The Impact of Section 508 Compliance on Educational Games and the Need for a New Accessibility Framework

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Executive Summary: The Need for Accessible Educational Games and Policy Reform

Educational games are critical tools in modern education, promoting core competencies and critical thinking skills. However, current accessibility standards like Section 508 are insufficient for addressing the dynamic, interactive nature of these games. This policy paper highlights the urgent need to establish a new accessibility framework specifically tailored to interactive educational games. Key immediate actions for policymakers include revising Section 508 standards, creating flexible accessibility guidelines, funding accessible game development, engaging with accessibility experts, and enhancing teacher training.

Educational games have rapidly become a powerful tool in modern classrooms, offering students interactive and engaging ways to learn core competencies, like reading, writing and mathematics, but also other critical skills such as problem-solving, collaboration, and creativity. However, for these games to be truly effective and inclusive, they must be accessible to all students, including those with disabilities. Current federal accessibility standards, such as Section 508 of the Rehabilitation Act, were designed for static digital content and do not adequately address the dynamic, challenge-based nature of video games. Consequently, educational games are frequently either oversimplified, which reduces their educational efficacy, or excluded from classroom use altogether due to technological incompatibilities, thereby eliminating a valuable, engaging tool that has demonstrated positive effects on student learning outcomes.

To ensure that educational games can serve all students effectively, policymakers must take action. This white paper outlines a roadmap for creating a new, flexible accessibility framework that balances the need for inclusivity with the preservation of the educational challenges that make games a valuable learning tool.

Key Recommendations for Policymakers:

1. **Revise Section 508 to Account for Interactive Content:** Section 508 should be updated to provide flexibility for interactive media like video games. A new standard must allow for adjustable difficulty levels, alternative input methods, and customizable feedback to accommodate students with disabilities while maintaining the educational integrity of games.
2. **Establish a Video Game / Interactive Media -Specific Accessibility Standard:** Create a new federal standard, or adopt already proven public systems, for educational games that emphasize customization and flexibility over the rigid removal of challenges. This would encourage developers to design accessible games that are still engaging and educational.
3. **Provide Federal and State Funding for Accessible Game Development:** Policymakers should allocate funding to support the development and implementation of accessible educational games. Grants, school-developer partnerships, and research funding are crucial to ensuring these tools are available to schools and meet the highest standards of inclusivity.
4. **Engage Subject Matter Experts :** Seek out organizations that are on the forefront of accessibility in the gaming space. Crafting accessible experiences in the private sector.
5. **Train Teachers on Accessible Game Integration:** Teachers should receive professional development and support to incorporate accessible educational games into their curricula,

ensuring that they can leverage these tools effectively for all students. Tasking governmental agencies, like the Department of Education, and partnering with national organizations such as the National Education Association (NEA) to develop training programs.

Table 1 Table of Relevant Federal Laws Impacted by Accessible Educational Games

Law	Description	Impact on Educational Games
Section 508 of the Rehabilitation Act of 1973	Requires that federal agencies ensure their electronic and information technology is accessible to individuals with disabilities.	Section 508 needs to be revised to account for the interactive and challenge-based nature of video games, ensuring flexibility in compliance for educational games.
Americans with Disabilities Act (ADA) of 1990	Prohibits discrimination based on disability in public and private spaces, including educational institutions.	Ensures that educational tools, including games, are accessible to students with disabilities, but does not provide specific guidance for interactive content like video games.
Individuals with Disabilities Education Act (IDEA)	Guarantees that students with disabilities receive a free and appropriate public education, including access to educational technology.	Educational games must comply with IDEA by offering accommodations to ensure that students with disabilities can fully participate in classroom activities.
Every Student Succeeds Act (ESSA) of 2015	Focuses on personalized learning and the use of technology to improve educational outcomes for all students.	ESSA encourages the use of innovative tools like educational games to personalize learning, but it requires that these tools be accessible to students with disabilities.
21st Century Communications and Video Accessibility Act (CVAA) of 2010	Requires that modern communications technologies, including digital content, be accessible to individuals with disabilities.	While primarily focused on communications, the CVAA sets a precedent for ensuring that digital and interactive content, such as educational games, are accessible.

Conclusion: A Call to Action

To prepare students for success in the digital age, policymakers must act now to support the development and implementation of accessible educational games. By revising Section 508, creating new accessibility standards for games, and partnering with accessibility experts in the commercial sectors already achieving high-quality accessible experiences in video games, the federal and state governments can ensure that all students, regardless of ability, can benefit from these powerful learning tools. Providing the necessary funding, certification, and training to support inclusive educational games will empower schools to create a more equitable, engaging, and effective learning environment for all students.

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1. The Role of Educational Games in Modern Learning

This section explores the role of educational games in modern learning, addressing essential elements for policymakers.

1.1. The Growing Role of Educational Games in the Classroom

Educational video games are transforming modern classrooms. Over the last decade, the rise of digital learning tools has paved the way for video games and interactive digital media to become an effective medium for teaching complex concepts, enhancing student engagement, and promoting interactive learning. These games introduce dynamic, real-world scenarios that help students apply theoretical knowledge in practical, problem-solving contexts.

Summary: Effective policy making requires understanding and addressing the challenges outlined in the role of educational games in modern learning.

Teachers across the U.S. are increasingly wanting to employ educational games to teach subjects such as math, science, history, and literacy. For many students, these learning games may be found in the home already, as parents look to add value to ongoing debates around screen time. The unique appeal of games lies in their ability to make learning fun. By integrating engaging visuals, narratives, and game mechanics such as levels, rewards, and challenges, students can remain focused and motivated to learn. Studies have demonstrated that educational games increase student motivation[1][2][3], improve retention of information, and enhance critical thinking skills, making them valuable tools in the educational arsenal.

Moreover, the rise of educational games dovetails with federal education policies, such as the Every Student Succeeds Act (ESSA), which encourages the use of innovative technology to personalize and enhance learning experiences. Games provide an avenue to meet these objectives by offering adaptable content that can be tailored to the diverse needs of students, ensuring no learner is left behind.

It is worth noting that for students in lower socio-economic households, educational games, along with general computer use in schools, can play a key role in closing the digital divide, providing computer literacy that may not be available at home.

1.2. Video Games as a Major Part of Children's Lives

Beyond the classroom, video games have become a significant part of children's daily lives. With the widespread availability of gaming devices such as smartphones, tablets, and gaming consoles, many children are exposed to video games from an early age. According to recent industry studies[4], 76% of

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[1] Gamification and motivation in learning (Ramos et al, 2024)
[2] Babuta'an Traditional Games In Increasing Students' Learning Motivation (Hasanah et al, 2024)
[3] Development of Game-Based Learning Applications. (Setiawaei et al, 2024)
[4] ESA 2023 Essential Facts about the US Video Game Industry

children in the U.S. play video games regularly. This prevalence means that children are accustomed to gaming as part of their entertainment and social activities.

The educational sector has seized on this trend, recognizing that games can leverage children's enthusiasm for gaming to improve learning outcomes. Educational games provide an opportunity to extend learning beyond traditional classroom settings, allowing students to engage with educational content at home, on the go, or even in collaborative online environments with their peers.

Because video games are already a familiar and engaging medium for most children, incorporating them into learning can increase participation from students who may be disengaged with more traditional methods of teaching. The natural appeal of gaming offers educators an effective way to reach students where they are and turn leisure time into learning time.

1.3.   Evidence-Based Benefits of Educational Games in Student Learning

Educational video games aren't just engaging, they're effective. Over the last decade, researchers across the globe have studied the impact of educational games on student learning, and the data are clear: well-designed games can significantly enhance academic outcomes and cognitive development. These findings support a growing consensus that educational games should not be treated as supplemental novelties but as credible instructional tools. This section summarizes key global findings across academic and cognitive domains.

1.3.1.   Academic Outcomes – Learning Gains, Retention, and Test Scores

A wide body of research confirms that educational video games can improve academic performance. A 2022 meta-analysis of 38 experimental studies reported a very large effect size (Hedges' g ≈ 1.69) favoring educational games over traditional instruction methods, particularly in primary education settings[5]. Another meta-analysis of 33 studies in STEM education found that students using game-based tools outperformed their peers with a moderate average effect size of 0.67 (p < .001), with the strongest gains in science and mathematics[6]. A third meta-analysis of 69 studies showed that digital games significantly enhanced student learning relative to nongame conditions.[7]

These tools also support deeper learning. Studies show that students retain more content over time when learning through interactive games. In science education, for example, "serious games" led to significantly higher knowledge retention compared to lecture-based methods[8].

In the classroom, games have found success as preparation for future learning, giving students common ground with the teacher to engage with abstract or distant ideas[9].

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[5] Karakoc, M., et al. (2022). The Effectiveness of Digital Educational Games on Academic Achievement: A Meta-Analysis.

[6] Jong, M.S.Y., et al. (2021). *Meta-analysis of digital games and STEM learning outcomes. International Journal of STEM Education.*

[7] Clark, D. B., Tanner-Smith, E. E., & Killingsworth, S. S. (2016). Digital Games, Design, and Learning: A Systematic Review and Meta-Analysis. Review of Educational Research, 86(1), 79-122.

[8] Mayer, R.E. (2019). *Computer Games for Learning: An Evidence-Based Approach*

[9] Merrill, Erin. "Cast Your Vote and Growing Informed Voters." *iCivics*,. Accessed 24 Apr. 2025.

Large-scale global assessments reflect similar trends. The OECD's analysis of PISA data from 64 countries found that students who played single-player games moderately, between monthly and almost daily, scored higher in reading, math, and science than peers who never played or who played excessively[10]. This suggests a sweet spot: moderate, intentional game use can drive measurable improvements in academic performance.

Studies have shown educational games targeting 21st Century Skills (such as critical thinking, problem solving, and information literacy)[11] and STEM topics are effective.[12,13]

1.3.2. Videogame Playing in General Has Positive Benefits In Moderation

Some games designed for entertainment also have their place in the curriculum and after school programming. Game mechanics like strategic decision-making, time management, and goal tracking help foster problem-solving and executive function skills. In younger learners, puzzle and memory games have been shown to improve spatial reasoning, attention, and working memory[14].

Recent large-scale studies underscore these cognitive gains. A 2022 study involving nearly 2,000 children found that gamers performed better on tasks measuring working memory and attention control than non-gamers[15]. Functional MRI scans of these participants revealed stronger activation in brain regions associated with attention and information processing[16]. In other studies, regular gameplay has been linked to improvements in task-switching, inhibition control, and decision-making speed[17].

These skills are foundational for learning, particularly in dynamic classroom environments. Games that require students to analyze scenarios, fail safely, and adapt strategies can meaningfully support their ability to think critically in both academic and real-world contexts.

Before and after school, Scholastic e-Sports programs offer an inclusive atmosphere for students to engage in teamwork and practice leadership skills playing videogames competitively. There are 3,500 US high school e-sports organizations associated with NASEF[18].

1.3.3. A Note on Responsible Implementation

While the benefits are clear, the research also highlights a need for balance. Games are most effective when integrated into instruction intentionally and in moderation. Excessive gaming, or games without educational scaffolding, can reduce their instructional value and potentially crowd out time needed for

[10] OECD (2018). *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*

[11] "21st-century skills." *Wikipedia,* Wikimedia Foundation, 24 Apr. 2025,

[12] Meihua Qian, Karen R. Clark, Game-based Learning and 21st century skills: A review of recent research Computers in Human Behavior, Volume 63, 2016, Pages 50-58, INNS 0747-5632

[13] Wang, LH., Chen, B., Hwang, GJ. *et al.* Effects of digital game-based STEM education on students' learning achievement: a meta-analysis. *IJ STEM Ed* **9**, 26 (2022).

[14] Papastergiou, M. (2009). *Digital Game-Based Learning in High School Computer Science Education: Impact on Educational Effectiveness and Student Motivation. Computers & Education*

[15] Chaarani, B., et al. (2022). Association of Video Gaming With Cognitive Performance Among Children. JAMA Network Open, 5(10)

[16] Paulus, M.P., et al. (2022). Neural Correlates of Cognition and Behavior in Young Video Game Players. Journal of Neuroscience

[17] Green, C.S., & Bavelier, D. (2012). Learning, attentional control, and action video games. Current Biology

[18] Gifford, Aaron. "Scholastic Esports Surging in Popularity Nationwide, Globally." *GovTech*, 14 Feb. 2024,.

other learning activities[19]. When implemented thoughtfully, however, educational games are powerful tools for building knowledge and supporting cognitive growth.

These outcomes reinforce the value of game-based learning across the general student population. Yet despite the evidence, many schools remain hesitant to adopt educational games, particularly when accessibility compliance introduces risk. As the next section discusses, the limitations of Section 508 are a key barrier to ensuring all students, including those with disabilities, can benefit from these proven tools.

1.4. The Power of Shared Gaming Experiences for Social Development

Educational video and tabletop games not only enhance learning outcomes but also play a crucial role in the social development of children. Games, particularly multiplayer or cooperative ones, create shared experiences that bring students together. In a classroom setting, games can foster collaboration, teamwork, and communication skills, as students work together to solve problems or complete tasks.

For children with disabilities, this collaborative gaming environment is especially important. Video games designed with accessibility in mind allow students with disabilities to participate in the same activities as their non-disabled peers, fostering social inclusion and building bridges between different groups of students. Well-designed educational games can level the playing field, offering students of varying abilities opportunities to engage and interact in meaningful ways.

1.5. Shared gaming experiences help children bond and develop friendships[20]

This is particularly beneficial for children with disabilities who may otherwise feel socially isolated due to physical or cognitive barriers in other activities[21]. For example, a child with a physical disability may not be able to participate in a traditional games at recess but can join their classmates in a digital learning game where physical barriers are minimized. During gameplay, these barriers can be mitigated or eliminated through accessible design, enabling all students to share in the experience of learning through play. By creating a common ground, games can reduce stigma and encourage empathy among students, fostering a more inclusive and supportive classroom environment. Accessible Educational Games as a Path to Inclusion

Inclusion is a core goal of modern education, and accessible educational games are a powerful tool for achieving it. Well-designed games can accommodate students with a wide range of disabilities, providing them with the opportunity to engage with educational content in ways that suit their needs. This includes features like customizable difficulty levels, alternate input methods (such as voice or eye-tracking controls), and adaptive game mechanics that allow students to tailor their gaming experience to their specific abilities.

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[19] Wang, Z., et al. (2021). Balancing Educational Game Use and Academic Workload in Adolescents. Educational Psychology Review
[20] Impact of digital game-based learning on the social competence and behavior of preschoolers
[21] Understanding the Perspectives and Usability of Digital games for Children with Intellectual Disabilities

For students with disabilities, having access to the same educational games as their non-disabled peers allows them to participate fully in classroom activities. This participation not only enhances their learning but also boosts their confidence and self-esteem, as they can demonstrate their skills and contribute to group projects on equal footing. In this way, accessible games help ensure that all students feel valued and included in the classroom community.

The impact of accessible games goes beyond just academic benefits. By fostering inclusive play experiences, these games contribute to a broader cultural shift toward empathy and understanding in the classroom. When all students can participate in the same games, regardless of ability, it challenges stereotypes and assumptions about disability, promoting a more inclusive and accepting environment.

1.6.   The Disconnect Between Educational Goals and Section 508 Accessibility Framework

Despite the promise of educational games as tools for learning and inclusion, there is a growing tension between the accessibility requirements of Section 508 and the nature of video game design. Section 508 mandates that digital content must be accessible to individuals with disabilities by eliminating all barriers that prevent full access to information and services. This approach works well for static content like websites or documents, but applying these same requirements to interactive media such as games presents challenges.

Video games, by design, are often built around obstacles and challenges that players must overcome. These barriers are not meant to exclude but to engage players in problem-solving and critical thinking, which are essential components of the learning process. For example, in an educational math game, students might be required to solve increasingly difficult puzzles under time pressure. This type of challenge is central to the learning experience, as it encourages students to think quickly and apply their skills in real-time.

However, when educational games are forced to comply strictly with Section 508, developers may be required to remove this feature to ensure accessibility. This can undermine the educational value of the game, as it strips away the very mechanics that promote learning and engagement. Another example, a game designed to improve strategic thinking might have to eliminate complex decision-making processes to meet accessibility standards, making the game less effective as a learning tool. All of these challenges can be addressed in a way that allows for all students to participate and learn, but those games will never comply with the binary compliance structure of Section 508.

The fundamental issue is that Section 508 was designed for static digital content, not for the dynamic, interactive nature of video games. While the law's goal of eliminating barriers is crucial for ensuring accessibility, its application to video games may need to be reconsidered. A more flexible framework is needed, one that allows for the preservation of educational challenges while also providing accessible features that ensure all students can participate.

2. Understanding Section 508 and Its Relevance to Digital Accessibility

2.1. Introduction to Section 508

Section 508 of the Rehabilitation Act of 1973, as amended in 1998, mandates that federal agencies ensure their electronic and information technology (EIT) is accessible to individuals with disabilities. The law's goal is to guarantee that individuals with disabilities, whether they are federal employees or members of the public, have the same access to information and services as non-disabled individuals.

Summary: Effective policy making requires understanding and addressing the challenges outlined in understanding section 508 and its relevance to digital accessibility.

While Section 508[22] is a critical U.S. standard, it's important to note that globally, digital accessibility is guided by the Web Content Accessibility Guidelines (WCAG), developed by the World Wide Web Consortium (W3C). These guidelines are often considered the gold standard for web accessibility worldwide and are referenced in many international regulations. WCAG is also integrated into Section 508 as a key component of its updated standards. However, WCAG was similarly developed with static web content in mind, not interactive video games.

For the purposes of this whitepaper, we will focus on the U.S. Section 508 standards. However, it's crucial to understand that the limitations highlighted here apply to Web Content Accessibility Guidelines (WCAG) as well. Both frameworks struggle to account for the dynamic and challenge-based nature of educational games. As such, the approach we propose for addressing these limitations, by adopting more flexible, game-specific accessibility standards, applies equally to Web Content Accessibility Guidelines (WCAG) and other global standards. The core issue remains: both Section 508 and Web Content Accessibility Guidelines (WCAG) emphasize barrier-free access, which works well for static digital content but often falls short when applied to interactive media such as video games

2.2. Driving Section 508 Compliance

The push for Section 508 compliance stems from broader legal obligations and initiatives aimed at enhancing accessibility for people with disabilities across various sectors, including education. Several key U.S. laws and regulations have contributed to the momentum behind enforcing Section 508 in digital content, including:

- **The Americans with Disabilities Act (ADA) of 1990**: While originally focused on physical accessibility in public spaces, the ADA has increasingly been interpreted to apply to digital content, especially following high-profile lawsuits related to website accessibility. The ADA underscores the importance of ensuring equal access to information and services for people with disabilities.

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[22] 508.gov

- **The Individuals with Disabilities Education Act (IDEA)**: This law guarantees students with disabilities a free and appropriate public education, tailored to their individual needs. As educational technology becomes an essential part of learning, there is growing pressure to ensure that educational tools, including games, comply with accessibility standards to meet the mandates of IDEA.
- **The Every Student Succeeds Act (ESSA) of 2015**: This law emphasizes personalized learning and ensuring that all students, including those with disabilities, have access to high-quality educational resources. ESSA's focus on technology in classrooms has increased the demand for digital accessibility to support inclusive education.
- **The 21st Century Communications and Video Accessibility Act (CVAA)**: Enacted in 2010, this law requires that advanced communication services and products be accessible to people with disabilities. Although its primary focus is on communications technology, the CVAA has bolstered the overall push for accessibility across digital platforms, including educational tools.

Policymakers are increasingly aware of the importance of digital accessibility as schools and federal agencies digitize more of their services and educational tools. Section 508 compliance is seen as a critical element of this effort to ensure that digital innovations do not exclude students with disabilities. However, the enforcement of Section 508 across all forms of digital media, including educational video games, can sometimes lead to unintended consequences when applied to interactive experiences like games.

2.3. Legal Implications for Educational Institutions and Developers

For educational institutions, particularly those receiving federal funding, compliance with Section 508 is not just a recommendation; it is a legal obligation. Further, many states[23] have adopted the federal standard into state law with no modifications, like California[24], this adoption has pushed Section 508, and its limitations, into most publicly funded classrooms. Schools and universities that rely on digital content, including educational games, must ensure that their materials are accessible to all students, including those with disabilities. Failure to comply with Section 508 can result in legal challenges, loss of funding, and reputational damage.

For game developers, particularly those creating educational tools, the implications of Section 508 are complex. While it is relatively straightforward to design static digital content, such as websites or documents, to meet Section 508 standards, video games present a far more dynamic challenge. Games are inherently interactive, with mechanics that may include obstacles, challenges, and varying levels of difficulty, elements that can be at odds with Section 508's mandate to remove all barriers.

The issue is that compliance to Section 508 is binary, it is either fully compliant, or not compliant at all, there is no middle ground. Because of the limitation inherent in Section 508 when it comes to interactive media, this has created a situation where developers of educational games cannot overcome the bar needed to deploy their product, not because it is not designed with students with disabilities in mind, but because the legally mandated standards are potentially incompatible to the

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[23] State-level Accessibility Laws and Policy – Section508.gov
[24] California Government Code Section 7405 – Electronic and Information Technology

technology. This creates a threat of legal action or non-compliance penalties compels both educators and school administration to focus on legal requirements, overshadowing the educational goals of games as discussed in section 1.4, which often depend on the inclusion of in-game barriers to foster learning and skill development.

2.4.   Section 508's Accessibility Requirements

Section 508's core requirements revolve around making electronic and information technology accessible to all individuals, regardless of disability. Some of the most pertinent requirements include:

- **Providing text alternatives**: For non-text content like images, videos, or audio, there must be equivalent text-based alternatives (e.g., captions, transcripts, or descriptive text).
- **Keyboard accessibility**: All content must be navigable using a keyboard alone, ensuring that individuals who cannot use a mouse due to physical disabilities can still interact with the technology.
- **Adaptability for visual and auditory impairments**: This includes features like high-contrast displays, screen reader compatibility, and audio descriptions, along with captioning for multimedia content.
- **Compatibility with assistive technologies**: The content must be compatible with assistive technologies such as screen readers, braille displays, and voice recognition software.

While these requirements are crucial for ensuring accessibility in traditional digital content, they do not always align with the mechanics and design of video games. Video games, especially educational ones, often rely on challenges, obstacles, and difficulty scaling to engage players and promote learning. This creates a tension between Section 508's mandate for "barrier-free" access and the inherent nature of gaming, where barriers are an integral part of the experience.

2.5.   Challenges in Applying Section 508 to Educational Games

Video games are fundamentally different from static digital content such as websites or documents. They are designed to be interactive, immersive, and often challenging, with success often dependent on the player's ability to overcome obstacles. In educational games, these challenges serve as learning tools, helping students develop critical thinking, problem-solving, and perseverance. However, when games are required to adhere strictly to Section 508's accessibility guidelines, developers face a dilemma: how to preserve the educational value of the game's challenges while removing barriers that might exclude students with disabilities.

For example, a game designed to teach math skills might include increasingly difficult puzzles that require quick thinking and calculation under time constraints. These mechanics are fundamental to the learning process, as they simulate real-world problem-solving scenarios. However, Section 508's guidelines could **require** the removal of time limits or the simplification of controls to ensure accessibility for students with disabilities, potentially diluting the educational impact of the game.

This conflict highlights a fundamental issue with applying Section 508 standards to video games: while the law was designed to remove barriers in static digital content, video games often rely on the inclusion of barriers as part of the player's experience. This presents a challenge for developers and educators who want to create engaging, effective educational games that are also accessible to all students.

2.6.   The Need for a Nuanced Approach to Accessibility in Educational Games

While Section 508 provides an essential framework for digital accessibility, it is not a one-size-fits-all solution, especially when applied to video games. Games designed for educational purposes often require a different approach to accessibility, one that balances the need for inclusivity with the necessity of preserving the core gameplay mechanics that drive learning outcomes.

Policymakers must consider how to adapt existing accessibility laws like Section 508 to accommodate the unique characteristics of video games. Rather than mandating the removal of all barriers, a more flexible framework could encourage the use of design patterns that allow for customization and adaptation, enabling players of all abilities to participate in the same educational experience. In this context, alternative accessibility guidelines, such as those developed by organizations like AbleGamers, may offer more effective solutions for the gaming environment.

By working toward a more nuanced understanding of accessibility in educational games, policymakers can help ensure that students with disabilities are not only able to access educational tools but can do so in ways that are meaningful, effective, and aligned with the learning objectives of these games.

3.   Limitations of Section 508 in Video Game Accessibility

While Section 508 of the Rehabilitation Act provides critical guidance for ensuring digital accessibility in federal procurement, its framework was not designed with video games in mind. As a result, applying 508 standards to interactive entertainment presents unique challenges and often falls short in addressing the specific needs of players with disabilities. This section outlines those limitations and explains why alternative approaches may be more effective in evaluating and improving game accessibility.

Summary: Effective policy making requires understanding and addressing the challenges outlined in limitations of section 508 in video game accessibility.

3.1.   The Nature of Video Game Design and Inherent Barriers

Video games, including educational ones, are inherently built on the premise of challenge and progression. They engage players through obstacles, puzzles, and levels that become progressively more difficult. These mechanics are not accidental; they are crucial components that drive player engagement and learning. For educational games, in particular, these challenges serve as teaching tools, helping students develop essential skills like problem-solving, critical thinking, and perseverance. For example, many games may require fast reflexes, complex decision-making, or timed responses. These mechanics, while essential for the game's educational value, can exclude players with motor or cognitive disabilities unless adaptive features are built into the game's design.

However, Section 508, which mandates barrier-free access for digital content, was not designed with video games in mind. It was primarily created for static, informational digital platforms like websites, software interfaces, and documents. This means that no matter what a game designer does to ensure

that the game adapts to the needs of a student with disabilities, the very presents of the challenge, regardless of the student's successful in managing the challenge, runs afoul with Section 508, and therefore is not compliant. That non-compliance leads to games being excluded as tool for learning in the classroom. A consequence of applying a one-size-fits-all approach to accessibility.

3.2.   Case Studies of Educational Games and Section 508 Compliance Challenges

When Section 508 standards are applied too rigidly, the educational content risks being oversimplified, removing the challenges that are essential for deep learning. While it is vital to make games accessible to players with disabilities, it is equally important to preserve the educational integrity of the game. Striking the right balance between accessibility and challenge is essential for creating inclusive yet effective educational games.

3.2.1.   Case Study – "Cyberchase" Games (2024, Publisher WNET/ PBS Kids, Developer: Bridge Multimedia

Bridge Multimedia developed 5 games for the Cyberchase universe produced by WNET and hosted on the PBS Kids website and mobile app. This initiative was funded in part by the U.S. Department of Education's Office of Special Education Programs (OSEP).

These games feature:

- Keyboard navigation
- Screen reader emulation
- Focus rectangle
- Captions
- Color contrast adjustable
- Text Size adjustable
- Switch support
- Gaze device support (Dwell mode)

While it's difficult to argue that these games are now playable by a wide base of players with different needs, these games do not meet binary nature of Section 508 / WCAG 2.1 AA and may not be allowed in schools under the proposed DoJ rule, and yet, the developers have demonstrated that they have created experiences with students with disabilities in mind. There are at least a few criteria that are not met that are especially challenging for web game developers to meet:

- **2.1.2 No Keyboard Trap**: Because the game uses an HTML canvas element to display instead of presenting the UI as HTML markup, it must emulate keyboard navigation instead of using the browser's built-in keyboard agent. While it is possible to navigate from the page to the game using a keyboard, once the game has keyboard focus, tabbing will not leave the game window and return to the surrounding page.
- **4.1.2 Name Role Value**: Since the game must display high performance graphics, it uses the <canvas> tag to display. This means that the interactable elements are not visible to the user agent's accessibility hierarchy. There are no exceptions to 4.1.2 for games that render in <canvas>. Same

3.2.2. Case Study – Literacy Game

Filament Games is involved in a WCAG 2.1 retrofit of a digital literacy game product for a major U.S. education publisher. This is a game that contains a number of phonics activities housed inside of a fun age-appropriate world. Several of the activities assess the ability to associate letters or images of objects with phonemes (the fundamental components of spoken language). These game mechanics conflict with WCAG 2.1 AA guideline **1.3.3 Sensory Characteristics**. This guideline requires that objects are not referred to solely by their sensory aspects. This makes it almost impossible to avoid giving away the answer to the challenges, eliminating the learning opportunity. Note that this guideline *does not* have an **essential** or **test** exemption.

3.2.3. Case Study – Handwriting Acquisition Interactive

Filament Games designed and developed a playful interactive experience that teaches handwriting skills. Handwriting practice is one effective approach to developing literacy and fine motor skills in grades K-2[25].   This interactive digital program creates some tricky situations with WCAG 2.1 AA guidelines,

- **1.3.3 Sensory Characteristics**: Instructions for drawing cursive letters are difficult to describe without primarily referring to the shape and direction of drawing.
- **1.4.4 Resize Text**: There are "standard rule" writing areas designed to build muscle memory in practicing handwriting motions. If the drawing area and samples are of different sizes it makes it difficult to "copy down" letters and words when initially training on handwriting.
- **1.4.12 Text Spacing:** Students are normally taught a certain way to space letters horizontally. Having fixed size blocks containing each letter can support this[26]

3.3. The Need for Flexibility in Accessibility Standards for Educational Games

There is a growing need for more flexible accessibility guidelines that acknowledge the interactive nature of video games and the value of in-game challenges. Rather than mandating the removal of all barriers, an alternative framework could focus on providing players with multiple ways to engage with a game. This might include customizable difficulty levels, alternative input methods, or optional assistive features that enhance accessibility without compromising the game's educational intent.

Furthermore, game developers should be encouraged to adopt accessibility design patterns, like those created by AbleGamers through their Accessible Player Experience (APX) framework. This framework focuses on giving players more control over how they interact with games, providing multiple pathways to success without removing the core challenges that make games engaging and educational. By promoting flexibility in how educational games are designed and played, developers can create more inclusive experiences while preserving the educational value of their games.

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[25] Konnikova, Maria. "What's Lost as Handwriting Fades." *The New York Times*, 3 June 2014,.
[26] Cindy. "5 Ways to Work on Size and Spacing in Handwriting!" *Your Kids OT*, 8 Apr. 2022,

4. Alternatives to Section 508 That Have a Proven Track Record of Creating Experiences for All

Given the limitations of Section 508 in addressing the complexities of interactive media, alternative frameworks have emerged that more effectively support accessibility in video games. These approaches are built with player experience in mind and have demonstrated measurable success in creating inclusive environments. This section explores proven methodologies that prioritize usability, engagement, and equitable access for players with disabilities.

Summary: Effective policy making requires understanding and addressing the challenges outlined in alternatives to section 508 that have a proven track record of creating experiences for all.

4.1. The Need for Alternative Accessibility Frameworks in Video Games

As the limitations of Section 508 become more apparent in the context of interactive media, it is essential to explore alternative frameworks that better accommodate the unique challenges posed by video games. Unlike static digital content, where accessibility primarily involves removing barriers, video games, especially educational ones, thrive on the inclusion of challenges, obstacles, and problem-solving tasks. A more nuanced approach to accessibility is required, one that allows games to remain engaging and educational while being inclusive for all users, including those with disabilities. Several alternative frameworks have emerged as more effective solutions for making games accessible without compromising their core design. One such framework, known as the **Accessible Player Experience (APX) design patterns**[27], this free to use resource from AbleGamers has been successfully adopted by game developers across the industry. These patterns provide a flexible toolkit that enables game creators to offer inclusive gaming experiences, giving players control over how they engage with the game without reducing the inherent challenges that foster learning and engagement.

4.2. Accessible Player Experience (APX) Design Patterns: A Flexible Approach to Inclusion

The **APX design patterns** were developed as an alternative approach to accessibility that focuses on giving players more **control** and **customization** over their gaming experience. Unlike Section 508, which tends to focus on removing barriers, APX recognizes that many barriers in video games are essential to the gaming experience and instead provides multiple ways for players to interact with those barriers.

Key features of the APX design patterns include:

- **Customizable Difficulty Levels**: APX encourages developers to include adjustable difficulty settings that allow players to tailor the game's challenges to their abilities. For example, an

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[27] [AbleGamers APX Design Patterns](#)

educational game might allow players to slow down the game's pace, remove time limits, or add hints, without changing the core content or goals.

- **Multiple Input Methods**: Providing flexibility in how players interact with the game is another key principle of APX. This could involve allowing players to choose between traditional input methods (such as a game controller or keyboard) and alternative methods, such as voice controls or eye-tracking software. By offering multiple ways to interact, games can be accessible to individuals with physical disabilities while preserving gameplay mechanics.
- **Personalized Feedback**: Games designed with APX patterns allow users to customize how they receive information from the game. For example, a player with a hearing impairment might use visual cues to replace audio instructions, or a player with a cognitive disability might benefit from simplified visuals or additional instructions. This flexibility ensures that all players can understand and interact with the game, regardless of their specific needs.

These features provide students with disabilities greater autonomy in how they engage with educational games, allowing them to participate fully without diluting the core learning experience. APX patterns offer a flexible approach that meets the needs of diverse players while maintaining the integrity of the educational content.

4.3.   Proven Success of APX Design Patterns in Commercial Games

The APX design patterns have been widely adopted in both commercial gaming environments where Section 508 is not a legal requirement. Developers who have implemented these patterns report higher levels of engagement from players with disabilities and a significant reduction in the need to redesign games to meet accessibility standards, as the APX framework is built into the game from the start.

In commercial games, developers using APX design patterns have created inclusive gaming experiences that appeal to a broad audience, from players with disabilities to casual gamers who might prefer more flexible game mechanics. These games provide multiple pathways to success, allowing players to adjust their experience without altering the core challenges that make the game enjoyable and rewarding.

Multi-billion dollar game companies are success in creating inclusive experiences that have been well-documented. For example, players that identify as blind, were able to enjoy the game "God of War Ragnarök."[28] In fact this game was able to be enjoyed by countless people with disabilities because of the technical expertise that the game developers implemented. We reach the core of the issue, supporting the blind and visually impaired is a key principle of Section 508, but this game would not be compliant. The binary nature of the standards do not give weight the successful completion of the objective, be it, obtaining information from a website, or completing an in-game mission. It only cares about technical checkpoints, that are simply pass or fail. Yet no one would argue that this game is not accessible.

In educational games, the use of proven models, like the APX design patterns, can allow students with disabilities to participate in classroom activities alongside their non-disabled peers. A math-based game that incorporates APX patterns might offer multiple levels of difficulty, customizable input

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[28] God Of War Ragnarok: How a man without sight could play one of the biggest games of the year

methods, and alternative feedback options, enabling all students to engage with the material in ways that work best for them. This ensures that the educational goals of the game, such as improving problem-solving or critical thinking skills, are met, while also promoting inclusivity.

4.4. Other Emerging Frameworks for Accessible Gaming

While the APX design patterns are among the most widely adopted frameworks for accessible game design, other emerging frameworks are also contributing to more inclusive gaming experiences. These frameworks take different approaches to solving the accessibility problem, but they share a common goal: creating digital experiences that are inclusive for all players.

One such framework is the **Inclusive Design for Immersive Experiences (IDIE)**[29], part of the XR Association, which focuses on accessibility in virtual and augmented reality (VR/AR) environments. As VR and AR become more prevalent in educational settings, ensuring that these immersive technologies are accessible to students with disabilities is crucial. Like APX, the IDIE framework emphasizes customization and flexibility, allowing users to adapt immersive experiences to their specific needs.

Another promising development is the **Xbox Accessibility Guidelines**[30], which provides developers with a comprehensive set of recommendations for making games accessible to players with disabilities. These guidelines cover everything from user interface design to audio and visual adjustments, offering a broader set of tools for developers looking to create accessible games that still challenge and engage all players.

Both the APX design patterns and these emerging frameworks share a commitment to balancing accessibility with the essential components of game design, challenge, interactivity, and immersion. Together, they provide game developers with a toolkit for creating inclusive educational games that meet the needs of all learners.

5. Policy Changes Needed to Support Learning Through Games

As educational institutions increasingly turn to video games and interactive media as tools for learning, policy must evolve to ensure these resources are accessible to all students. Current regulations often overlook the unique accessibility needs presented by game-based learning environments. This section outlines key policy changes needed to support equitable access to educational games, ensuring that learners with disabilities are not left behind in this growing field.

Summary: Effective policy making requires understanding and addressing the challenges outlined in policy changes needed to support learning through games.

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[29] [Inclusive Design for Immersive Experiences](#)
[30] [Xbox Accessibility Guidelines](#)

5.1.   Introduction: Why Policy Reform is Necessary

As educational games and interactive media become an increasingly vital part of modern learning, and the positive outcomes that they bring to the classroom, as discussed in section 1.3 of this document, federal and state policies must evolve to support their effective use in classrooms. Current accessibility standards, such as Section 508, though well-intentioned, were designed for static digital content and are ill-equipped to handle the dynamic, challenge-based nature of video games. To ensure that educational games remain both accessible and pedagogically effective, policymakers need to rethink existing regulations and develop new guidelines that align with the unique needs of interactive learning tools.

This section outlines a roadmap for policymakers at the federal and state levels to better support the integration of educational games into classrooms while ensuring that accessibility is maintained without compromising the educational integrity of these tools.

> **Hear from an Expert**
>
> *As educators, developers, and researchers, we must ensure all students, regardless of ability, have access to high-quality, engaging learning tools. The updated DOJ rule mandating WCAG 2.1 AA compliance brings long-overdue clarity and urgency to this effort. But compliance alone isn't enough. We must design with intention, incorporating principles from Universal Design for Learning (UDL) to create inclusive experiences from the ground up. In doing so, we serve all students—not just those with identified needs. The mantra "what is necessary for some is good for all" guides much of our thinking.*
>
> *- Linda Smith, PhD, Education Research Director/STEM Specialist on behalf of Explore Interactive.*

5.2.   Recommendations for Developing a New Framework

To ensure that educational games are both accessible and effective, a new framework for assessing accessibility is necessary, one that recognizes the unique nature of video games and their role in education. Instead of relying solely on Section 508, educational games would benefit from a hybrid assessment framework that takes into account the specific needs of interactive, challenge-based learning. Such a framework should combine the accessibility mandates of Section 508 with the flexibility and player-centered focus of alternative frameworks like the **Accessible Player Experience (APX)** design patterns or other emerging accessibility standards.

This hybrid approach could allow games to retain their educational integrity while ensuring that all students, regardless of their abilities, can participate in the learning experience. Such a framework should be built on the following principles:

- **Flexibility:** The framework must be flexible enough to accommodate the interactive, challenge-based nature of video games. Rather than eliminating barriers outright, the framework should allow for the adaptation of barriers to meet the needs of diverse learners.
- **Customization**: Developers should be encouraged to incorporate customizable settings, such as difficulty levels, alternative input methods, and personalized feedback, to ensure that students with disabilities can adjust the game to suit their abilities without losing the educational challenges.

- **Collaboration**: The development of the new framework should involve collaboration between educators, game developers, accessibility advocates, and policymakers. By drawing on the expertise of all stakeholders, the framework can be both practical and comprehensive, ensuring that it meets the needs of students, teachers, and developers alike.
- **Legal Protection**: The framework should provide clear legal guidance that aligns with existing accessibility laws while offering flexibility in how those laws are applied to interactive educational content. This will help protect schools and developers from legal challenges while promoting innovation in educational game design.

5.3. Engage with External Subject Matter Experts in the Accessible Interactive Game Content

To successfully implement accessible educational games, it is essential to establish an assessment framework that effectively evaluates both accessibility and educational efficacy. This section outlines the primary advantages of adopting a new, flexible assessment framework designed specifically for interactive content, highlighting how such a system can enhance inclusivity, drive innovation, and provide critical legal clarity.

5.4. Benefits of a New Assessment Framework

By adopting a new, more flexible assessment framework for educational games, policymakers and educators can ensure that all students have access to high-quality learning experiences that are both engaging and inclusive. The benefits of such a framework include:

- **Increased Engagement**: Games that retain their educational challenges will be more engaging for students, helping them develop critical skills like problem-solving, collaboration, and persistence.
- **Inclusive Learning**: Students with disabilities will have greater access to educational games, enabling them to participate fully in classroom activities and benefit from the same learning opportunities as their non-disabled peers.
- **Innovation in Game Design**: A flexible framework will encourage innovation in educational game design, as developers will have more freedom to create games that are both accessible and educationally effective.
- **Legal Clarity**: A new framework will provide clear guidelines for schools and developers, ensuring that they can meet their legal obligations without compromising the educational value of their games.

6. Federal-Level Policy Changes

Federal-level policy reform is critical for addressing the current limitations of Section 508 regarding interactive educational content. This section outlines targeted recommendations for federal policymakers, emphasizing necessary revisions to existing standards, the establishment of new accessibility frameworks specific to educational games, and strategic funding initiatives. These measures will support the broader adoption of inclusive, effective educational tools nationwide.

6.1. Expanding Section 508 to Include Flexibility for Interactive Content

One of the first steps policymakers can take is to revise **Section 508** to account for the interactive nature of video games. While Section 508 is critical for ensuring accessibility in digital content, its rigid guidelines often do not apply effectively to video games. Educational games rely on challenges and obstacles to teach, but Section 508's focus on barrier-free access can strip games of these essential elements.

A revised Section 508 should:

- **Allow for adjustable challenge levels**: Rather than removing challenges, Section 508 should permit games to offer multiple difficulty settings or alternative ways for students to engage with challenges. This would enable students with disabilities to experience the educational value of overcoming obstacles while receiving the support they need to participate.
- **Encourage flexibility in compliance**: Federal guidelines should promote flexibility in how games meet accessibility standards, allowing developers to implement creative solutions that fit the unique demands of interactive content without forcing them to sacrifice educational quality.
- **Incorporate accessibility frameworks like APX**: Section 508 should encourage the use of frameworks like the **Accessible Player Experience (APX)** design patterns, which have been proven to create accessible and inclusive gaming environments without diluting the gameplay or educational experience.

6.2. Creating a Video Game-Specific Accessibility Standard

In addition to revising Section 508, policymakers should create a separate, video game-specific accessibility standard that recognizes the distinct characteristics of games. This standard should be informed by accessibility experts, game developers, educators, and disabled communities, ensuring that it reflects both the educational goals of games and the needs of students with disabilities.

Key elements of this standard should include:

- **Flexibility in assessment**: Rather than a one-size-fits-all approach, the standard should provide a flexible framework for how games can meet accessibility requirements, allowing for customization in difficulty, input methods, and sensory feedback.
- **Customization over simplification**: The standard should emphasize giving players control over their gaming experience (e.g., customizable controls, adaptive difficulty), rather than forcing developers to oversimplify gameplay to achieve compliance.
- **Integration of assistive technologies**: The standard should encourage developers to integrate common assistive technologies such as screen readers, adaptive controllers, and voice commands, ensuring that games can accommodate a wide range of physical and cognitive disabilities.

6.3. Federal Funding for Accessible Educational Game Development

Federal agencies, such as the Department of Education, should create grant programs or financial incentives to support the development of accessible educational games. These funds could help small

and large developers integrate accessibility features into their games and ensure that their products are available to schools at affordable prices.

Potential funding initiatives could include:

- **Research and development grants**: Federal funding should support research into new technologies, such as adaptive AI, that can make games more accessible while preserving educational complexity.
- **School-Developer Partnerships**: Financial support should be available to foster partnerships between schools and game developers, allowing educators to influence how games are designed to meet classroom needs while also ensuring accessibility.

6.4.   State-Level Policy Changes

Many states have opted to adopt federal Section 508 standards at the state level, unintentionally carrying over the same limitations that hinder the use of video games in educational settings. By doing so, they restrict the potential of game-based learning tools that fall outside the scope of traditional digital content. States have the authority to establish their own accessibility policies, tailored to the unique needs of classrooms, and in doing so, can unlock the full potential of interactive learning experiences for all students.

6.4.1.   Implementing Statewide Standards for Accessible Educational Games

While federal guidelines are essential, states should also develop their own accessibility standards for educational games, tailored to their specific educational goals. These standards should align with federal laws but provide room for flexibility based on local needs and resources.

State governments can also play a role in training and certifying developers to meet accessibility standards, ensuring that state-funded educational games comply with both state and federal accessibility guidelines. This could involve:

- **Training programs**: States can offer training for developers on how to integrate accessibility features into educational games, including workshops on accessible design and the latest assistive technologies.
- **Adopting hybrid frameworks**: State policies should encourage developers to adopt hybrid frameworks that balance Section 508 compliance with flexible, player-centered approaches like APX design patterns. States could certify games that meet these standards, creating a clear path for schools to select games that are both accessible and educationally effective.

6.4.2.   State Funding for Inclusive Educational Technology

States should invest in inclusive educational technology by allocating funding specifically for the adoption and development of accessible games in public schools. This funding should be used to ensure that schools have access to high-quality, accessible educational games and that teachers receive training on how to integrate these tools into their curricula.

States can also:

- **Provide technology grants**: Offer grants to schools for purchasing assistive technologies that enhance access to educational games (e.g., adaptive controllers, voice recognition software).

- **Subsidize accessible game development**: Partner with local game developers to produce regionally relevant, accessible educational games that align with state educational standards.

6.5.   Creating a National Accessibility Certification for Educational Games

To ensure consistency and quality in accessible educational games, both federal and state governments should collaborate to establish a **National Accessibility Certification** for educational games. This certification would recognize games that meet high standards of accessibility while preserving their educational value. Developers who meet these standards could display the certification, helping educators and schools make informed decisions when selecting tools for their classrooms.

The certification process should:

- **Include rigorous testing**: Games should undergo testing with real users, including students with disabilities, to ensure that they are both accessible and educationally effective.
- **Evaluate customization options**: The certification should prioritize games that offer a high degree of customization, ensuring that students can adjust gameplay to suit their individual needs.
- **Be developed in collaboration with educators**: Educators should have a voice in the certification process, helping to define the criteria for educational effectiveness alongside accessibility standards.

6.6.   Teacher Training and Support for Accessible Game Integration

Another critical aspect of policy reform is ensuring that teachers are equipped to integrate accessible educational games into their curricula. State and federal governments should support **teacher training programs** that focus on:

- **Understanding accessibility tools**: Teachers should be trained in how to use and adapt accessibility features in educational games, including how to customize settings for individual students.
- **Incorporating games into lesson plans**: Teachers should learn best practices for using games as part of their broader teaching strategies, ensuring that games complement traditional instruction rather than replacing it.

6.7.   Ongoing Evaluation and Adjustment of Accessibility Policies

Finally, policies related to educational game accessibility should be subject to **ongoing evaluation** and **adjustment**. As technology evolves and new accessibility tools are developed, both federal and state regulations must remain flexible enough to adapt. This requires a commitment to regular reviews of accessibility standards and the willingness to update policies to reflect new developments in educational technology.

7.   Conclusion: The Roadmap for Policy Change

Creating an inclusive educational environment where all students can benefit from the power of educational games requires a concerted effort from policymakers at both the federal and state levels. By revising Section 508, establishing new video game-specific accessibility standards, and providing funding for research and development, policymakers can foster an educational landscape that supports innovative, accessible learning tools. Additionally, states must develop localized standards, invest in assistive technologies, and offer training programs for teachers and developers alike.

Working with subject matter experts like **AccessForge Consulting**, policymakers and developers can ensure that their approaches are grounded in proven strategies for making games accessible without losing their educational value. With the right support, educational games can continue to evolve into one of the most powerful and inclusive tools available to students and teachers in modern classrooms.

7.1.   Paving the Way for Inclusive Learning Through Educational Games

Educational games hold enormous potential for transforming the way students learn by offering dynamic, interactive, and engaging experiences. These tools can teach critical skills like problem-solving, collaboration, and perseverance, all while aligning with educational standards and goals. However, to fully realize the benefits of educational games, it is essential to ensure that they are accessible to all students, including those with disabilities. This requires more than just retrofitting games to comply with rigid accessibility laws like Section 508, it demands a thoughtful, innovative approach that balances accessibility with educational integrity.

The limitations of Section 508 in the context of interactive educational tools highlight the need for a new, flexible accessibility framework. One that accommodates the challenge-based nature of games while still providing students with disabilities the tools they need to engage in meaningful learning. Policymakers must play a leading role in creating this framework by revising existing regulations, developing new standards for educational game accessibility, and fostering collaboration between developers, educators, and accessibility experts.

At both the federal and state levels, changes are needed to:

- Revise Section 508 to better suit interactive content like video games.

- Establish game-specific accessibility standards that allow for customization and flexibility.

- Provide funding to support the development of accessible educational games.

- Train teachers and developers on how to integrate accessibility features without compromising the educational value of games.

Working with subject matter experts like **AccessForge Consulting**, founded by accessibility pioneer **Mark Barlet**, can accelerate these efforts. AccessForge Consulting brings valuable experience in creating accessible game design solutions that preserve engagement while meeting the needs of students with disabilities. By partnering with experts in the field, policymakers can ensure that their reforms lead to practical, impactful results in classrooms across the country.

The future of education is digital, and games will continue to play an increasingly important role in how students learn. It is essential that the policies guiding this future are inclusive, flexible, and forward-

thinking. By fostering a legal and educational framework that supports accessible, challenge-based learning, we can ensure that every student, regardless of ability, has the opportunity to thrive in the classroom. Together, we can build an educational environment where no learner is left behind, and where the potential of every student is unlocked through innovative, accessible educational games.

8.   About the Contributors

Partnering with Subject Matter Experts to successfully implement these changes, policymakers, publishers, and educators should collaborate with subject matter experts who have a proven track record in game accessibility.

AccessForge is a consulting firm dedicated to advancing accessibility across interactive media, technology, and public-facing spaces. With over 20 years of experience in game accessibility, the team brings deep industry knowledge to help clients design inclusive experiences that go beyond compliance. AccessForge works across sectors, including video games, consumer electronics, aviation, hospitality, and cultural institutions, to integrate accessibility into products, environments, and strategic planning. Through user research, audits, and education, the firm equips organizations with the tools and insights needed to create solutions that effectively and sustainably serve people with disabilities.

Filament Games is a leader in designing and developing accessible educational games. For many years they have developed products under the Universal Design for Learning[31] guidelines. Filament has recently developed capacity for developing new games and retrofitting existing web-based games to meet Section 508 and WCAG 2.1 AA. This includes developing custom plugins for pixi.js and Unity that allow games to fully meet the guidelines, well beyond the basics of screen reader and keyboard support offered by open-source plugins. Designing and developing an accessible game involves expertise in the design phase, to design interactions that are engaging without requiring dragging or multi-touch gestures. Working with UX designers that are familiar with the types of color blindness and the need for appropriate contrast and legibility of type is critical. Finally, it's essential that the game development team has the training to be able to self-assess accessibility throughout the game production process to shipping, so that players or auditors are not the ones finding all the accessibility blockers. This training comes from practicing with assistive devices such as screen readers, switches, etc. as well as observing players who rely on these devices to play.

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[31] Universal Design for Learning