(Slide 1) STEM Accessibility: Beyond Simply Making Things Accessible

What can we do to prepare students for life post-college?

# **(Slide 2) Who Are We?**

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* Alex Mason, Assistive Technology Specialist

# **(Slide 3) Who Are We? (2)**

## Where do we fit in at Purdue University?

* + Consulting & Training Team
    1. We support Brightspace
    2. We support globally supported LMS integrations
    3. We provide workshops, consultations, etc.
  + We are in a unique position between Purdue’s Disability Resource Center and Teaching and Learning Technologies.

# **(Slide 4) Why Are We Here?**

## Our Agenda:

* How does a student in STEM engage and interact with materials?
* Why is it important for a student to have independence when working with STEM materials?
* How was this done with one particular student and how can this be replicated for future use?

# **(Slide 5) Engaging with Materials**

## After making materials accessible, we can’t just stop there!

* There is no one-size-fits-all solution in every circumstance.
  + Every person is different with their specific needs and preferences
* Accessibility related to math and engineering
  + The “new frontier” of accessibility
  + Many students just “deal with it” in regards to the lack of accommodation for certain aspects of STEM
* Graphical representations of information
  + It is quite the challenge to find alternate ways to express graphical information

# **(Slide 6) Having Independence with Materials**

## Accommodation logistics, etc.

* Importance of human readers/scribes in STEM
  + Screen readers and voice-to-text solutions only go so far, especially when interacting with mathematical symbols, etc.
* Potential barriers with human readers/scribes
  + Does the reader/scribe know the subject matter?
  + Cost considerations
* Not effective, long-term solution
  + Is this something companies typically provide to their employees?
* There is no one-size-fits-all solution in every circumstance.

# **(Slide 7) Interaction and Replication**

* How did the student show their work?
* How did the student explain their “engineering judgement” used in solving the problem?
  + The student knows Nemeth Braille, but there would be substantial complexity in back-translating Nemeth to something the instructor could understand.
  + LaTex would be a good option, but the student would need to learn LaTex while taking classes.
  + ChattyInfty is also somewhat complex to use, but the learning curve is substantially smaller than with LaTex.
  + ChattyInfty can essentially be run as a LaTex editor, so the student can learn LaTex while completing classwork.
  + ChattyInfty can create both Word and LaTex documents.
  + ChattyInfty can also be used in conjunction with the Word equation editor. The student liked this option because it was easier to add additional text.
  + Most importantly, the student had more than one effective option.

# **(Slide 8) ChattyInfty Demo**

# **(Slide 9) Interaction and Replication (2)**

* How did the student graph and chart lab information?
  + Graphs are a required part of doing homework assignments.
  + The student needs to accomplish groupwork where these graphs are discussed.
  + Graphs are an effective method for students to understand trends and other information about data.
* Alternatives considered for graphs and charts
  + The student could work with a human reader/scribe to hand-draw graphs and charts.
  + The student could provide the graph/chart information to someone who could create a tactile conversion.
  + The student could use a tactile graphics embosser, in this case a ViewPlus Delta and Tiger Software Suite, to convert the graphs and charts independently.
  + The student can also print the same graph or chart on a laser printer to turn in for homework or share with group members.

# **(Slide 10) Tactile Graph Example**

# **(Slide 11) Interaction and Replication (3)**

* How did the student interact with technical drawings? (Work-in-progress)
  + The student started using ChattyInfty and Tiger Designer in Spring 2023. In Summer 2023, the student went to an internship and discovered the need to work with a CAD (Computer Aided Design) system. After the success in the spring, the student contacted me and was disappointed that I did not have a ready-made solution to this problem.
  + Possible process
  + Improvements on this process

# **(Slide 12) CAD Drawing Example**

# **(Slide 13) Discussion / Q&A**

# **(Slide 14) Thank you!**

# **(Slide 15) Contact Us!**

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