Assistive technology (AT) is any tool that helps students with disabilities accomplish something that they could not do without it. This definition encompasses tools ranging from low-tech options such as pencil grips to high-tech options such as apps, and it is understandably sometimes challenging to determine if a student needs AT, who to turn to for guidance regarding AT, and what AT options are suitable for addressing a student's specific needs. Although educators frequently refer to AT for content areas, such as English, social studies, or math, AT should be considered in terms of developmental, functional, and learning needs. In this CTD resource, we focus on a functional area of concern that comes up frequently for classroom teachers: writing.
As a teacher, the first thing that you will need to do when you have identified a student with writing concerns is determine the specific area of writing that you are worried about. In other words, when you say writing, are you referring to:

- handwriting
- typing
- spelling concerns
- concerns about organization or the structure of a piece
- language use or grammar concerns
- slow speed of composition compared to classmates
- difficulties with note-taking
- some combination of the above or something else entirely?

Your school district may have on staff, or contract with, a variety of professionals to whom you could turn with AT-related questions, including an occupational therapist (OT), speech-language pathologist (SLP), reading specialist, and/or an AT Specialist. If you have concerns about a student’s handwriting or typing, you would likely first consult the OT; if the student uses repetitive or overly simple language in writing compared to his/her peers, you might check with the SLP. The more specific you are able to be regarding your concerns, the easier it will be to determine the appropriate professional(s) to consult and the type(s) of tools that might address the issues you are observing.

In most cases, if your district has an AT specialist, you will likely consult with him or her to determine if an assessment is necessary to find the right tool for the student. Many districts with an AT specialist on staff will require a consult or assessment with him/her before purchasing AT equipment. It is considered best practice to complete a formal AT assessment or thorough informal assessment via consult before providing tools to a specific student to address a particular concern. Remember that the Individuals with Disabilities Education Act (IDEA) requires that assistive technology be considered during the development and/or updating of a student’s Individualized Education Program (IEP). Even is a student does not have an IEP, he or she might be eligible for school-provided AT devices.

In addition, many schools and school districts are adopting the principles of universal design for learning (UDL) and are providing some of the tools described below as part of UDL initiatives. UDL refers to an educational framework used to create a flexible environment that supports individuals with a variety of learning differences. For example, under UDL, all students might be given access to free speech-to-text supports available within Google Docs, regardless of whether they have been identified with a need for such tools. In that event, as the classroom teacher, you would be able to try the supports to see if they benefit your students with specific needs, while waiting for an AT assessment to be completed, or while waiting for more specifically recommended AT tools to be made available.
TYPES OF AT TOOLS

Given the speed with which new technology emerges, the following list focuses primarily on the types of AT tools available for addressing writing concerns, rather than on specific products.

**Pencil grips** might help a student who is struggling to hold a pen or pencil in a way that facilitates writing. An occupational therapist can help you select the appropriate option. Not all grips are meant to accomplish the same goal. Some grips might help a student hold their fingers in a tripod grip, while others might simply help to prevent the writing utensil from sliding in the student’s grasp.

**Writing guides** help to keep handwriting on track. A writing guide is usually made of plastic or metal, with lines cut out corresponding to the location(s) on the page where handwriting should occur. This can help students who have low vision or who struggle with orienting their handwriting in the space of a blank page.

**Adapted keyboards** come in a variety of formats and might be designed to help with spelling concerns or to assist with the physical act of typing. They can be physical, computer-based, or app-based. Keyboards might have color-coding for different key functions or color-coding for vowels. An AT specialist might provide a keyboard that works for someone using a different access method such as switch scanning or eye gaze. A keyboard can also be fitted with a keyguard – a piece of plastic placed over the keyboard or app with openings that correspond with the buttons below. This can help to make a “well” or a deeper opening over each key. An adapted keyboard might also provide word prediction options, described in more detail below. Examples of adapted keyboards include the Chester Creek Kinderboard and the Keedogo and Keeble apps.

**Worksheet completion tools** can help students who might otherwise struggle to complete handwritten assignments. Various apps, including GoWorksheet Maker and Snap Type Plus, allow a teacher or paraprofessional to take a photograph of a worksheet and adapt it for use on an iPad. The apps might allow the student to type or speak their answer instead of handwriting it.

**Mind mapping** refers to the use of visual diagrams for organizing written information. While this strategy is often introduced to students as a method of arranging their thoughts before beginning to write, some students may require a mind map before being able to produce written academic text, thus making it AT for those students. Mind mapping is available in several formats, including paper diagrams, apps (such as Inspiration or Tools4Students), Google Chrome extensions, and computer software.
Some students might do best when allowed to use **dictation**. While traditionally this has meant speaking to an assigned scribe who then wrote down precisely what the student said, technology now provides more cost-effective options. As anyone with a smartphone is aware, various companies offer speech-to-text options, often in any app that allows you to use their designated keyboard. After selecting that function, a user will simply speak a phrase and the words will appear on the screen. Google Docs has a free speech-to-text add-on available, while Dragon Dictation is popular software for dictating written output with a variety of command and edit functions available. The use of dictation or speech-to-text supports can increase speed of composition and reduce spelling and/or typing errors.

**Word prediction** refers to the use of apps, extensions, or software that provide a list of options for the next likely word in a sentence based on what you have started to type. This may be displayed as a horizontal list along the top of the keyboard or as a vertical list in a “bubble” next to the cursor position in the document. Word prediction can be helpful for students who struggle with spelling, especially if they are able to provide the first letter or two of the desired word. Co:Writer from Don Johnson and Read&Write Gold from texthelp are popular examples.

**Word banks** can assist students who benefit from the ability to use word recognition rather than just recall when composing a piece of writing. Word banks can be provided in a low-tech or paper-based form, as well as automatically generated for a particular lesson or unit by various AT supports such as Don Johnson’s Word Bank or the app Clicker Docs. This may help students with spelling and with using less familiar new vocabulary specific to an academic unit.

Some students may need additional guidance and will benefit from **sentence construction tools**. Such students might do best when being presented with all of the words in a given sentence and asked to assemble them in order, or to use already provided words and phrases to construct their own sentences. The apps Clicker Sentences and Clicker Connect are good examples of these more specific supports.

**Note-taking tools** can help students who struggle to keep up with the speed of a lecture or who have difficulty making sense of the notes they have taken when they go to review them. A variety of options are available. For example, the app **Notability** allows for audio recorded during a class session to be played in sync with the notes a student took on their tablet during that time. Alternatively, a student may benefit from the AT
device LiveScribe SmartPen, which enables a student to take notes by hand but can also sync with software to convert the notes to searchable text.

Now that you have a better sense of the types of AT supports for writing that are available, you will be better equipped to request consultations from related service providers and to explore the use of tools that may be available in your district with students in your classroom. More examples of tools to support written expression are described in the CTD webinar Assistive Technology (AT) Tools for Writing.