

## Part 3 - Assistive Technology: A Practical Implementation Resource

[Evan Loreto-Lee] Welcome to Assistive Technology: A Practical Implementation Resource. My name is Evan Loreto-Lee and I'm a teacher and an Assistive Technology Consultant with the York Region District School Board.

In this section, we'll focus on how students can use assistive technology to support the organization of writing and thinking, and how these tools can help reduce barriers to learning, including for students who may be experiencing challenges with learning.

As we move through this section, consider how these tools might fit within your context. Assistive technology is not meant to replace strategies that are working, but instead it is meant to expand access and support a range of learner needs. Now, let's consider how learning disabilities and other processing challenges can influence organization. Whether a student is attempting to assemble their ideas into a coherent written piece, oral presentation, or some other product, the ability to gather different pieces of information. Explanation and analysis can be difficult without explicit support. Many assistive technology tools can support this process to ensure that their strengths are boosted and their needs are supported. Many tools exist to help educators and students with templates or organizational frameworks that guide their thinking and facilitate the creation of a coherent, final product. In many cases, these strategies benefit from being pre-taught and intentionally integrated into classroom practice.

So let's explore some of the common organizational tools available to support writing and thinking. Now, organization is an essential quality in students who successfully navigate learning environments, particularly when they are asked to create some kind of product, students are assessed, in part, in their ability to share their thinking in a logical and a coherent way. For some students, this is challenging, and they might need explicit strategies to organize their thinking, writing, or speaking to ensure their message is clear and aligned with the specific and or overall curricular expectations being explored. Using pre-existing structures can support students as they plan out their thinking and allow them to remember key elements that may otherwise be forgotten without prompting.

So let's orient this processing difficulty with the waterfall chart. As noted in the bottom

corner of your screen. As with other areas of processing, the waterfall chart groups requisite skills and directs educators to specific strategies available for support. If you're interested, scan the QR code with your own device to see the revised waterfall chart available for you. And note that this is a resource provided by the York Region District School Board, and it's called the Understanding How Processing Affects Learning Resource. So this excerpt is taken from the final page of the waterfall chart. One helpful feature of this document lives in the final page. By presenting overall skills broken down by areas of processing as well as with an easy to understand description for each. For example, organization is broken up into six domains. We have language, visual motor skills, visual spatial perceptual skills, memory, attention, and executive function. Notice how these different areas work together to make up effective organizing skills. And when there's a breakdown in any one of these areas, the whole organizational process can be disrupted. Assistive technologies can support each of these areas. And let's see how we could leverage tools to support students who would benefit from tools to support with organization. But we dig deeper into difficulties with visual motor skills we can see the graphic organizer can be a supportive tool. Visual motor skills are described as the ability to coordinate the eyes and the hands to produce and guide physical movement. And this shows up in students' abilities to efficiently write out letters or copying information off board, including digital graphic organizers like mind maps can help students express their thinking with a clear structure so they can work towards developing their independence when note taking, generating ideas or any other task that encourages a thoughtful and structured response. Notice also that the inclusion of speech-to-text software on the listing of supports for assistive technology, and this and similar tools can be integrated into organizational software. For example, I can dictate my thinking into a text box on a mind map created on a Google drawing, or on to other programs like Mindomo using a voice note or the Chromebook or the Mac, or the Windows speech-to-text tool. So all of these tools will work on my mind mapping software. So again, I don't need a tool like Mindomo, which is a third party mind mapping software in order to organize these thoughts.

Similarly, visual spatial skills are described as the ability to organize visual information into meaningful patterns. This shows up in students abilities to see specific content or items against a particular background. Like the ability to notice certain words or text on a page with a distinct backing colour or scene. Using a feature like text-to-speech can highlight and playback any readable text on a document, which draws the individual's focus into an area they may have missed without that support. Sharing a digital graphic organizer or a mind map can be customized to ensure all students can see their target content. Encouraging students to adjust materials as needed helps them understand

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their efforts as integral to the process of building accessible learning spaces. Students might miss key information if they can't access necessary accommodations and organizational tools like text-to-speech or mind mapping software.

Through a shared understanding of tools, educators can help students interact more comfortably with the content, building independent skills as they navigate the curriculum. It cannot be understated how important the teachers use of these tools, the modeling of these tools is to the student's use of those tools, and it can be really intimidating putting these sorts of learning processes on display for the students to see you potentially fumbling through can be very intimidating, but it's really important.

And as lead learners in those classrooms we can show them this journey, show them that despite the discomfort, there can still be learning. In fact, without discomfort, there generally isn't that learning. So by being those sort of brave bodies in the room to try something new, we can show our students that that kind of an attitude is very, very beneficial. So when we're considering the right tool to support students, and your own efforts hopefully, consider the comparison identified previously with third party tools may provide a more seamless user experience when generating a mind map, but sometimes they're often limited unless you're able to access a paid license. System tools generally have at least one program with which to create a simple line shape mind map. But unfortunately, they're not really optimized to do this work. So choosing the most appropriate tool for this work may be guided by factors beyond your control. Specific districts or school policies may determine which option is permitted. So it's important you understand this factor when making decisions around any assistive technology software. If you have the opportunity to make recommendations for a program that optimizes mind mapping, consider how these tools work within your existing assistive technology suite of tools.

For example, ensure that a tool that you're going to choose works with the text-to-speech or speech-to-text engine and other tools that are recommended for accessibility. For example, if I'm using my windows text-to-speech function can that work to generate text in my hopeful mind mapping software that I hope to bring to my district. In most cases, tools that are advertised as "free" will only provide limited access. Full access generally requires a paid subscription. Also an important consideration is how the tool connects to learning management systems like Brightspace or Google Classroom. Many will connect educators directly with their learning management system to make posting classroom activities or assignments easier. But these are the sorts of things that we must consider when choosing a suitable

tool.

How do they work and play with the tools that we've already got working in our environment? Now, alternatively, you might prefer to rely on existing tools on your device to visualize thinking. Most major operating systems have a program that can be used and will do the basics of mind mapping with a line and a shape drawing. I like to think of the old use of Microsoft Paint. It's a basic program that has the functions that we may need to do this work. Even programs like the current version of Microsoft PowerPoint, Apple Freeform, Google Draw may do the trick for most users. As we noted previously, consider the existing status of tools already in your digital environment. Is there a tool that's provided already? Have you really thought about how you can leverage the existing access through the system tools that you already have access to?

As with all tools, we want to be certain that they are supported by our school and district privacy and IT security departments. Whenever we're making recommendations for digital tools, it's essential that we mitigate any potential risks to student data. Be sure to connect with your digital literacy team to learn more about the tools that are permitted in your digital environment. Now, let's take some time to explore three different mind map platforms that may be available in your school or your district within their digital environment. So the first option that we have available is just a simple Google drawing. Now to access a Google drawing you can actually just type in "drawing.new" and it will take you - as long as you're in Google Chrome and you're signed into your school Google account -it should take you directly into a new drawing area. And within this we can add our shapes, right? I can use these for us. In this case we have a Venn diagram. But I could use this as any kind of mind map. And any time that I want to connect them, all I'm doing is taking these shapes and layering them over on top of each other and I'm adding in text boxes. And so I could build this out for students and then I can share this drawing diagram with students as well. And one interesting, maybe easy way that we can do this notice on the end of your URL where it says edit. If I type in the word copy instead of edit and I hit enter what it will do is it will force a copy for students to use as a template. And then when I'm ready to share, I want to copy this entire URL and I can drop it into my learning management platform, into my Google Classroom, or into my Brightspace or whatever it is that you're using. And this way, students can be accessing their own copy.

And I'm going to obviously want to ask them to share that with me. So that just to make sure that I have access to the work that they're doing. Now another option that we have is something like PowerPoint. PowerPoint as a presentation software can be rethought

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as a mind mapping software as well. And the nice thing about PowerPoint is there's a lot of templates that already exist, so you don't have to build this from scratch. You can take something like the example that I've provided on the screen, and you can repurpose those different sort of bubbles and text based on the topic that you're working on. So it doesn't require you to build this from scratch. There are templates available for you to use.

Now, the other option that I would like to share is through a program called Mindomo, and Mindomo is a tool that is available in some school districts, and it allows students to build their own mind maps in a very sort of interactive and supportive way. So let's see what that looks like. So Mindomo, as I mentioned, is a mind mapping software and it allows students to build mind maps in a way that leverages lots of different sort of input. So I could insert different multimedia, which could involve images, videos, or even audio recordings. Maybe a student isn't comfortable presenting in front of the class, and instead of using their own, maybe Google Slides or PowerPoint or other presentation software, they can actually use this mind map as a presentation, and they can record what it is that they want to say into the presentation. So they can click on this and they can record what it is they want. And then when it's time to present, they press play and the audience can listen to that recorded message. But the nice thing about this is we can customize how this is, how this is designed and we can adjust this. And for some students, this visual representation is really helpful.

And I can say, okay, if I've got my topic, if I'm trying to argue something, I need three distinct reasons and not only do I need three reasons. I want to be able to write about it. And if I have evidence about it, maybe I can include a picture or a video, and maybe I can record my thinking about that first reason. Because for some students, maybe the difficulty is getting that information sort of down, onto the document. So maybe I'm thinking about it and I want to capture it as a voice note so that I can keep it there as a sort of a way of making sure that I don't forget what I'm thinking. And in this case, in an environment that I'm familiar with, a tool like Mindomo will also work with Read&Write so I can actually use my existing assistive technology to support my mind mapping software as well. And this will work within my Google Docs. I will use this in my... I could even use this in my Google drawing, but if I want to turn it on, I click on the same place that I showed last time when I was in the document. I press the button and it pops up ready to go. And what I could do is I can use my voice typing to help generate my ideas verbally.

If I'm having difficulty writing it out, I can use this to help brainstorm. So I can go into my

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main reason and I can add some, some additional context. And so one of the nice features is I can type a note. So if I'm trying to sort of explain something, I can turn on my microphone and I can talk it out so that I can think about the different ways in which I can support this particular topic and when I stop talking, it will drop it into the box.

Okay, so I combine these tools and the different functionalities within them, and I can ensure that students can sort of mix and match as they need to. And whether it's through Read&Write whether it's through the internal windows speech typing device, I can use these tools to help gather that information.

And as I mentioned, there are lots of mind mapping tools available, but some I find are a little bit more robust than others. So presented on the screen is a table that identifies the functional language, a description of the tool, and some examples. Note that these examples obviously are not an exhaustive list. Nor are they necessarily an endorsement for their use. But make sure that you connect with your school or your school district to see if there are already tools recommended for use. You can also check out the link that's shared via the QR code in the bottom right hand side of the screen. As this resource explores a range of assistive technology tools, as they connect to the concept of universal design for learning.