AEM AND THE 21ST CENTURY STUDENT

WHAT ARE ACCESSIBLE EDUCATIONAL MATERIALS (AEM)?

Accessible Educational Materials are print and digital educational materials that have been adapted in a way that makes them accessible to students with disabilities either through Audio, Braille, Digital Text, and/ or Large Print.

HOW CAN AEM SUPPORT THE 21ST CENTURY STUDENT

A student seeking to use AEM to assist their reading should be prepared to answer the following questions to support their preparation:

1. What type of AEM does the student currently use - Audio, Braille, Digital Text, Large Print or a combination of different forms of AEM?
2. What forms of Assistive Technology (AT) (i.e. iPad, Android, Laptop, eBot, Refreshable Braille display) does the student use and be utlitized across environments?

ASSISTIVE TECHNOLOGY AND UNIVERSAL DESIGN FOR LEARNING TO SUPPORT THE PROVISION OF AEM

Many students use different platforms for the provision of Accessible Educational Materials (AEM). Assistive Technology (AT) and the Universal Design for Learning model/approach are valuable tools that can support the provision of AEM. Assistive Technology (AT) is defined as "any item, piece of equipment, or product system, that is used to increase, maintain, or improve the functional capabilities of a child" (Authority: 20 U.S.C 1401 (1) or IDEA Amendments of 2004. P.L. 108-446, 20 U.S.C. S 1400 et seq., 300.5). The Universal Design for Learning model/approach (UDL) is a "framework for designing learning tools, texts, and environments so that all learners have access to the supports they need to succeed" (Rose & Meyer, 2002 cited in P. 39 Dalton, 2014). UDL can be paired with Assistive Technology to include features to support students with and without disabilities; some of these features can include text-to-speech, speech-to-text, and picture dictionaries. Students can use an iPad with dedicated apps to support the provision of AEM by using apps to convert documents and PDFs to be read aloud, enlarge the text, or be used with a refreshable braille display. The Kindle and the Nook also have a Text-to-Speech feature that creates synchronized highlighting to support literacy instruction (Dalton, 2014). Both AT and UDL can support a student's use of Accessible Educational Materials throughout their education and into employment. For example, students can use AT and UDL for reading assignments during their education and use the same resources to read a manual at their place of employment.

E-Readers and Text-to-Speech applications are forms of Assistive Technology and UDL that have been shown to support the development of a student's reading ability. An experimental study with e-reader tools found that "presenting children's books as digital text with dictionaries or activities can lead to improvements in phonological awareness, word reading skills, and vocabulary knowledge for kindergarten and first-grader readers" (Biancarosa and Griffiths, p.144 2012). In a meta-analysis, it was shown that middle school students increased their reading capabilities and improved their reading comprehension from using e-text and other supported technologies (Moran, Ferdig, Pearson, Wardrop, & Blomeyer, 2008). "The research is relatively robust on the benefits of text-to-speech for readers with impairments that might otherwise preclude equal access to the text and for younger readers still acquiring basic skills like phonological awareness of decoding" (Biancarosa and Griffiths, p. 143, 2012). Both E-Readers and Text-to-Speech can foster the relationship between a student's access to materials and reading ability across the lifespan.

People with print disabilities keep their independence and autonomy by using forms of AT and UDL, like an iPad™ or a tablet, in addition to using dedicated apps to make their world accessible (Retter, S., Anderson, C. & Kieran, L., 2013). An iPad™ and apps can also be used to support an employee's job duties, tasks and reminders without depending on

others, thus creating more independence (Hill, D., Belcher, L., Brigman, H., Renner, S., and Stephens., 2013). Using both AT and UDL to assist with the provision of AEM can support the 21st century student in their academics, with job searches, interview preparation, and support in the workplace.

The following are some forms of AT that can support the provision of AEM:

AT Devices

- Android
- iPad
- iPhone
- Daisy Reader
- Chromebook

Apps for iOS

- Bookshare
- Learning Ally
- Voice Dream Reader
- Pocket
- ClaroPDF
- KNFB Reader
- TextGrabber
- Prizmo

Apps for Andriod

- Bookshare
- Cool Reader
- Ebook Droid
- GoRead
- Learning Ally
- Moon+Reader
- PocketBook Reader

AT Reading Software

- Snap&Read Universal by Don Johnston
- Read&Write by Texthelp
- Kurzweil 3000

If you are a student, educational, professional, transition specialist, or family member that would like more information about supporting the provision of AEM during the transition towards employment feel free to contact the Wyoming AEM Coordinator at nimas@uwyo.edu.

WIND Wyoming Institute for Disabilities

WATR Wyoming Assistive Technology Resources

WYOMING ACCESSIBLE EDUCATIONAL MATERIALS

References:
Biancarosa, G., & Griffiths, G. G. (2012). Technology Tools to Support Reading in the Digital Age. The Future of Children, 22(2), 139-160. doi:10.1353/foc.2012.0014
Dalton, B. (2014). E-text and e-books are changing literacy landscape. Phi Delta Kappan, 96(3), 38-43. doi:10.1177/0031721714557451
Hill, D., Belcher, L., Brigman, H., Renner, S., and Stephens. "The apple iPad™ as an innovative employment support for young adults with autism spectrum disorder and other developmental disabilities." *National*
IDEA 2004 Statute (P.L. 108-446) for Part C. (n.d.). Retrieved April 5, 2016, from http://www.copyright.gov/legislation/pl108-446.pdf
Maran J., Ferdig, R.E., Pearson, P.D., Wardrop, J.,& Blomeyer, R.L. (2008). Technology and reading performance in the middle-schoolgrades: A meta-analysis with recommendations for policy and practice. Journal of Literacy Research, *40* (1), 6-58
Rehabilitation Counseling 44.1 (2013): 28-37.Web. 24 Sept. 2015. <http:libproxy.uwyo.edu/login?url=http://search.proquest.com/docview/1346943181?accountid=14793>.
Retter, S., Anderson, C. & Kieran, L. (2013). iPad Use for Accelerating Gains in Reading Skills of Secondary Students with Learning Disabilities. In R. McBride & M. Searson (Eds.), Proceedings of Society for Information Technology & Teacher Education International Conference 2013 (pp. 4025-4030). Chesapeake, VA: *Association for the Advancement of Computing in Education* (AACE).