

A COMMERCE WHITE PAPER BY

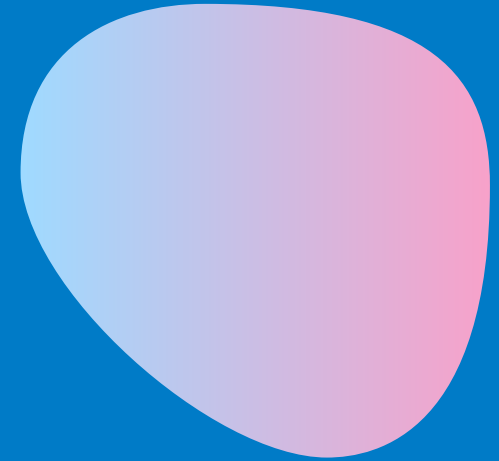
intive

Accessibility in EdTech

Learning to make Education
Technologies accessible to all



Content



CHAPTER 1

Introduction

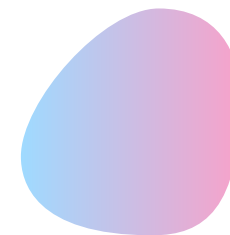
The pandemic spurred a new era of learning in the digital realm. As the world continues to adapt to virtual education as the norm, more people with varying levels of tech literacy and capabilities rely on digital platforms and tools to attend school, get certifications, and develop skills. With such a large volume of diverse users, EdTech has led the way in prioritizing inclusivity – paying attention to flows and navigation that accommodate people with and without disabilities.

Educational institutions have long been held to a high standard when it comes to accessibility, both because of legal requirements and a moral obligation to share and foster knowledge. And, compared to other industries, education faces deeper scrutiny when it comes to the success or failure of their accessibility measures. The sheer number of students and variety of abilities means that educational institutions and industry leaders

have designed user experiences with an all-encompassing mentality from day one. Access to education is a basic human right, and as education has moved online, EdTech companies have enacted that right throughout their products and services. That's why in the remote revolution, EdTech companies offer an effective accessible template for other industries.

But being accessible isn't only an ethical duty, it makes good business sense. Accessible EdTech products don't only serve people with visual, audio or mobility impairments – they create better experiences for **everyone**. For example, young people are almost [four times more likely](#) than older people to watch TV shows with subtitles, despite having fewer reported problems with hearing. Features that were once categorized as accessibility extras, can actually enhance the user experience as a whole.

This paper offers advice and tools to businesses looking to bake accessibility into their design and development cycles and optimize their outcomes. The paper breaks down key EdTech learnings, including accessibility compliance, the importance of user testing, and the risk of retrofitting. Along the way, it will draw on intive's projects working with Macmillan on its leading Learning Management System, and highlight how to keep design and development aligned for a truly accessible, comprehensive solution.



CHAPTER 2

Regulations should serve as an Accessibility Baseline

There are a selection of guidelines that can support EdTech companies with accessibility. The Web Content Accessibility Guidelines – known as [WCAG](#) – are the technical parameters to build accessible websites, focusing on content being perceivable, operable, understandable, and robust. Meanwhile, Apple has the [Human Interface Guidelines](#) and Android has its own [best practices](#).

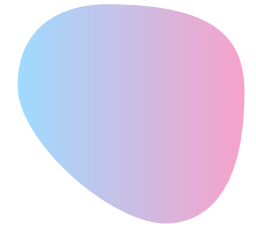
When applying any of these guidelines, the maximum requirements should be the minimum level of accessibility that EdTech companies strive for and apply across their products. Cherry-picking accessibility features can dilute the overall effectiveness of initial accessibility

efforts, as virtual doors will be opened for some people, but will remain closed for others.

For example, implementing a screen reader ensures that images on a page or app have a description that can be read aloud, and that the navigation is narrated for people with visual restrictions, or for people who retain information more strongly via audio. But a screen reader won't detect text that has been added to images. Nor will a screen reader aid people with color blindness who can't determine if an answer is correct because it is displayed in red or green. That scenario demands a better color contrast ratio – at least 4.5:1, according to WCAG.

Likewise, EdTech companies should enable keyboard navigation for people who have restricted mobility, but also provide the option for mouse navigation to serve people who simply prefer that option. Students who are gamers for instance, may be accustomed to both forms of navigation, and benefit from the choice.

EdTech companies should see accessibility guidelines as a springboard to layer their features and guarantee a pathway to learning, regardless of students' scenarios. Following regulations is a firm and necessary step toward accessibility, but it should not be viewed as the completion of the journey.



CHAPTER 3

Recognize the Nuances between Compliance Levels

Accessibility lawsuits against online platforms have [increased](#) substantially in recent years, in part because organizations have failed to meet users' needs or because they have incorrectly labeled their accessibility rating. To avoid large fines and potential damage to trust among users, EdTech companies should take care to research and define which compliance level they can realistically implement and still serve the maximum number of people.

Within the WCAG, there are three levels of accessibility: A, AA, and AAA. Level A removes elements on a website that could make it inaccessible and uses features like keyboard navigation, text-alternative content, and video captions. Level A websites additionally take care not to convey meaning via size, color or shape alone.

Level AA websites are usable and understandable for people with and without disabilities. They incorporate a 4.5:1 color contrast, alt text for images, accurately-labeled form fields, have headings in a logical order, and provide status updates through a screen reader. More sophisticated requirements for level AA include providing documentation for keyboard shortcuts and exposing the location of keyboard focus visually and programmatically, plus ensuring that users can stay logged in on the platform.

intive recently worked with Macmillan to achieve WCAG 2.1 Level AA compliance for its flagship Learning Management System. In the past, intive has also helped Norton, Catalyst, Kitamba and Amplify reach AA status.

During the process, the following tools and resources were valuable to fulfill the standards:

- JAWS, NVDA, Mac Voiceover, and Android TalkBack screen readers
- Dragon speech recognition software for Windows and Mac
- ZoomText screen magnifier for Windows and Mac

Level AAA is the highest WCAG compliance, where a site is accessible to the largest number of individuals. Criteria for level AAA includes sign language interpretation for audio and video content, a color contrast of 7:1, and context-sensitive support – for example, tooltips showing link previews within articles.

CHAPTER 4

User Testing comes before Technical Development

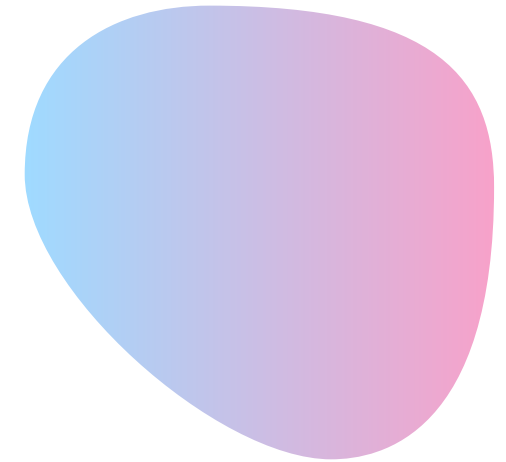
Accessibility has to be rooted in real-life context, not abstract assumptions. Testing therefore **must** influence the technical architecture of accessible features – not the other way around. User needs are constantly evolving, and EdTech companies have to regularly test products and services with representative groups to keep pace with those shifts. Not doing so could quickly make a platform exclusionary or outdated for students.

Rather than a “set it and forget it” approach, where companies make a blueprint for accessibility and rigidly stick to it moving forward, accessibility has to be dynamic and reactive. EdTech organizations should conduct accessibility testing every time they want to develop or iterate a feature, and that

testing should take place with people with a broad spectrum of abilities. Testing with homogenous groups will inevitably leave gaps in accessibility. [Fable](#) is a great community to find diverse users and ask them to test digital products, as well as to tap into resources about people’s lived experiences of usability in EdTech and other industries.

During testing, be conscious to mix and match users and situations. Ensure that Mac users sample flows on a Windows device, and that assistive software is played on a selection of operating systems and web browsers. The combination will likely extend quality assurance time, but is worthwhile to confirm that accessibility isn’t compartmentalized.

Beyond user testing, accessibility needs to be consistently reviewed once put in place. Automated tools like [Linters](#) spot accessibility issues in React apps, while [a11y add-ons](#) support writing accessible components. Google’s [accessibility tree](#) or Firefox’s [Accessibility Inspector](#) are powerful to grasp how accessibility elements interact together, and to check that accessibility is not hindered by the presence of APIs or third parties. These tools are beneficial to maintain a finger on platforms’ accessibility pulse. However, teams must manually test accessible functionality themselves and with users to cover crucial areas often missed by automatic scans.



CHAPTER 5







Build atop of existing UX Expectations

Accessibility doesn't mean having to reinvent the wheel. In fact, EdTech companies will see greater success by doubling down on processes and elements that users are already familiar with and finessing accessibility from there. Trying to change behaviors for accessibility purposes will create more friction for users, not streamline how they reach and retain information.

EdTech companies have to improve existing flows without heavily disrupting users' current digital literacy and expectations. They can do so by making UX intuitive, empowering people to make repeat actions and naturally acclimatize to the platform. Educational institutions should take particular note to extend their in-person curriculum norms into the digital space. Teams should be looking at how people with disabilities are included on campus and in the classroom, and mirror those measures in UX.

EdTech companies should equally conduct a deep dive into students' preferences around online activities. For instance, people are more likely to access solutions via mobile, and, if so, ensure that accessibility is optimized for a smaller screen. Font size, spatial awareness, touch point placements, and data entry should all be top concerns to make learning experiences on mobile accessible. For case studies around UX expectations and designing for different mediums, [The UX Collective](#) has a host of takeaways for EdTech.

A FEW GENERIC UX EXPECTATIONS THAT EDTECH BUSINESSES SHOULD USE AS A FOUNDATION IN THEIR DESIGN

-  Show hyperlinked text in the same color across the website/service
-  Underline breadcrumb items
-  Apply instructions on form fields and text inputs
-  Add quality descriptive alt text to images
-  Use formatting to give structure and priority to information (i.e. using H1, H2, H3 headers)
-  Offer a colorblind friendly mode (see [Trello's version](#))

CHAPTER 6

Make interactive Content inclusive

One of the best qualities of EdTech is its potential to have multiple mini applications that enable students to interact with content in creative ways. An online chemistry class, for example, could involve choosing and mixing substances from different test tubes and observing the different reactions. In this case, students with a disability may need additional prompts to engage with the experiment in the same way as other students, and to collect feedback from the exercise. And prompts don't just support people with disabilities, they may make the content as a whole clearer and more memorable.

Staying with the test tube example, EdTech platforms can't simply display a fizzing reaction

on the screen. There should be a screen reader that describes the change in state, and other assistive technologies that provide cues to students about how their actions have impacted the experiment. The same applies to other interactive scenarios, where being accessible means communicating the outcomes in more than one way.

Unlike other industries, the goals of EdTech aren't to get users to convert in the shortest time possible. On the contrary, accessible EdTech is rooted in giving paced, in-depth information to students, so they have a complete perspective of a task, and can respond accordingly, no matter their physical or mental capabilities.



CHAPTER 7

Accessibility has to be proactive – don't rely on retrofitting

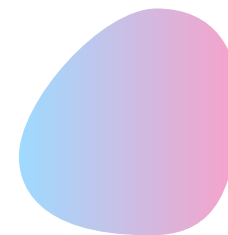
Despite rapid unfolding digital transformation, many businesses aren't investing in accessibility due to fear of costs or because of a lack of resources to facilitate research and testing. Yet, as accessibility regulations are enforced more strictly, companies that don't commit to accessibility will end up spending more down the line. Estimates show that retrofitting accessibility could cost companies [three times more](#) than if they built products with accessibility in mind from the start. Not to mention, there are more free and affordable accessibility tools and communities to use than ever before.

EdTech companies have an especially big responsibility to be accessible, to allow all students equal access to knowledge building and sharing opportunities. Platforms that don't

prioritize accessibility may have to rewrite code later, which could disrupt learning flows for everyone, and lead to expensive, time-consuming breaks.

Being proactive about accessibility makes ethical and financial sense. It involves sewing the accessibility seed early on and tending it to grow through all operations. Browser extensions are helpful to keep atop accessibility efforts (e.g., the [WAVE Evaluation](#) tool from Chrome), but these won't provide a full picture around inclusion. EdTech companies need to additionally collect real-time feedback from real users, and encourage an open dialogue about accessibility with students – such as Macmillan's in-platform chat where students can request accessibility improvements.

EdTech organizations may also want to consider working with consulting firms to facilitate accessible designs, roadmapping, toolkits, and protocols. The more perspectives on a strategy, the more accessible it will become. Macmillan collaborates with [Tech for All](#) consultants, many of whom are living with disabilities themselves and offer customized training for teams to identify and rectify barriers to accessibility.



CHAPTER 8

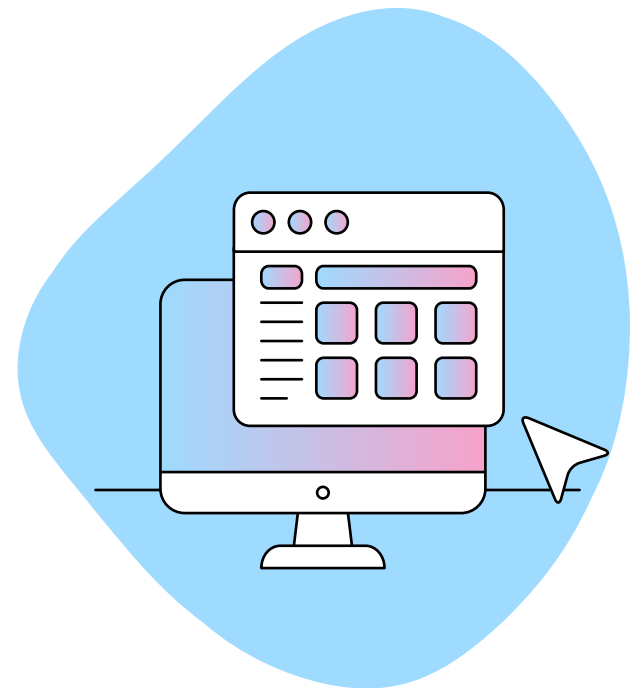
Keep Development and Design close

Accessibility falls on the shoulders of every person in the team: It is a collective effort and has to be understood by all stakeholders to be truly realized in an EdTech platform. Accessibility meetings should take place during the planning stage, and whenever possible, be reviewed by compliance specialists. Naturally, there will be people who lead and document how accessibility moves forward, but there should still be a general consensus about the significance of accessibility throughout cycles.

Engineers, designers, and quality assurance personnel should all attend various stages of user testing and work in close proximity to one another. They should also have extensive training around news and trends in the accessibility landscape, and be aware of EdTech platforms that have had concerns raised about their accessibility.

Enacting accessibility requires technical functionality, but students need aesthetics and a human touch to first recognize and digest accessible settings. Engineers, designers, and QA have to envision what the UX of a design would be, and garner feedback to see if it can be achieved. In particular, designers are tasked with concisely relaying the accessibility details of a design to developers.

For example, 'focus states' express when a user has highlighted an element on the page. Not having focus states means students using a screen reader won't know where they are on a page. It's up to designers though, to specify in the design annotations to engineers what a new component's focus state is. With accessibility design requirements clearly annotated, engineers and QA personnel can more thoroughly construct it.

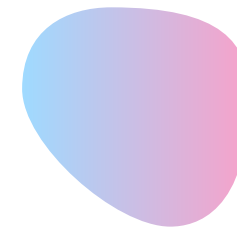


CHAPTER 9

EdTech: an Ambassador for Accessibility

At the intersection of education and technology, EdTech is in a unique position to champion accessibility and inspire other verticals to follow suit. The COVID-19 pandemic forced society to rethink how to deliver education and how the new 100% online format could cater to more diverse students in more diverse locations with more diverse contexts. The result has been a wave of innovation in UX and design in EdTech, and new groups of people being brought into the technological fold.

With inclusion now at the forefront of how EdTech platforms are made and maintained, EdTech has established itself as a long-term ambassador – and enabler – of accessibility.



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We're looking forward to being your digital partner.