

## In the Classroom 10

# See What Your Students Know Through Multiple Means of Action and Expression

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**Stan Skrabut:** Welcome back, thanks for taking time to listen to this podcast, I really appreciate it. As I've said over and over, you could be doing other things, but you're hanging out with me, so I really do appreciate it. In this episode, we're going to continue our look at Universal Design for Learning. Last week, we talked about the principle of multiple means for representation.

In today's episode, we're going to look at the principle of multiple means for action and expression and see how that all fits in with this idea of multimedia development because that's what my class is about for this specific term and everything that we have surrounds that. That's what we're doing, so sit back. We have a lot of information to cover and let's get to it. In episode number eight, we took an overall look at Universal Design for Learning and the framework. Then we dove in in number nine, and we focused on the principles for multiple means for representation.

Basically, that's taking a look of the content that you're supplying for the course and can individuals perceive it and understand it? Everything is wrapped around that. Well, when we talk about multiple means for action and expression, we're flipping that, and we're looking on how individuals can demonstrate what they know and also part of the action and expression is the individual's ability to navigate within the learning environment that you have created.

As we know, everyone has strengths and weaknesses and as educators, if we only provide them with one way to demonstrate their knowledge or their ability, then we could be limiting a lot of other students and we may not think that they are as capable that they truly are simply because they just are not good in demonstrating it using the method that we provided.

An example, if you have somebody who is dyslexic, when they talk to you, everything may just be absolutely fine, but when they start writing, an absolute mess, but yet, this is how we're evaluating them instead of giving them options. If you remember, I'm a huge fan of this Universal Design for Learning, is I like having choices or providing choices and having choices and I also like providing support.

When we're talking about action and expression, we're talking also about providing choice and support in those areas. There's three guidelines that fit under this multiple means for action and expression. The first one is physical action, that there need to be tools available that individuals can use in order to work with the content and be able to demonstrate that knowledge using the content and different ways of manipulating

that and we'll go into detail. The second guideline deals with expression and communication, that we give alternatives for composing and sharing ideas, that there's just more than one way of doing it.

Then finally, the very last guideline deals with executive functions that students have a way of setting goals, learning how to create strategies or plans to achieve those goals and know how to monitor that they're moving forward on those goals. Those are the three guidelines that sit under that principle of multiple means for action and expression.

Let's take a deep dive on guideline number one. Guideline number one focuses on physical action. When we look at this, this is really, the tools, we need to provide tools where everyone can interact with those tools equally. If you have somebody that is, say a quadriplegic, for example, and you're asking them to use paper and pencil, you're putting that individual at a disadvantage. It's not saying that you're making things easier, you just need to create a system that is equitable for everyone.

One way that you can help make it more equitable is that when you provide materials and content, that you do it where it's all digital, so you may be able to hand something out on paper in the classroom, but in your learning management system, you need to provide something that's also digital, so everybody has an opportunity to manipulate it within their capabilities. That they can use tools like assistive technologies that if you have somebody who cannot see and you give them a sheet of paper and ask them to read from it, it's pretty difficult, but if you give them a digital document, they have text to speech tools that can help them read that particular document.

Those are the kind of things that we're talking about. If you totally rely just on print materials, you could be leaving somebody out. Within this guideline, there's two checkpoints. The first checkpoint is having varied methods for response and navigation. I talked about this a little bit in episode nine, if you provide a video or an audio file, you need to also provide the controls for the user to be able to control it, where they can stop it, they can rewind it, they can also change the speed because somebody who is from a different country that English is not their first language, they may need to listen to it just a little slower. This is quite useful for them.

I happen to listen to podcasts at 1.5. I like to just zip through them. My wife who is from the Netherlands, she thinks it sounds like chipmunks, so she prefers to listen to it at normal speed. I also know other individuals who do not have the same command of the English language, want to listen to it like at 0.75. They make it just a little slower so they can listen to it. Other things that you want to do is alternatives for responding or indicating selections, for example, I mentioned this idea of pen and paper, right?

Not everyone can use pen and paper, right? That some individuals maybe do not know how to write with a pen and paper, so instead provide them with a keyboard or something that allows them to have keyboard controls. Or if you have a program where you're manipulating things with a mouse and somebody does not have that capability, do you also have keyboard controls that they can manipulate the program?

Have you ever worked on a computer and suddenly your mouse stopped working and you're trying to close things or you're trying to-- It can be very difficult if you are not familiar with the keyboard shortcuts, but yet, most programs have keyboard shortcuts to allow you to do a lot of these capabilities. It's just a matter of searching for them.

Then also having alternative input methods that for some people, they need a joystick, other people maybe it's done with voice commands, and we're seeing a lot more of that where you have like Alexa or Siri. I probably, sorry, if I've set some of those devices off, I apologize. On that, you can give keyboard commands-- Not keyboard commands, but commands to your computer or the device through voice or other tools.

I guess the big thing is you don't necessarily have to plan for this, individuals from Disability Services will help you come to a solution if there is an accommodation that's required, but what you should not do is set up a barrier to prevent these type of devices from being used, right? That's probably the big difference, ways to make this happen, right? Just make students aware that there are keyboard commands. One of the greatest efficiencies that I know is learning how to like cut, copy and paste, all doing it with a keyboard command.

I was working with a gentleman the other day, and he was using some music software for editing, like I'm producing on this podcast and what we did is we learned-- I learned the keyboard shortcuts, and he was just amazed like, "How did you do that?" Because I just touched the keyboard and was able to do it. When you look at the menu and you pull down a menu for an item, typically just to the right of specific menu item, you'll see a keyboard shortcut. It's just a matter of learning what they are.

These keyboard shortcuts are also very useful for foreign languages where they have certain accents that are on letters and it's just a matter of making students aware that they can just hit a couple of keystrokes and they can make this happen.

Some individuals need an alternative keyboard. They have special keyboards that are designed, maybe due to limited movement, so they have different keyboards. When you're selecting software, just recognize that that software may need to work with these different keyboards or making sure that it does have keyboard alternatives, keyboard shortcuts, that'll help people. It's just thinking about those little things.

All right, the second guideline focuses on providing expression and communication. Everyone, as we talked about, learns in a different way and everyone has a different grasp of knowledge on a specific topic, some are novice, some are experts, but how they demonstrate their expertise and how they demonstrate whether they know the material or not also varies with individuals.

I mentioned individual who may have dyslexia, that they're great with storytelling, but they can't write. Do you have accommodations in your program? Do you have choices on how individuals could demonstrate this. As CAST notes that it's important to provide alternative modalities for expression and this is both to level the playing field among learners and to allow learner to appropriately or easily express knowledge, ideas, and concepts in the learning environment.

Basically, you're trying to play to their strengths, yes, so we're focusing on the second guideline. In this guideline, there's three checkpoints. The first checkpoint is using multiple media for communication, that if it's not required for a specific task, then allow the latitude to do it, to produce whatever the product is. Allowing that flexibility to choose the tools and how they can use those specific tools. If it's required, the example they give is if you're painting something and you specifically have to use oil paints, well, then you have to use oil paints and you have to do that.

But if you're writing software code, in my class, I want them to learn how to write HTML coding and Cascading Style Sheets. I'm asking them to do it in a very plain notepad. The reason I want to do that is because I know there are software tools out there that will basically write the code for them, and I don't want them to start out on that direction. I want them to get their hands dirty with the code and really look at it and try to understand the code. These other tools just make it a lot easier, but I think there has to be a foundational level. That's an example I have.

One of the things when we're talking about multimedia for communication is we right now live in a very media-rich environment. Writing is not the only way that we communicate, so what we should be focusing on more than writing is composition. In composition, you can do it in so many different ways, from speaking to drawing to sculpture to creating videos or films, doing storyboards. There's all kinds of ways to demonstrate knowledge, that you don't have to always write an essay to do it.

If you have an opportunity to allow somebody, for example, if you do an anatomy, that maybe somebody has their own skeleton. I'm not judging, I don't know where they got it, but maybe they have their own skeleton and they've been practicing pointing out what the different bones are on these skeletons. Then having it in 2D, maybe they're just not good with that 2D, maybe they have to see it in a three-dimensional form in order to really grasp the idea, so providing that capability. Using social media, different ways that you can apply that. Checkpoint one is using multimedia for communication.

Checkpoint two, multiple tools for composition. Normally, we gravitate to these traditional tools, and we have to rethink that. CAST, they mentioned that there are certain liabilities with always focusing on the traditional tools. Now, traditional tools, they've been there for a long time, but it doesn't necessarily prepare learners for the future. It limits the range of the content. You don't have the breadth that you need, restricts learner's ability to express knowledge and it constricts the learners who can be successful. By narrowing it down to only one tool, you've limited individuals, so try to provide alternatives.

If you want somebody to get from point A to point B, there are many ways to do that. They can ramble around, they can look at a map and realize, "Well, this highway, if I just stay on this highway, it'll get me from point A to point B." Some may use a compass in a map, some may follow the North Star and use a sextant in order to figure out where they're at. Others may just use a GPS. If it doesn't matter how they get from point A to point B, let them use whatever tool that they have available.

In terms of writing, we should be encouraging them to use these tools, spell checkers, grammar checkers, word prediction software, unless it's just like a spelling bee, then you wouldn't, but if I'm writing, I'm using all the tools that I have. I have text-to-speech software. I use Google Voice Typing in order to write faster. It separates my writing brain from my editing brain. I can write 5000 to 8000 words an hour by using these writing tools. If you force me to sit there and try to write it out in cursive, it would take me forever, it would be an unpleasant experience, you would not get the same quality, it just would not be good.

Calculators, graphing calculators. It's absolutely essential to know how to set up the problem. I went to the Air Force Academy Prep School, and in there, we got schooled in math very well, but they also provided us with calculators. They said, "It's really important to learn how to set up the problem, but after that, anybody should be able to plug numbers into the formula and get the right answer." We need to get beyond elementary math, and we need to start working on high-level math and teaching them how to do those kind of things.

Outlining tools, concept maps, I use a tool called FreeMind that lets me plot things in a concept map, which is, quite great. Music notation software. You're sitting there playing on a piano and the notes come out or playing on a guitar and the notes are coming out. Computer-aided design tools. These are all different types of tools to get to the end product. We should be teaching them how to use those types of programs.

Checkpoint number three, build fluencies with graduated levels of support and practice that this is where a lot of the supports come in. The supports definitely tie into this idea of multimedia development because you could be adding video or audio or images, all kinds of different things in order to support the learners and what you're looking for is maybe different mentors. I mentioned this in a previous episode that when you are learning something, that as the instructor, ideally, I should be able to explain it, and you can understand it really clearly and you can do it immediately.

Well, that doesn't ever work, and so you give different examples. Well, sometimes you just need maybe a tutor who explains it entirely different. Maybe you're too much of an expert and you don't know how to break it down for the novice, where somebody who is closer to being a novice, may have figured out the strategy to think as a novice and that in between the novice and an expert. Having different mentors is really important in being able to provide that information. Being able to scaffold information or scaffold knowledge is very useful.

Strategy, if you have a learning management system is an adaptive learning model where they have to demonstrate competency on one task before it opens them up where they move on to the next task. That's adaptive learning. You're going to see more and more adaptive learning coming online because of artificial intelligence, the speed of the computers, everything keeps getting better, so you're going to start seeing a lot more that's related to that.

Feedback is absolutely critical in this idea of checkpoint or providing support, that I've seen a lot of tests where the student will take the test and all it does is say you're

correct or incorrect, that's it. Well, we need to provide more robust tests. When you're writing these test questions in a learning management system, you can provide your feedback sources. You can link them right back to where that material is, so don't be afraid to use these tools like that and get that information to them where they can go back and review and find out what the right answer is.

The final guideline, guideline number three, is providing options for executive functions. When we're talking about executive functions, basically we want students to be able to set goals, plan to meet those goals, and have the capability of monitoring their progress along the way. This is what we want them to be able to do once they graduate, get into the real world, as they say, to be able to do that. According to LD OnLine, the executive functions are a set of processes that we all have to do with managing oneself and one's resources in order to achieve a goal. It is an umbrella term for the neurologically-based skills involving mental control and self-regulation.

Basically, we want students to set long-term goals, have effective strategies for reaching those goals, be able to monitor their progress, and if necessary, modify the strategies if they're coming up to roadblocks. A lot of students, when we talk students, it could be at any age, maybe do not have these executive functions in place yet. As somebody who is an expert in a domain, part of what we need to do is help them learn these different executive functions.

In there, there's four guidelines or four checkpoints. We're on guideline number three. We've got four checkpoints. First checkpoint is teaching students how to set proper goals. That rather than us set the goal for them, we should be in discussion to allow the student to set their own goals. A lot of reasons for this. One of the reasons and I learned this while I was in the Air Force, and we deal with counseling, if you set the solution for someone-- They did something wrong, and you go in and provide advice and say, "This is how you're going to do it," you continue to own the problem, you continue to own it. If the solution doesn't work out, guess whose fault it is? Yours.

What you have to do is you have to get the individual to own the problem, to recognize the problem and be able to think through various solutions to come up with a solution that they believe will work and then you go test the solution. Well, the same thing applies with establishing goals, that basically you're going to help them learn how to establish these goals and you're doing it from your expert position in your domain.

How would an expert in your domain establish a goal that's relative to that domain? You need to provide examples and models of the process and how to do it and let them work through those processes in order to do it. Being able to provide different guides and checklists, are also helpful. That will help them better understand this goal-setting process and keeping those goals and objectives out in front, posted somewhere where they can see them and be able to continue to move forward to them. We want them to basically think like experts.

Show them the process that you would do to establish setting goals and also estimating time. Estimating time is critical, that a lot of folks don't know how to determine time. We are so bad with time, so being able to do that is important.

Checkpoint number two, as I mentioned, getting from point A to point B can be messy if you don't have a plan. This checkpoint focuses on helping students develop a plan and a strategy to achieve a goal.

They may not necessarily have the skills to do this, so there are some strategies that you can use. Particular strategy is stop and think. Say, "Okay, here we are in the process at this point, you're heading to this goal. What are some options that you can go forward? Think about this, let's plan this out" and to keep them moving forward in that direction. Having them stop and explain how they got to the point that they are, being able to do some type of critique.

In the class that I'm working on right now, they're writing a chapter. At the end of this term, we should have an OER chapter for each student on a different topic, but basically, there's three different checkpoints in there to have them stop, reflect on what they have to identify maybe gaps that they need to improve on or we're going to look at APA, we're going to look at a variety of different things in order that they can keep moving forward. I don't want them to continually do massive rewrites, but they're going to have to do some rewriting.

Other ways that you can help them with the planning process is provide checklists, different templates that you may have to help them understand the problem, how to prioritize different aspects and schedule these different steps so they know that they're on track. I've talked about think-alouds, those are important. Just touching base with each student and asking them about their project, where they're at goes a long way.

Then also you can't eat an elephant all at once, so you do it one bite at a time. Taking those huge goals, a massive research paper for example and breaking it down and talking about these different processes, these different steps to get through that. My writing that dissertation was exactly that. Huge project but we took it one step at a time.

We worked on the first three chapters, and we did data collection, and I did data and analysis, and then-- So, a lot of different steps and how each one worked with the other pieces. Checkpoint number three, managing information and resources. We have an amazing amount of information that we get every day, and we're responsible for countless tasks. I'm just talking as a worker, and students, they have this too. Every class is pouring information into them. They are responsible for this information in order to successfully complete their tests, and it's just packed in there. How do they organize this stuff? How do they know what they should keep in mind? What strategies can we share with these students?

As an expert in your domain, what strategies can you help them with, to teach them how to organize this material, how to determine what the priorities are? Provide them with your strategies. Teach them how you organize information. If we were as instructional technologists that we may be building a learning system and that requires images, it requires audio files, video files, text files, animations, all kinds of different assets.

Well, we need to know what assets are going to go on to each slide, for example. We need to know how this is going to be ordered. Therefore, we have to have some way of organizing all these different assets to know if we've used them, where they're at, and so we have file naming conventions and all kinds of different things, but that's something that I would teach an up-and-coming instructional technologist on how to do this. Also, things that I would teach in my domain is how to use project management software, how to use various communication software to keep in touch with the team.

Those are things that would be important to my domain. In other domains, being able to provide checklists and guides for how to take notes that are relative to that domain, different organizers, ways of collecting data and organizing that data. What are tools that we could use for that, that would all apply to that. We make assumptions that students know how to do this. They don't. They do not know how to do this. We can help them learn how to do this.

My last checkpoint in this particular guideline which is dealing with executive functions is monitoring progress. Students need to know how well they did something. There has to be feedback all the time. I have been in classes where I have turned in products. I have never to this day received feedback on those products. I have no idea how successful I was or was not. Without feedback, they don't know if they're progressing adequately. It's really critical in your assessments that you provide feedback that also provides the details if they're successful or not.

This feedback has to be timely. Otherwise, they don't know what to do differently. Making sure that your feedback is explicit, timely, informative, accessible, that all has to be in there. Now, some of this could be feedback that they set up on their own so they can see where they're at. The class that I'm teaching right now, they have to earn so many points on these quests or little assignments that I'm giving to them, but what I did is I calculated how many points the total group of students need.

I put together a burn down chart. A burn down chart is something I took from Agile Programming, specifically the Scrum and just I'm calculating weekly how many points they should have accumulated until we get down to zero. It's just counting off how many points that they should've achieved collectively. That's a graphical thing. They're on the site, they could go look at that graph. It's updated as I update, calculate the points as they're coming in. Right now, at the trajectory we're at, they're not going to make it, but they will. I have confidence. They're just going to work crazy hard.

Being able to provide other types of feedback, having self-assessment checklist, scoring rubrics are important. Having multiple examples that they can model their information. This will all help them be able to monitor their progress and know if they're on track to meet that goal. We went through a lot of stuff. This is being able, action and expression. Are they on track? Are they able to provide information in a way that they can demonstrate that they know the information? If you give them options, everybody gets to play to their strengths. In the end, what you want to do is, do they know the content that you want them to know and putting that out there.



Multimedia comes into play because they will have to learn how to use these different multimedia tools, being able to, from creating text to audio, to video, to animation, there's a lot of tools that are at hand. In the show notes, I'm going to put also a couple of links that talk about some other teaching tips for a UDL-friendly classroom and ways that you can supercharge your classroom. I think you're going to appreciate some of those tips. A lot of information. Thank you for hanging in with me. Real quick, here's a plug for my book. I'm really happy with it.