Physics Classroom Accessibility Overview & Plans

Date: February 1st, 2026

History and Accessibility Progress/Challenges

Mission and History

Physics Classroom has been providing Physics (and now Chemistry) educational materials since the 90's. We have our own high school focused online Physics and Chemistry textbook, 700+ HTML5 interactive modules, over 750 CalcPad assignments with over 2750 problems, about 250 printable worksheets, Lesson Plans and other teacher resources. It's our mission to make Physics and Chemistry fun, accessible and cost effective. Our Task Tracker allows teachers to assign, modify, and track our activity completions and automatically score them, and we have serviced over 7500 teachers and countless students.

Physics Classroom was started by Tom Henderson, a teacher in Illinois, who started creating resources for his students to take home (then burnt to a CD) to practice. It evolved over the years into a website, interactive modules, and eventually the Task Tracker system. Tom retired in 2024 and sold the company to Trevor Fayas, who was (and still is) the primary developer of the site for over a decade.

Upgrade work began late in the 2024 year. The existing site was a decade old and far behind both technological and accessibility standards. This started the long journey of keeping Physics Classroom available to teachers and students.

Accessibility Progress Summary

Trevor Fayas (new owner) has long been an advocate for creating truly accessible websites. Before becoming the owner of Physics Classroom, Trevor had over 15 years of software engineering (10 of which in consulting), he also was one of the few Kentico MVP (and now Kentico Community Leader). Trevor has created many modules and code for helping sites not just 'check the boxes' of accessibility but to actually make their site a positive experience for visually impaired individuals. We have both the experience and drive to continually improve Physics Classroom and our tools.
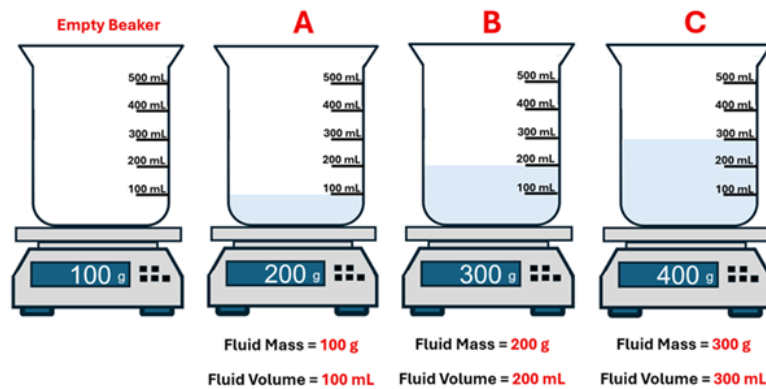
Work began on rebuilding Physics Classroom late 2024. We selected a web template/system that had accessibility features available for each of its tools, and built a template that contained numerous accessibility features:

- Screen reader specific navigations with keyboard shortcuts
- Skip to navigation
- Dark Mode
- Multilingual Audio Player on Tutorials and Help Sections (with accessibility keyboard shortcuts and instructions in the screen reader navigation on how to use)
- Color options that are WCAG 2.1 AA contrast compliant in all states (normal, dark mode, hover-affected, etc.)

- Dynamic Page level navigation (based on Header Hierarchy)
- WCAG 2.1 AA 9.7/10 score (Scan https://www.physicsclassroom.com/Store/Ad-Free-Plans for an example, or click here for Wave WebAIM analysis)

Migration of the Task Tracker, Interactives and Ordering system completed July 2025, with some improvements to usability being added in the following months. During this time, we also added our Chemistry textbook and 4 additional units in our Physics Textbook, with a focus on hand-writing proper verbose descriptions for images. These still existed in the old site (pending migration).

Example of verbose (hand typed) description, for the image below:

"4 beakers on top of scales are shown. Labels of Empty, A, B and C are above them, and the fluid mass and fluid volume are listed below. Empty shows 100g on the scale and no fluid in it (weight of the beaker), Flask A shows 200 g on the scale and a fluid mass of 100g and fluid volume of 100 milli liters. Flask B shows 300 g on the scale and has 200 g for mass and 200 milli liters of volume, and Flask C shows 400 g on the scale and has 300 g of mass and 300 milli liters of volume."

February 2026 saw the completion of the remaining Units and materials and begins the next phase of migrating content from the old site to the new.

Accessibility Gaps and Correction Plans

In this section, we will cover the major accessibility gaps that exist and what we plan on doing about them. A site that was built over 20+ years with so much content is no simple task.

Migration of Tutorials

Problem: Our textbook is currently on the "Old Site" which does not have the new accessibility features. Starting February 2026, we will be migrating the remaining legacy content, including the Tutorials. The older tutorials were created before accessibility standards were widely pushed, so many are missing alt tags and many have improper heading orders.

Solution (Initial): We will be migrating this content, but also while we migrate, we will be fixing Header hierarchy. We will also be running clean up scripts to help fix various issues. We also will be rendering the content after running it through a soon-to-be-created script which will detect image tags, look up their metadata (alt tags) and dynamically insert them before rendering to the user. We leveraged AI to create short and verbose descriptions during migration for these legacy images.

Solution (Long Term): In the farther future, we plan on rebuilding _all_ the tutorial pages, adding new (and more accessible) page structures and tools, replacing many equations that are currently in

image form with LaTeX syntax and parsers, and writing our own verbose descriptions, and including Braille versions of images and graphics (via [Humanware TactileView](#)) with ability to toggle to them.

CalcPad Accessibility

Problem: One of our interactives is the CalcPad, this is a React-based problem system. Currently we are 'rendering' this on the old template, and it hasn't had an accessibility pass done to it to make sure it's easy to use with keyboard and screen reader.

Solution: Spring/Summer 2026 we will be refactoring the CalcPad code to render on the new template. Along with this, I've tasked our Front-End Developer to make whatever adjustments are needed to make it a smooth experience with screen reader and keyboard. This should not be a difficult task, and we expect it to be ready for the 26-27 school year.

Concept Builder/Science Reasoning/Minds On/Concept Checker Accessibility

Problem: Physics Classroom's interactive modules are largely HTML5 modules that are built individually and were created throughout the past decade. These were not built with accessibility in mind and currently require mouse and sight to use.

Solution A: One possible solution is to go through each module, one by one, and update them to be accessible. These exist in largely 2-3 'types' of systems, so figuring out how to make the template accessible may give a blueprint to make the whole thing accessible, but this is a lot of time (year +). We are gauging if we will do this, or go with Solution B.

Solution B: We have plans to create a brand-new Problem Builder system, which will have Accessibility (and localization) as first class citizens. These will be driven by the database making creating new modules quicker, and we can migrate many of our interactives into them once complete. This is probably a yearlong project to do it right. Afterwards, our Minds On and Concept Checker activities will be able to be migrated over rapidly, with the Concept Builders and Science Reasoning slowly migrated (as they are very individualized)

Either solution we hope to have for the 27/28 school year, although I've found timelines are very tricky with a small team as ours (even if we are Senior Software Engineers).

Curriculum Corner Think sheets

Problem: While our Think sheet PDFs were made in word and are largely usable with screen readers, they are visually created and may not be easily used by a PDF screen reader. Images also will not have the alt descriptions for them.

Solution: We plan on making a Screen Reader version of the worksheets which will have the visual formatting stripped out and proper verbose image descriptions, and where answers need to be graphed, add student and teacher instructions/considerations to help accommodate. These will then be available alongside the normal version. Timeline is yet unknown for this, but probably within a year to year and a half. This way anyone needing to use assistive technology can use the digital accessible version of the think sheet.

Physics and Chemistry Interactives

Problem: Our final offering area are various simulations, games, virtual labs, and other activities that have been created by various authors (like PHET). Some of these we no longer have the source

code to either. These are also built without accessibility in mind over the past decade +. Sadly, we do not have a massive team (only 2 developers and 1 teacher) nor budget to go back through these. New modules will be built with accessibility in mind, but we aren't sure, yet what we will do with the existing ones.

Solution: This one we don't fully know yet. We will probably need to rebuild many of these from scratch or just mark them as not accessible and let teachers use them at their discretion (like how PHET still has modules it hasn't recreated yet). We plan on adopting a [Parallel Accessible DOM + Audio Description](#) model that Phet uses. Each interactive is completely different from the next.

Task Tracker Teacher Administration Accessibility

Problem: The Teacher view of the Task Tracker system also was not built with Accessibility in mind. This is a lower priority item since our primary focus is on ensuring the experience is accessible to students. However, this still needs to be updated. Along with this, until it is updated, the Teacher Task Tracker Portal is on the 'old template' (not old site, but a copy of the old site's header/footer to keep styling proper until refactored).

Solution: When we create our future Problem Builder, it will contain new systems to manage the activities, as well as new reporting capabilities. The Admin UI will eventually get completely refreshed, and during that time we will add accessibility to it as well. This may be multiple years in the future.

Ordering System Accessibility

Problem: Our ordering UI was not accessibility tested when we created it (we were in a very big rush to get it standing up to take incoming orders for the school year). This, although not often used by students, also needs an update.

Solution: We will eventually make updates to this ordering tool to ensure it works smoothly with screen readers. Lower priority to the other items. No timeline just yet on this.

Audio/Video Content

Problem: We have a large library of YouTube videos that were created long ago, which do not have transcriptions.

Solution: We will need to go through them and create transcripts, lower priority but also on the list of things we will do.

Considerations when Approving or Denying Physics Classroom

Physics Classroom is a resource created by teachers for teachers and their students. While we are not a "Not for Profit", we also have never been about profit. We are a ministry to the people we serve. There have been times when a school denied funds for a subscription already in use, and we kept the subscription active anyways so the teacher could continue using it. Or when a teacher needed a couple more students, that we just added them. That's the type of company we are.

Many teachers have been users of Physics classroom for years, even decades, and our material is written into the warp and weft of their course. Many I know and consider friends and family of the site. We have striven to keep costs down (haven't raised prices even through COVID), while putting our own sweat equity to continue to innovate and invest in our resources, and provide tremendous value to both students and Teachers. Physics Classroom has even been in 2 recent studies which showed the effectiveness of the methodology we promote in increasing understanding and scores.

We tread the line between keeping costs down and paying the bills, which we often just barely cover our rising costs. Please keep these things in mind – we don't have large teams like many big companies do because we don't charge like big companies do. Please do not punish the teachers by stripping our resources from them while we do everything we can to improve and become more accessible (which we are with everything we do).

Sincerely,
  Trevor Fayas – President of Physics Classroom

Our Next Steps (Completion Times are Estimates)

- Finish Migrating static content off old legacy site onto new platform, doing programmatic cleanup on tutorials to bring as close to full compliance as possible (~ End of July 26)
- Migrate the CalcPad system (React) to new tooling, design, and ensure Accessibility standards are met (~ End of July, 26)
- Work on making PDF content Accessible, or create Accessible versions of them for braille or readers (~ End of December 26)
- Either update and republish Minds On / Concept Checkers with accessibility, OR begin work on new Universal Problem Builder that will be accessible and these can be easily migrated into (~ April 2027 ??)
- Start Rebuilding Concept Builders and Science Reasoning into either the new Problem Builder or adjust to make accessible (probably using the Parallel DOM + Audio methodology Phet uses)
- Start Tutorial page recreation to make even better visually and accessibility wise (+creating Braille compatible version of images)