

Accessibility in STEM

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Math and science content must be created in ways that all students can access, including those using screen readers or Braille. Not all math formats work the same in D2L. Some formats keep the meaning and structure of math, while others break accessibility when files are uploaded in D2L or converted.

This article explains common STEM formats, where they work, and which ones are accessible so faculty can choose reliable options for their courses. Based on those formats, recommendations for converting or making STEM course materials accessible are also included.

Webinar Recording

STEM ADA Compliance

D2L Ally should not be used as proof that STEM content is accessible. Ally has documented limitations when evaluating complex STEM content and may not detect broken or incorrect math accessibility. A green **Ally** score reflects automated, surface-level checks, not the actual screen reader or Braille experience.

Avoid Uploading

- Scanned PDFs
- Word documents with OMML math expressions
- Image-only math
- Content assumed accessible *only because Ally is green*

Switch to Known-Reliable Workflows

- [D2L's built-in Equation editor \(MathType\) \(https://vtac.lonestar.edu/help/the-graphical-editor-latex\)](https://vtac.lonestar.edu/help/the-graphical-editor-latex)
- [LaTeX — inline or block — inside D2L \(https://vtac.lonestar.edu/help/using-latex-inline-on-the-html-editor\)](https://vtac.lonestar.edu/help/using-latex-inline-on-the-html-editor)
- [EquatIO \(Desktop, Chrome Extension, or LTI\) \(https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more\)](https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more)
- [HTML with MathJax for STEM content \(https://vimeo.com/1202251636?share=copy&fl=cl&fe=ci#t=1068.526\)](https://vimeo.com/1202251636?share=copy&fl=cl&fe=ci#t=1068.526) (17:46 in the Webinar Video)

Where Is Your Content Coming From?

Find your situation below, then follow the guidance in the corresponding section.

Content Source	Common Situation	What to Do
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Content Source	Common Situation	What to Do
Publisher platform and imported material	McGraw-Hill, Pearson, Cengage quizzes and homework	- Ask for WCAG 2.1 AA compliance and test with a screen reader. - Test imported publisher material with a screen reader, and fix with EquatIO if needed.
Word documents	Worksheets, exams, handouts with OMML or MathType equations	- Convert to HTML using AI and upload into D2L. - Use EquatIO Desktop to convert OMML equations.
PDFs	Scanned pages, exported Word docs, downloaded resources	- Convert to HTML using AI and upload into D2L. - Use Adobe Acrobat OCR to recognize text and characters, convert to Microsoft Word, then use EquatIO Desktop to convert equations.
New content in D2L	Content pages, quizzes, discussions built in Brightspace	Use D2L's HTML editor with the Equation editor, LaTeX Inline, or EquatIO.
Graphs and diagrams	Charts, chemical structures, visual data from any source	Write meaningful alt text; use AI tools to generate and refine descriptions.

Glossary of Math & Accessibility Formats

This glossary explains common math and accessibility formats used in STEM courses. Each entry includes a short definition, where the format works, and its accessibility level. Use it as a reference when you encounter an unfamiliar term or format.

MathML (Mathematical Markup Language)

MathML is a web standard that captures the structure and meaning of mathematical expressions, not just how they look on screen. Screen readers use that structure to speak math correctly and allow students to navigate within expressions using assistive technology.

MathJax

A JavaScript library that renders MathML or LaTeX consistently across browsers. Equations and formulas are **stored as MathML and rendered with MathJax**, preserving full mathematical

structure for screen readers and assistive technologies. These are the tools that use MathJax: [D2L Graphical Equation editor \(MathType\)](https://vtac.lonestar.edu/help/the-graphical-editor-latex) (<https://vtac.lonestar.edu/help/the-graphical-editor-latex>), [EquatIO](https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more) (<https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more>), and [Inline LaTeX on the HTML Editor](https://vtac.lonestar.edu/help/using-latex-inline-on-the-html-editor) (<https://vtac.lonestar.edu/help/using-latex-inline-on-the-html-editor>).

LaTeX

A plain-text markup language commonly used in STEM. **LaTeX by itself is not accessible** to screen readers. However, when entered into [D2L's Equation editor](https://vtac.lonestar.edu/help/the-graphical-editor-latex) (<https://vtac.lonestar.edu/help/the-graphical-editor-latex>) or used as [Inline LaTeX on the HTML Editor](https://vtac.lonestar.edu/help/using-latex-inline-on-the-html-editor) (<https://vtac.lonestar.edu/help/using-latex-inline-on-the-html-editor>), **Brightspace** converts it to **MathML**, making it accessible.

NOTE: **EquatIO** includes a **Screenshot Reader** that captures images of STEM expressions and copies them as LaTeX, which can then be pasted into D2L or converted to MathML.

EquatIO (by Texthelp)

EquatIO enables faculty to create mathematical content by typing, handwriting, speaking, or capturing screenshots of equations. It generates accessible math using MathML structured format, which supports accurate interpretation by screen readers and Braille displays.

EquatIO-generated content is not limited to simple image descriptions; instead, it includes underlying mathematical structure, allowing assistive technologies to interpret and navigate equations more effectively. **EquatIO** is available as a Desktop App for Word and PowerPoint, a Chrome Extension for web and D2L, and as an LTI integration within D2L (via Insert Stuff).

See: [Use EquatIO for Accessibility and More](https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more) (<https://vtac.lonestar.edu/help/use-equatio-for-accessibility-and-more>).

Nemeth Braille Code: Braille Mathematics Standard

The standard Braille notation for mathematics, widely used by students who are blind or have low vision. When math content is authored in **MathML**, Braille translation software automatically converts STEM expressions to Nemeth code with no extra effort required from faculty. Image-based or flattened math breaks this pipeline entirely, leaving Braille users with no access to the mathematical content.

MathType (by WIRIS)

MathType powers D2L's [Graphical Equation editor](https://vtac.lonestar.edu/help/the-graphical-editor-latex) (<https://vtac.lonestar.edu/help/the-graphical-editor-latex>). When STEM expressions are created directly inside D2L (content, quizzes, discussions), **MathType** outputs accessible MathML within the LMS. **The MathType desktop add-in for Word and PowerPoint is not licensed at Lone Star College.** MathType expressions created in MS Word or PowerPoint do not survive when uploaded to D2L.

OMML: Office Math Markup Language

Microsoft's proprietary equation format used in Word and PowerPoint. OMML expressions are

readable by screen readers inside Word but lose all mathematical structure when uploaded to D2L or converted to PDF.

Tagged PDF

Tagged PDFs are accessible for reading text, but math is reduced to flat alt-text descriptions. While screen readers can read these aloud, students cannot navigate within expressions or explore mathematical structure. PDF/UA does not support MathML in any practical way, and no mainstream PDF reader renders it. Students are left with a verbal description only, with no Braille fidelity or ability to re-read a sub-expression. For these reasons, **Tagged PDFs are not recommended for STEM content**, even when they pass automated accessibility checks.

Alt Text for STEM Content

Alt text is a written description attached to an image that conveys its meaning to students using assistive technologies. In STEM content, graphs, charts, and chemical diagrams require meaningful alt text that clearly communicates key information or relationships. While alt text can describe equations and formulas, it does not preserve their structure. Therefore, mathematical expressions are best represented using MathML, which enables accurate interpretation by screen readers and Braille displays.

If you need additional assistance, contact the **IT Service Desk** at **281.318.HELP (4357)** or submit a ticket through the [IT Service Desk Portal](https://lonestar.teamdynamix.com/TDClient/Requests/ServiceCatalog) (<https://lonestar.teamdynamix.com/TDClient/Requests/ServiceCatalog>).