Accessible PDFs with LaTeX for ~~DUMMIES~~ Teachers

Bryan Lewis and Carla Zeigler, Garrett College, January 2026

Why LaTeX?

- LaTeX is the de facto standard for the communication and publication of math and science. Chances are you *will* encounter LaTeXin STEM!
- LaTeX is widely used in publishing because it clearly separates presentation from content.
- LaTeXtypesets technical symbols and mathematics beautifully.

Why Accessibility?

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More Accessibility — placeholder

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Accessible PDF Output is (Recently) Possible!

- Thanks to *years* of diligent work by the LaTeX project developers. See this presentation at PDF Days 2025 Berlin:

  `https://www.latex-project.org/news/2025/10/30/pdfadays`

- Also check out the many solution posters from the conference:

  `https://pdfa.org/the-winning-technical-poster-at-pdf-days-europe-2025`

- Our slides walk you through a few basic steps to get things working.

Step 1: Use `lualatex`

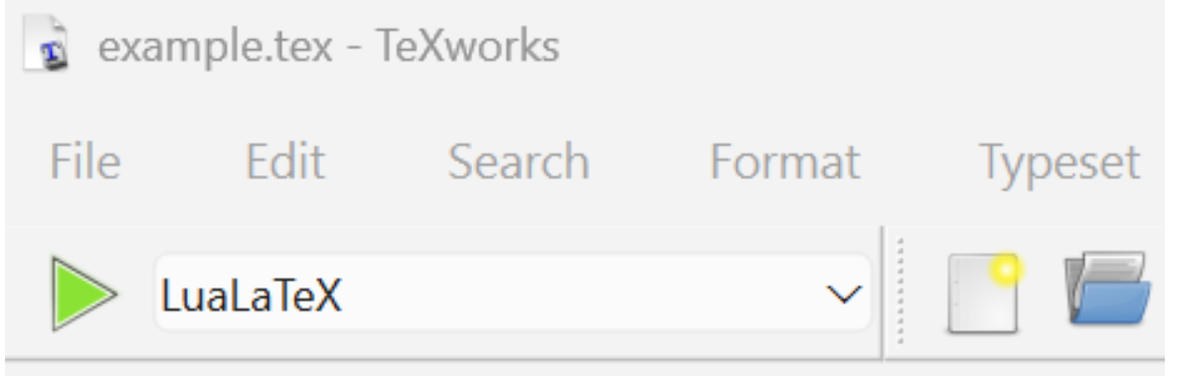
- LaTeX can be processed by many different rendering engines (`pdflatex`, `lualatex`, ...)
- `lualatex` is currently the best engine to use for accessibility.
- On many GNU/Linux systems simply install with:

  ```
  sudo apt install texlive-luatex
  ```

Using `lualatex` with MiKTeX on Mac and Windows Systems

1. Install MiKTeX (`https://miktex.org/download`)

2. Open the installed TeXworks editor and select the LuaLaTeX engine from the drop-down menu (see figure below).

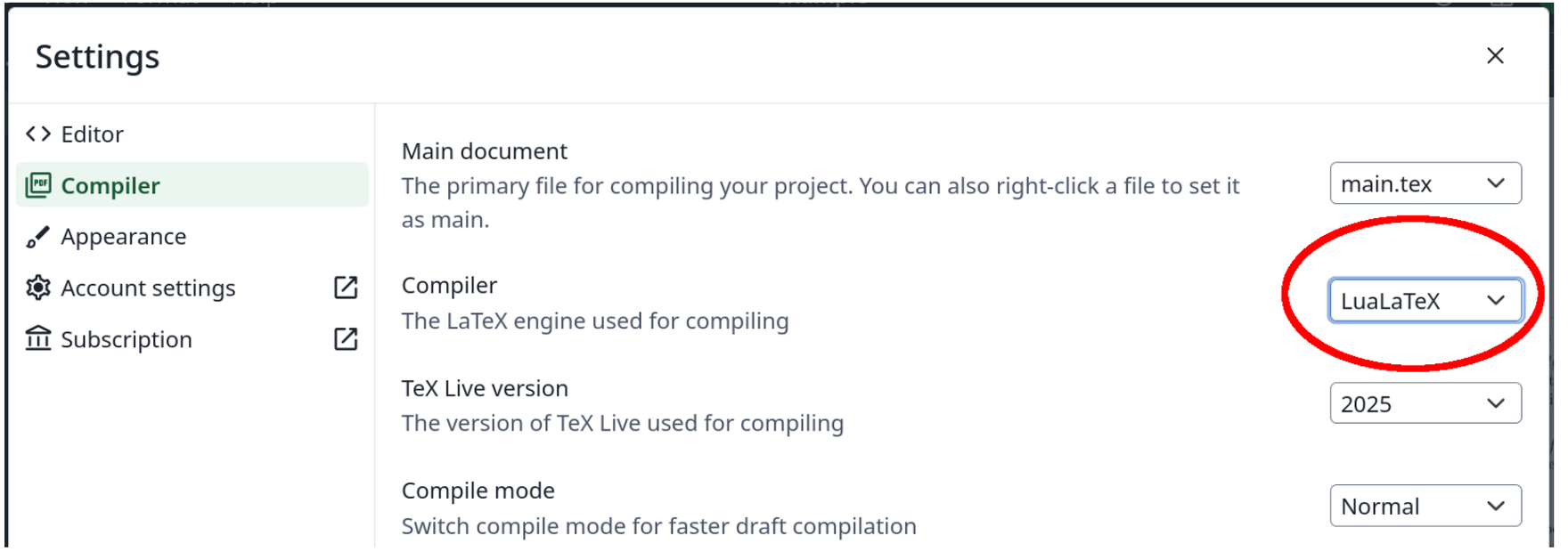


That's it! Note that MiKTeX may need to download and install a few packages the first time you select the LuaLaTeX option.

Using `lualatex` with Overleaf

Overleaf is a popular online LaTeX editor with over 20 million users. You can set it up to use the `lualatex` engine. Alas, this might only work with the paid version ☹.

- From the File menu, select the "Settings" option.
- Navigate to "Compiler" and select "LuaLaTeX" as shown in the figure below.



Step 2: Metadata in your documents

Add the following to the very top of your document (adjusting `lang` as needed):

```
\DocumentMetadata{
  tagging=on,
  tagging-setup={math/setup={mathml-SE,mathml-AF}},
  pdfstandard=ua-2,
  pdfstandard=a-4f,
  lang=en-US
}
```

This turns on tagging and embeds two kinds of mathematical notation markup for widest compatibility with reader software.

PDF document metadata

Add the following to your preamble above `\begin{document}` (adjusting entries as needed):

```
\usepackage{hyperref}
\hypersetup{
  pdftitle={Accessible PDF with LaTeX},
  pdfauthor={Bryan W. Lewis},
  pdfsubject={Accessibility},
  pdfkeywords={Accessibility, LaTeX, PDF},
}
```

Use the `unicode-math` math symbol package

Include the following package in your document preamble:

```
\usepackage{unicode-math}
```

Avoid use of the following packages if possible (`unicode-math` may work in their place):

~~`\usepackage{amsmath}`~~
~~`\usepackage{amssymb}`~~

This may not be strictly necessary but tends to produce good embedded MathML output.

Be sure to add text descriptions to every included image

Whenever you include an image in your document, be sure to include a text description defined with `alt`. For example:

```
\includegraphics[alt={Accessible PDFs with LaTeX for Teachers}]{filename}
```

Congratulations! Your LaTeX-generated PDF documents are now accessible!

See

`https://github.com/bwlewis/latex-pdf-accessibility/tree/main/example`

for a simple but complete, self-contained example document.

Setting up NVDA reader software with MathCAT

- The reader software with the most complete support is NVDA (NV Access) equipped with the MathCAT add-on. It's free, supports audible and braille output in many languages, and works very well!

  `https://www.nvaccess.org/download/`

- Install NVDA from the above link...

- Bring up the NVDA menu and select “Add-on store...” from the “Tools” menu.
- Right-click on the “MathCAT: speech and braille from MathML” add-on and select “Install” You will see “Downloaded, pending install” in the Status column. (This can take a while.)
- You’ll be asked to re-start NVDA for the add-on to take effect.

You’re all set to read beautiful PDF documents with LaTeX math aloud or in braille!

We recommend using Microsoft Edge to view PDF documents to be read by NVDA—it worked fine! Firefox also worked for us, but had some quirks. Google Chrome’s PDF viewer didn’t work at all with NVDA on our Windows 11 computer.

As an alternative, Adobe Acrobat Reader should also work.

Issues

- These techniques are all *very* new! Most (all?) accessibility checkers simply don't work correctly yet. That includes, at least, Blackboard's built-in checker as of January 2026. Look for proof in pudding and run your PDF output through a reader like NVDA to make sure it works well.
- *Most* LaTeX packages "just work." Your mileage may vary however with less mainstream packages. If you run into issues you might need to consider package changes.
- As mentioned in the last slide, choice of PDF viewer can be finicky. We expect fewer glitches as the software matures.

About us

Carla Zeigler is the Coordinator of Distance Learning and Instructional Design at Garrett College...

Bryan Lewis teaches math at Garrett College and has been using LaTeXsince the 1990s. He's written dozens of journal papers, a book or two, many talks, and lots of classroom notes in LaTeX.

Slide source code, examples, and more

These slides, examples, and example videos are available from:

`https://github.com/bwlewis/latex-pdf-accessibility`

and can be freely used and redistributed without restriction.