cell that's presenting some piece of a virus on this little molecule here. And now this CD4 T cell can interact with that dendritic cell and do nasty things, right?

So I think it's really valuable to have something like this. It's sort of remindful of the old chalkboard days when professors would just get up there and draw pictures. And I learned like that like crazy. Although there were times when I didn't really understand how things fit together.

And so my classes are-- well, the notes that I provide for my students are really just an outline of what I'm going to be talking about. So they can see headings and subheadings and how everything fits together. They can see the framework for what we're going to talk about in that day.

I like being able to use PowerPoint or Word or whatever to show pictures and figures from the book that I couldn't draw, right. But I still think it's nice to be able to draw sometimes. Because it makes the students more interactive. And they're interacting with that information in a different way than just staring at it.

Right. So it's like using the chalkboard, but with benefits, is the way I see that. And I'll show you an example of what my notes look like that the students download.

So back to this whole tablet PC. You can get something like this. The thing I don't like about it honestly is that it's really small. Some people might like that it's really small.

But you can also get external tablets that you just hook to your regular laptop with a USB cord. And those are really awesome as well.

Some not too technical strategies that I use. So I kind of talked about group exams. So what we do is we have the students form groups. So on the first day, or the first week of class, they get into groups of three to five students. And they're going to take four group exams throughout the course of the semester. And that means that I'm going to make the group exam available.

I post it on our learning management system, RamCT. The students download it. They work together outside of class on that group exam. It's really just a take home homework assignment. But we call it a group examine and they get all freaked out, right.

So they work on that outside of class. It's open book. It's open internet. It's open other groups. It's open to professors. You can talk to whoever you want. You work on this.

And then it when it's due-- it's due a week later-- they'll come to class. We devote a whole class period to this. They have the first 15 to 20 minutes to work on it together and submit one document as a group. And they all put their names on it.

They hate this in the beginning, because they have to coordinate their schedules. They hate it. They hate it.

And by the end they realize, whoa, that was probably the most useful tool in the class. It's collaborative learning, right? So we can do problem-based learning, collaborative learning, and pure teaching. That's what happens with these group exams. And you can see the students working together on these.

And then they hand in their document, right, at about a quarter after the hour. And then they take the clicker quiz. So then they're taking this quiz individually. And they have to do well on that.

And if they don't get a certain score on it, then they will get that percentage of what the group score is of that group exam that they handed in. So I'm really trying to get at the students that are slacking off. Using that clicker quiz is a way to do that.

Oh. And then the types of questions that I ask on the group exams are really hard, right? Because they have so many brains working together. They're really hard. And then the students get really good at it. And they figure out, OK. These are the concepts she wants me to hone in on to, and that she wants me to understand. And then I'm gonna ask them hard questions on the individual exam.

But I would never ask those questions that are on the group exam for the first time on an individual exam. Because that would just be too hard and not fair. So I let them practice the information on the group exams.

I also use cheat sheets. I just started doing this. And it has been awesome. I thought at first, well, I don't know.

But what's been awesome about it is it forces the students to move beyond memorization. So I talked about in the beginning how our job isn't really now to just give them lots of information. Right. It's to teach them how to think like a scientist.

So the cheat sheet allows them to put down all that stuff like list some things that they would otherwise memorize, and make all those little mnemonic devices that they're certainly going to forget. Put all that down. And then I can ask them questions that force them to think about that information, to apply the stuff that they probably wrote down onto the test. Apply it to new situation on the test.

So it forces me-- probably most importantly it forces me to write questions that are higher level questions on Bloom's Taxonomy Pyramid. OK. So moving away from this memorization part of the pyramid, and up to these higher order thinking skills, right. Like applying, analyzing, evaluating.

So, it's challenging, because I write about 35 multiple choice questions per exam. And I write new exams every semester. So it's hard. It's hard to write these higher level order thinking questions over and over.

And then 30 points. So 70 points are multiple choice. And then 30 points are written. So that's how I do that.

They can write it. They can use both sides of the sheet of paper. Or they can type it. I think that's an important thing, because some students have a hard time writing. So they can do whatever they want.

And then they can use these cheat sheets on exam one. And then they can take exam one cheat sheet and use it for exam two. And they can develop a new one for exam two. So by the time they get to the final, they have four cheat sheets that they can use.

But I tell them as we go, do not rely on your cheat sheet. The cheat sheet is not going to give you an A. You have to be able to use that information. And they hate that in the beginning too.

I mean, I remember when I graduated from college. And I thought, oh gosh, I was a really good memorizer. And that's pretty much all that was asked of me. And I did well.

But I always felt bad, because I wasn't sure if I could think critically. That's terrible that I didn't know if I could think critically.

So I tell my students this story in the beginning. And I say, I don't want you to leave college wondering if you can think critically. I'm going to teach you how to. And you're going to see. It's not going to be fun in the beginning. It's going to be better on the second exam. The third exam you're going to get the hang of it. And by the final, you are going to be crushing it.

And that's the case for the students who really apply themselves. They actually do get there. And it's fun to watch.

So, another not so technical thing that I do are some hands-on models and classroom flipping. I don't have time to talk about both of these. So I think I'll just talk about that first one.

But first, classroom flipping. Right? This is kind how you guys probably feel right now. Classroom flipping is really gaining momentum at Colorado State University.

There are pilot studies going on right now. And there are classrooms that have been renovated to allow for classroom flipping. Where you know, the desks are round. Big round tables. And they can all be pulled apart and reconfigured so it could look like this room.

It's just really amazing. Everything's on wheels so it can move around. So I think that's really great.

But why classroom flipping? Because 5% of the information that we've lectured to students is retained. So we need to do something different.

And so in both of the activities that I was going to present to you today-- at least in the one. Or both of them. I'll present one. The students were asked to watch a lecture capture before they came to class.

And it was about 30 minutes long. Maybe a little longer than I would like. I think a 20-minute lecture might be better. Something a little bit shorter. But I'm working on that.

So they have to watch that before they come to class. And then when they come to the class on that day, we do an activity for the whole class hour.

So when I design an activity, I always think about what is the learning goal? I want, for instance, in this activity the learning goal was that my students-- so on this box here-- my students will understand that one antigen can have several antibody epitopes, or binding sites.

This is a concept that's hard for students in the immunology in the beginning. So that learning goal uses sort of lofty language, like understand. What does that mean?

The student has no idea what I mean by understand. They might think they understand it. But when I test them on it, they didn't understand it, right?

So the learning outcome for me is really important. The learning outcome for me is where I use very strong verbs. Right? Action verbs like, students will be able to demonstrate that one antigen can have more than one epitope, or more than one antibody binding site. OK, so that's how I start.

And I say, well, how do I design an activity that will be useful to all the students in my classroom, and that will allow them to achieve that demonstration? So I designed this activity. Well, actually in conjunction with another professor at CSU.

This activity allowed students to match antibody light and heavy chains to corresponding epitopes, or antibody binding sites-- on a viral antigen that was produced by 3D printing. So they have these little pieces that they have to manipulate in this activity.

OK. So that maybe won't be accessible to all students. So I have a little asterisk there showing OK, well, so this is a hands-on sort of model. What am I going to do for the students who can't manipulate those pieces? So that's the challenge for some of these activities, for sure.

Assessment for this. I do formative assessment using clickers. So as they're doing the activity, I can ask them questions to make sure that they're focusing on the right stuff and that they're getting it. And then I do summative assessments. So of course if I devote a whole class period to it, they know that they're going to get tested on this on the test, on the exams.

So the model's kind of cool. Are there any immunologists or microbiology people in here? Or biology people? Yeah.

So this is really cool. This was an honors project for two students who were really good at this kind of 3D printing stuff. So what they did is they took this electron micrograph-- I think is how they did this-- of the influenza virus. And then they somehow that file-- I don't really understand it, to be honest with you-- that file gets converted to something that allows them to print it.

And so it actually can be very accurate in terms of what that virus really looks like. But we changed it a little bit to make the antibody binding sites super obvious. Like we gave one of the antibody binding sites a pointy cone shape, and then one of them a very round spherical shape. Just to make it really obvious.

So this isn't exactly what the influenza virus looks like. But that 3D printing can print things that are exactly what the virus looks like, which is mind-boggling to me.

So the influenza virus has two what we call antigens. And they're proteins that are on the surface. One is called neuraminidase, or NA on the figure here. And one of them is called hemagglutinin, HA. And we're gonna focus on the HA, this one.

So notice how-- these epitopes are really fun. Fun shapes, right? And then it even has M2 ion channels. Whatever.

So just to show that this is pretty accurate. And then we cut the virus in half so that we don't have these big huge bulky models. And they're just cut in half. And they sit on the tabletop really nicely.

So we want to show that HA is an antigen, right? It's a big protein. And it's got multiple antibody binding sites. One that's shaped like a cone, and one that's shaped like a sphere. So we're trying to get to that learning outcome, right.

So we have these antibodies now that are magnetized. Where we have light chains and heavy chains with the antibody. And they're magnetized so you can attach them together, you can pull them apart.

So we have two different antibodies. And they have different light chains. And if you put this light chain right here, this little piece with this big heavy chain, it's

going to create this round binding structure. And if you put this little light chain, it's called, with this big heavy chain together, here's where the magnet sits in this little hole, it creates a binding site that has a cone shape.

Can you see that? Can you see that up there? I wish I had the actual model too, so you could hold it and see what it's like.

So in other words, there are four possible combinations where this green light chain pair can go with the red. Or it could go with the yellow. The little blue bits could go with the red, or they could go with the yellow. So there are four potential combinations for these antibodies to bind to this virus.

So then as they're doing this, as they're playing with those little pieces and figuring out what the right combinations are in order to have an antibody be able to fit like a lock and key to either this pointy bit-- oops. This little pointy bit, or the round epitope or antibody binding site. Then I'll ask them questions as we're going.

So they have the pieces. And they can then look at this question. What epitope or antibody binding site does the combination of heavy chain red and the light chain green bind to?

So they play around with it and they figure it out. They should select B. So it's sort of maybe hard to appreciate unless you have the little pieces. But it's sitting right on top of one of those little pointy pieces.

And then the other activity I was gonna show you, I design it the exact same way. I just wanted students to understand the relationship between genes and proteins. Well, what does that mean? Do you really understand it?

So I want them to actually to be able to generate a piece of messenger RNA from the DNA, and then make protein from that messenger RNA. That's what I want you to be able to do. Sure, we could do that with a piece of paper and some letters. Could do that. Or, we're going to use a model, which is what we did.

So I have a magnetic board. I created little magnetic pieces again. Manipulations. So if a student can't do that, I have to come up with a different way for them to get the same thing out of this sort of activity to meet that outcome.

So if they get the right protein it should spell rams, which is our mascot. And this just a picture of my students working on this type of thing. But notice the classroom. Not super conducive to active learning. Although it's not terrible, because it's kind of this long counter type thing.

They can't move around very much. It's hard to even squeeze into those desks or their chairs. So I'm really, really excited that CSU is changing the classroom environment at CSU.

So then I ask them clicker questions too as we go, to make sure they're following. And it gives them feedback. First of all, it tells a student how I ask questions. And it provides feedback to me so that I know if they're following along. And it also tells them what to focus on. They might be thinking about something totally off. And this, I think, helps guide them in the right direction.

So in these particular activities, manipulating the little pieces were really useful for kinesthetic learning, which a lot of scientists are. That's where we learn the most probably, is at the bench when we're actually doing stuff.

It also promotes group learning or fostering student talk between each other. And then peer teaching. So that's the best way to learn. And I keep reminding them of that, of course. And then the clickers gives me that sense of if they're understanding and the things that we've talked about here.

All right. So how do I incorporate UDL in my course. So the lecture capture I think is a nice tool, because it allows my international students who-- English is not their first language. It allows them to-- they can slow the rate of my speech down, which probably sounds really funny. Or they can speed it up if they want to. Some students probably do that.

They can pause it and rewatch something over and over again if they're not catching on to the words what I'm saying, just from going to English it might be hard. So I know I've spoken with a lot of them, and surveyed a lot of them and they love the lecture capture. And it's essential to their learning.

Nontraditional students also love it because some of them work 40 hours a week and they have families. So this allows them to not come to class if they can't come all the time. Although they're some of the best attenders.

They're usually so motivated. But there are times when they can't come. Maybe they're commuting from Denver or something like that. So I know it's very useful to them.

And then students with different kinds of learning disabilities also benefit from this. I will say that at CSU, we do not have captioning of our lecture captures. I was just in a meeting this morning where they were talking about a new initiative that has been launched at CSU to start captioning these lectures.

But at the moment, the technology that we have, it would cost $3 million to $5 million a year to caption all of the lectures that are coming out of CSU. So we're gonna have to do something. Maybe produce short little snippets of things that could be captioned at this point. But I honestly don't quite know where that's headed at the moment. But at least it's promising that captioning is happening.

Now I know that you can create captioned lecture captures for students on a student-to-student basis. The ones that need it will go to the resources for disabled students. And then the captioning will be done for that student.

So I was mentioning that my students are able to download my notes. And my notes are basically what they will see on what I call the overhead. Kind of old school.

So my overheads are the PowerPoint slides. And they are skeletons, basically, like I mentioned before. And then I just copy-- well, that's not exactly true. But basically what they see on their notes is what they see on that overhead.

I create lots of white space for drawing pictures or writing text if they want to. So I upload those as Word documents. And they can use those. Or they I also upload them as PDFs.

All of the accessibility content should transfer if you do it correctly when you convert a Word document to PDF. And I'll show you that in a second, too.

I don't worry so much about accessibility with my PowerPoint in terms of what-- because I don't give them my PowerPoints. So the things that I think about when I make my PowerPoint slides-- and I know there's room for improvement-- I try not to use-- when I use my little pen, I always use black or a dark ink. I try not to use red for colorblind people, for instance.

I try not to depend on color to convey any meaning on my slides. But they're never going to get a hard copy of my slides. They're just going to get a Word document or a PDF document.

So this is an example of just part of a piece of paper that they could download. Here's this enzyme lysozyme. It's an enzyme found in-- and I'll be talking about it. And they'll need to write down where that enzyme's found.

So it tells them, oh, she wants me to know where this is found. And then the mode of action. Oh, I need to know the mode of action. So I leave a blank after that so they know to do that.

Here's an example of something I would not care to draw. So I can just put this in there and show them that this enzyme breaks this bond right here. And it breaks apart these sugars. And that then disrupts the cell wall of the bacteria that we're talking about.

So this is what they're going to download from the RamCT, is what we use. So I have to make it accessible, right? So how do I do that?

So I go to File. And maybe this is a good springboard to the workshop that's coming up. I'm not sure.

But I just go to File. So this is what you'll see if you go to File under the Info tab, which is under the File tab. You click on the Check for Issues. And it'll come up with this little window right here.

And this will check for accessibility in your document. What that's going to do, is you're in Word, right? Working on this Word document. It's going to show you all the errors and give you warnings about what's wrong with your document. So this is really useful, I think.

Like for instance, I've highlighted on picture 2. This is picture 2. It had problems. It did not have that alternate text.

So you just click on that. And it even tells you down here, why fix it and then how to fix it. So it walks you right through it, which is awesome I think.

You know, Gerry talked about the need for an alternate text. And you guys probably already know. But this allows you to do that.

So you just click on that. And go to Format Picture. So you right click on this picture. And then you go to select Format Picture on that little menu. And this is what's going to come up.

And you're going to circle this guy. Or not circle it. I'm circling it. You're going to select this, whatever that little icon is. I don't know.

And it's going to bring up this alternate text for you. And then you want to write in the description what is in this picture. How would you verbally describe that picture to someone?

I've done a poor job of describing it right here, actually. I should go on to talk about-- so I'm saying this is treponema pallidum under a darkfield microscope. Well, I should give some more details.

You're gonna see a dark background. And the organism is going to be lit up. So I don't know why this is. And I'm sure people here do know this, but you don't want to write in the title for some reason. So you just leave that blank and fill in the description of your text. So then on a screen reader can read what's going on in those pictures.

Headings are another big-- this is probably one of the most important things that you can do to make your Word documents and your PDF documents accessible to people who are using a screen reader. So a lot of people just-- they don't use the true Word styles. The true Word styles are going to be up in your toolbar if you're working in Word.

Many people just bold or make the text larger. I know I was guilty of doing that. So what you will do is you'll just highlight the text.

So let's say it's the title of your lecture. You would highlight that. And then you can just go up here and select the title. Maybe make that the title.

And it'll change the text a little bit for you. And it'll make it different to a screen reader then the next heading. So you'll just highlight the next bit of text that you

want to be heading one. And you go up here and you say Heading One. Or you can take shortcuts and do Control Alt 1. That's another fast and easy way to do that.

So you'll highlight your text. And you go up to and select the heading level that you want to use. So it's pretty easy.

And then converting to PDF, you can either just go to File and say, make a PDF. Or you can go up to this Acrobat tab right here. So that's Save as Adobe PDF.

Or you can go to this Acrobat tab. And it'll allow you to select. This Enable Accessibility and Reflow with tagged Adobe PDF will be selected, most likely. I'd be surprised if it's not.

So usually it's just automatically when you convert to a PDF, all that accessibility information goes with it, as far as I understand. Which is pretty nice.

So other things that I think about. I try to use true numbered and bulleted lists. So that the plate reader-- we have plate readers in microbiology-- this screen readers know that they're looking at a list or numbered list. Use sufficient font size. 12 or better. Provide good contrast. So maybe dark ink and light background.

Not hazy gray or something like that for the text. Don't rely on color to convey meaning, because not everybody can see all the colors for sure.

Use true columns, not the little tab key. I don't ever really do this because I don't really understand how the screen reader see tables. And so I tend not to include a lot of those. Maybe somebody can help me out with that.

I don't do this, but you could provide a table of contents for a really long document, so the person knows where to go in the document. And then just using simple language is also helpful to many students.