

## Adapting Content with Technology

Just as the use of technology can offer multiple means of presentation, response and engagement, it also can provide a way for curriculum content to be accessible for students with a disability. It is always important to keep in mind that you begin with the needs of the learner, and let the technology follow. **The real power of technology lies within the teacher's ability to customize and differentiate instruction through content, process, product and environment, according to student readiness, interest and learning style.** Technology can facilitate both using different content to teach the same subject to students with different needs and to also enhance or augment existing content to make it accessible to all students.

Inherent within the nature of technology is rapid design and development. Now with the use of the worldwide web, the range of resources for teachers and students seems to be almost without limit. While it would be a near impossibility to list all of them, the following list of resources have been gleaned from the literature and are referenced under Resources on the Section IV: Technology Contents page. Teachers should review and select with discretion; some resources are free while others may require a fee. CDE makes no recommendation or endorsement of vendor products.

### Teacher Resources

**TechMatrix** is sponsored by the National center for Technology Innovation and the Center for Implementing Technology in Education. The consumer guides and links to software and assistive technology devices provide help resources for teaching science, math, reading and writing using technology for students with a disability.

**National Center for Learning Disabilities** – AT Resources for teachers <http://www.nclid.org/students-disabilities/assistive-technology-education> The **Statewide Augmentative Alternative Communication (SWAAAC)** project provides a wide variety of cost effective, readily accessible support services all around the state of Colorado. Access the SWAAAC Guidelines Manual <http://www.swaaac.com/>

**Assistive Technology Internet Modules-** OCALI project offers online training modules- (FREE! Unless you want certificates, then it's \$10 for each hour) <http://www.atinternetmodules.org>

### Using Technology to Access Content

**Video:** <http://www.learnnc.org/lp/multimedia/19117>

- Videos are associated with the article [“Inclusion in the 21<sup>st</sup>-century Classroom: Differentiating with Technology”](#) (Hobgood and Ormsby (2011))

Learner Characteristics *Also Reference Tables A-P in Section III	Technology Resource * Some applications may require a fee	Description
*Teacher-created online survey tools to ask students about their <b>preferred learning styles</b> or engage in response.	<a href="#"><u>SurveyMonkey / Zoomerang</u></a>  <a href="#"><u>PollEverywhere</u></a> <a href="#"><u>PollDaddy</u></a>	Student responds to teacher-posed questions Clickers to poll and capture data on a group of students Hand-held text messaging devices such as iPod Touches
Difficulty organizing thoughts Difficulty understanding and remembering relationships	<a href="#"><u>Bubbl.us</u></a> <a href="#"><u>Inspiration</u></a> or <a href="#"><u>Kidspiration</u></a> <a href="#"><u>Read,Write,Think</u></a>	Create concept map Graphic organizer Apps for digital literacy
Difficulty writing	<a href="#"><u>Glogster</u></a> <a href="#"><u>Voice Thread</u></a>  <a href="#"><u>Science Writer</u></a>  <a href="#"><u>Sounding Board</u></a>  <a href="#"><u>First Author Writing Software</u></a> <a href="#"><u>Co: Writer and Write:OutLoud</u></a>  <a href="#"><u>ClaroRead</u></a>	Journaling tool Can capture student’s voice and photos to narrate their own projects Writing tool for MS/HS students to scaffold through the process of writing a science report iPad/iPod Touch app to use as a storyboard communicator  Don Johnston software tools  word prediction with audio, homonym checker, and spell check; USB device available (fee)
Prefers choice	<a href="#"><u>Think-Tac-Toe</u></a>	Create boards to allow student to select assignment for differentiating instruction
Tactile issues	Bamboo drawing pads (Wacom) <a href="#"><u>Scribble Screen</u></a> download (Mac)	Encourages students to write their work in order to see where errors occur
Needs high interest leveled reading	<a href="#"><u>Time for Kids</u></a> <a href="#"><u>Newsela</u></a>  <a href="#"><u>Education City</u></a> <a href="#"><u>iReady</u></a> <a href="#"><u>Start-to-Finish Online</u></a> <a href="#"><u>International Children’s Library</u></a>  <a href="#"><u>Tumble Book Library</u></a>	Current events for Kids Current events with ability to adjust Lexile level Online activities and interactive whiteboard activities Curriculum Associates Don Johnston – accessible library Digital library- pictures books in 61 languages ebooks

Difficulty with phonics / spelling	<a href="#"><u>Simon S.I.O.</u></a> <a href="#"><u>WordMaker</u></a> <a href="#"><u>Write to Learn</u></a>	Don Johnston – accessible phonics and spelling Improve writing quality with formative feedback
Difficulty attending to lecture or reading lengthy text	Video-streaming subscription site offers searchable database for topics and levels; includes closed-captioning to reinforce language and vocabulary with spoken and written speech at the same time. <a href="#"><u>Dictionary Support</u></a>  <a href="#"><u>Discovery Education Streaming</u></a>  <a href="#"><u>Screen reading software</u></a>	Provides verbal and textual input that can be supplemented with visual reinforcement by video or images  Support for word meaning  Digital textbooks  Reads aloud text from a webpage or document using synthesized voice (student wears headphones)
Needs Adapted Text to access grade-level content	<a href="#"><u>Rewordify</u></a> –	this is a free, online software that can simplify difficult English, build better vocabulary and offer choices for students to understand complex text. Copy and paste selected text into the text box and click on Rewordify text. Teachers can also get charts and reports to monitor student progress.
	<a href="#"><u>Text Compactor</u></a>	Free online automatic Text Summarization Tool . Very simple tool to use to simplify complex text. Just cut and paste text into text box, set the % of text to keep in the summary and read the summarized text. It also has a text to speech and translation tool. (For improved quality of text-to-speech, you may want to paste the summary into a Word document, save as pdf ( tutorial: <a href="https://www.youtube.com/watch?v=ETOohmYui3Q"><u>https://www.youtube.com/watch?v=ETOohmYui3Q</u></a> )
	<a href="#"><u>Newsela</u></a> (free and upgrade for fee)	This site allows teachers to select news stories and adjust the Lexile reading level simply by increasing or decreasing the text complexity levels.
	Snap & Read Universal: Text Reading + Text leveling for Google-	donjohnston.com has a new reading tool for Google (fee)
	<a href="#"><u>Rewriting History, and Nine Other Ways to Adapt Textbooks</u></a>	Paula Kluth article
	<a href="#"><u>5 Technology tools to Measure Text Complexity</u></a>	
	<a href="#"><u>Text Complexity: Qualitative Measures Rubric for Literature and Informational Text</u></a>	

	<a href="#">Lexile Analyzer / The Lexile Framework for Reading</a>	determine the text complexity of a book or passage
Benefits from visual support to augment background knowledge	<a href="#">Flickr</a> <a href="#">MorgueFiles</a> <a href="#">Wikimedia Commons</a>	Searchable access to images (Check with district IT to allow access)
Needs alternate response mode	<a href="#">PollEverywhere.com</a>	Allows student response via cell phones with text messaging
Enjoys gaming	(older students) <a href="#">Quest Atlantis</a>	Explore Virtual worlds
Needs same content at different levels of text complexity	Textbook publisher's digital textbook offer a variety of supports, such as pronunciation guides, text-to-speech, vocabulary support and features to allow the reader to format text to improve readability. Visit the publisher's website.  <a href="#">Bookshare</a>  <a href="#">CAST UDL book Builder</a>  <a href="#">Tarheel Reader</a> <a href="#">Exemplar Text Support</a>  <i>Microsoft Word</i>  <i>Adobe Acrobat pdf (under View) enable read aloud (free)</i>	Digital format can incorporate interactive media directly within the text. Digital textbooks, eBooks and audiobooks provide both online and CD-based options  Federally funded; allows registered users to download books, textbooks, and newspapers that can be accessed by text-to-speech readers Free digital book database and book builder to create, share, publish and read digital books  Univ. of NC at Chapel Hill Center for Literacy and Disability Studies offers support for students with significant support needs. Tarheelreader is a growing free library of accessible, beginning level readers for students of all ages. You have access to images and can write your own books. Reading passages can be copied and pasted into Microsoft Word to allow students to use such tools as highlighting, and grammar support. The comment feature can facilitate editing. Adobe acrobat can read aloud any document in pdf format
Scanning and Reading Software	WYNN Wizard Scanning and Reading Software includes optical character recognition and ability to scan printed pages and convert them to electronic text. Speech synthesis enables scanned text to be read aloud	<a href="http://www.freedomscientific.com">www.freedomscientific.com</a>
Difficulty attending	REDCAT sound panel hardware system increases the intelligible sound of a teacher's voice. No	<a href="http://www.lightspeed-tek.com">www.lightspeed-tek.com</a>

	installation required to produce clear, natural sound for the classroom.	
--	--	--

## Using Technology to Differentiate by Process

Video: <http://www.learnnc.org/lp/multimedia/19120>

Information excerpted from Hobgood and Ormsby's article "*Inclusion in the 21<sup>st</sup>-century classroom: Differentiating with Technology*" to offer a variety of ways teachers can use technology to differentiate by process.

Flexible Grouping allows teachers to prepare for two, three or four basic groups	<p>Organize groups according to</p> <ul style="list-style-type: none"> <li>• Ability/readiness</li> <li>• Interest</li> <li>• Learning profile</li> </ul> <p>Group students differently depending on the type of activity or learning objective and allow students to move between groups.</p>
Processing and Recording Information	Technology can support notetaking and math calculation. Microsoft Word offers a free Mathematics Add-in to create graphs and solve equations within a word processor.
Manipulating Information	Virtual manipulatives can be helpful for students with processing difficulties or kinesthetic learners. <i>National Library of Virtual Manipulatives</i> is supported by the National Science Foundation
<p>Extending Access to class content beyond the instructional period</p> <p>Online class access</p> <p>Whiteboard capture</p> <p>Narrated PowerPoint</p>	<p>Online course platforms like <i>Moodle</i> and <i>Blackboard</i></p> <p>Free tools: wikis and template-driven website creators like <a href="#">Google Sites</a> and <a href="#">Weebly</a></p> <p>Print out notes from interactive whiteboard lesson</p> <p>Student can review and hear teacher explanation as many times as desired</p>

## Using Technology to Differentiate by Product

Video: <http://www.learnnc.org/lp/multimedia/19120>

By providing multiple means of engagement, a student can then demonstrate mastery through various products.

Blogs, Wikis and other Writing Platforms Microsoft Word	Class <i>Blogmeister</i> – free secure environment for students to share and comment Spell check; grammar check; Text-to-Speech add-ins support auditory proofing
Demonstrating understanding through various media:	
Digital Posters	<i>Glogster EDU</i> (make sure you select the educational version); incorporate images, videos, audio recordings and drawings with text Video: <a href="#">Digital Posters</a> : Composing with an Online Canvas (Hodgson)
VoiceThread	Allows response to a topic using text, audio, video or images; responses can be recorded
<a href="#">Digital storytelling</a> Apple iMovie Audacity Microsoft Photo Story 3 Photoshop Elements  <a href="#">Cowbird</a>  <a href="#">Digital Book Talk</a> Book Trailers K-12 <a href="#">Audio Editing Software</a>	Find a tutorial on the University of Houston website <a href="http://digitalstorytelling.coe.uh.edu/">http://digitalstorytelling.coe.uh.edu/</a>  Cowbird is a public library of human experience, offering a simple set of storytelling tools — for free, and without ads (older students; need to prescreen content) Preview books
Evaluating Student Products	Create clear guidelines for evaluation using a rubric. <a href="#">Rubistar</a> – free rubric generator <a href="#">The 5 Best Free Rubric Making Tools for Teachers</a>
Smart Pen	Allows students to record notes matched to the audio recording of the lecture; can also display on a computer screen. Smart Pen paper can be cut into strips and taped into a regular book to create an audio book. <a href="http://www.livescribe.com">www.livescribe.com</a>

## Using Technology to Differentiate by Environment

Video: <http://www.learnnc.org/lp/multimedia/19118>

Support all learners by manipulating the environment and considering these elements:

Control Chaos	For students with processing issues, controlling the ambient noise of a classroom is a consideration. Using individual student headsets allow access without disturbing other students
Sensory Experience	Providing technology can help students who have sensory aversion to such things as the feel of a pencil or the sound of pencil on paper (e.g. paper with raised/colored lines, liquid graphite pencils)
Culturally Inclusive Classrooms <a href="#">Photostory</a>	Provide access to a variety of materials with a rich global perspective to allow each class member to feel valued. Integrate culture and experiences across content areas with virtual field trips and visits to art museum galleries online
Using Virtual Worlds to engage gifted learners	Video: <a href="http://www.learnnc.org/lp/multimedia/19121">http://www.learnnc.org/lp/multimedia/19121</a>

### Assessing Student Proficiency with Technology Features

Naturally, a student's proficiency with technology will increase with familiarity and practice. The best way to prepare students for online assessment is to expose the student to a wide variety of computer-based instruction. Learning to navigate the program by clicking icons to enable certain features will lead to increased confidence. However, there are basic skills that every student needs to address either directly with a keyboard or with assistive technology. Please consult with your district's assistive technology specialist, and other related service personnel to craft a means for every student to access instruction.

These two samples are offered as resources for teachers as they first **assess students' technology skills** and then plan **instruction for developing competency with technology skills**. Neither resource is based on Colorado Academic Standards, but can perhaps serve as an inventory of fundamental skills.

1. **Example:** Click on this link: [Kentucky technology Skills Checklist for Online Assessment](#).

This tool is a product of a grant and was produced in collaboration with CAST. One of the research activities of the project was to identify the prerequisite skills for students to successfully access and use a computer-based assessment. The Kentucky assessment, CATS, is specifically mentioned, but parallels can be projected for use with Colorado's new online assessments. The tool is designed to:

- 1) analyze specific online assessments to determine necessary skills for all students

- 2) inventory skills each student can demonstrate and identify what skills are needed prior to taking online assessment
2. **Example: Click on this link: [Elementary Technology Literacy Guide-Plano, Texas ISD](#)**
3. **Educator Tools for teaching digital literacy**  
<http://www.digitalliteracy.gov/content/educator>
4. **[Common Core State Standards K-12 Technology Skills Scope and Sequence \(Long Beach Unified School District\)](#)**

#### References for Section IV

Allington, R. L. (2012). What really matters for struggling readers: Designing research-based programs (3rd ed.). Boston, MA: Allyn and Bacon.

Dalton, B., & Grisham, D. (2011). eVoc strategies: Ten ways to use technology to build vocabulary. *The Reading Teacher*, 64(5), 306–317. doi: 10.1598/RT.64.5.1

Hasselbring, Ted S., Williams-Glaser, Candyce H. (2000) *Use of Computer Technology to Help students with Special Needs*. The Future of Children Children and Computer Technology Vol. 10 No. 2 Fall/Winter 2000. Retrieved August 10, 2013 from the World Wide Web: <http://www.futureofchildren.org>

Hobgood, Bobby, Ormsby, Lauren. *Inclusion in the 21<sup>st</sup> –century classroom: Differentiating with technology*, (2011). LEARN North Carolina. Available on the web at [www.learnnc.org/lp/pages/6917](http://www.learnnc.org/lp/pages/6917)

Partnership for the Assessment of College and Career Readiness – First Edition (2013). PARCC *Accessibility Features and Accommodations Manual 2013 – 2014*. Achieve, Inc. Washington, DC: PARCC Assessment Consortia

**Reaching Every Learner: Differentiating Instruction in Theory and Practice:** a series of articles and web conferences offered 2010-11. Archived videos are available. [www.learnnc.org](http://www.learnnc.org)

Technology competency skills curriculum guide: *Elementary Technology Literacy Guide*. Plano ISD, Plano, Texas (1998) Available on the web at <http://k-12.pisd.edu/CurrInst/Elemen/techguide.pdf>

**Technology Skills Checklist for Online Assessment**, developed by: Jo Fleming, PhD; Jacqueline Kearns, EdD; Preston Lewis, MA; Ashley Dethloff, MA; Robert Dolan, PhD; Linnie Lee, BME. The *Universal Design of Assessment: Applications of Technology Project* ; Office of Special Education Programs (Grant Number H324D020016); affiliated with the Interdisciplinary Human Development Institute at the University of Kentucky. (2005) Available on the web at [http://www.hdi.uky.edu/ilssa/\\_Closed/uda/Files/TechnologyChecklistKY11-21-05.pdf](http://www.hdi.uky.edu/ilssa/_Closed/uda/Files/TechnologyChecklistKY11-21-05.pdf)

Thompson, S.J.; Thurlow, M.L.; Quenemoen, R.F., & Lehr, C.A. (2002). *Access to computer-based testing for students with disabilities* (Synthesis Report 45). Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved August 10, 2013 from the World Wide Web: <http://education.umn.edu/NCEO/OnlinePubs/Synthesis45.html>

UDI Online Project. (2010). *Students with disabilities and online learning* (Technical Brief #04). Storrs: University of Connecticut, Center on Postsecondary Education and Disability. <http://www.udi.uconn.edu>

Wiener, Daniel , Thurlow, Martha. *Creating Accessible PARCC Reading Assessments: Separating the Constructs and Providing Text-to-Speech Accommodations for Students with Disabilities*. PARCC White Paper available on the web at [http://ca539dfd55636c55e922-fd4c048d1c793e15a27f954b34a49d25.r49.cf1.rackcdn.com/PARCCAccessibleReadingAssessmentsPaperFINAL\\_0.pdf](http://ca539dfd55636c55e922-fd4c048d1c793e15a27f954b34a49d25.r49.cf1.rackcdn.com/PARCCAccessibleReadingAssessmentsPaperFINAL_0.pdf)

Zorigian, Kris, Job, Jennifer. *How do special education students benefit from technology?* (2010) LEARN North Carolina. Available on the web at [www.learnnc.org/lp/pages6917](http://www.learnnc.org/lp/pages6917)