

# No User Left Behind: Blackboard Collaborate and the Accessibility Imperative

Accessibility isn't a "nice to have." It's an imperative, especially for those of us who provide technology-based products and services used for online learning. For almost ten years, Blackboard Collaborate's No User Left Behind™ philosophy has guided us to build in accessibility from the ground up. The end result is a richer, more interactive online teaching, learning, and collaboration environment for everyone, regardless of geography, economy, or ability.



This paper discusses Blackboard Collaborate's history of accessibility and our ongoing mission to create a 21st century learning and collaboration environment that eliminates barriers and levels the playing field to meet individual needs and learning styles. It also covers how the major accessibility-centered release of Collaborate's web conferencing solution was developed in partnership with members of the accessibility community, as well as with educators and students with disabilities, and describes the results of that collaboration.

## The Accessibility Imperative

The numbers in the United States alone are staggering. In 2010, The U.S. Census Bureau reported that 56.7 million Americans had some type of disability - a number that represented nearly 20 percent of the population. Of those 15 years and older, 8.1 million had visual disabilities, and 7.6 million experienced difficulty hearing a conversation. Over 1 million people were completely unable to hear, and 2 million were entirely unable to see. Millions of others face mobility or cognitive challenges.

School systems, colleges, and universities increasingly support the needs of students with disabilities who once learned in a segregated environment, but who are now included. According to the U.S. Department of Education, in 2008-2009, 6.5 million children with disabilities, between the ages of 3 and 21, were served by Federal programs.

Supporting the needs of those with disabilities is an imperative for all types of organizations: educational institutions, businesses, social, and cultural organizations.

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*Ten years ago, we couldn't have dreamed of the potential. New technology makes things amazingly easier—as long as it's made accessible.*  
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Carin Headrick  
Independent Accessibility  
Consultant

In some cases, support is mandated through legislation, such as the Americans with Disabilities Act (ADA). This law resulted in many changes, large and small, that helped further open up the world for those with disabilities: buses with lifts for wheelchairs, the availability of telecommunications devices for the deaf, Braille markers on elevators. Many other accessibility advances have been spurred by the ADA.

The United States is not, of course, the lone nation concerned with the rights of those with disabilities. Australia has enacted its Disability Discrimination Act, Japan the Fundamental Law for Disabled Persons. The EU has developed a European Disability Strategy, centered on the Disability Action Plan, which focused on education, employment, and independent living. Throughout the world, the last several decades have seen great progress in addressing the needs of the disabled community.

Going beyond “because it’s the law,” there are obvious arguments of decency and fairness that reach well. These are all underscored by the full range of societal and economic benefits that accrue when the full potential of millions upon millions of people can be tapped.

Accessibility isn’t a “nice to have.” It’s an imperative, especially for those of us who provide technology-based products and services. That’s because, for those with disabilities, technology offers tremendous promise. Indeed, we regularly see breakthroughs—some of them breathtaking—in the assistive devices that technology makes possible.

The Internet provides special promise, but can also present barriers to those with disabilities. At Blackboard Collaborate, we see that potential (and the potential barriers) first hand through our eLearning, teacher professional development, classroom-to-classroom connection, and collaboration services.

It’s precisely because we see the tremendous potential the Internet holds in the arena of accessibility that Blackboard Collaborate has made a commitment we call “No User Left Behind™.” This commitment drives our development efforts—no more so than in our web conferencing solution the centerpiece of the overall Blackboard Collaborate™ solution, a comprehensive learning platform designed specifically for education.

Blackboard Collaborate™ web conferencing enables instructors and students to interact and collaborate in real time, adding another level of engagement to distance learning, as well as making it possible for a physical classroom to blend with a virtual classroom. The great majority of colleges and universities in the U.S. now offer distance learning. Beyond higher education, K-12 increasingly relies on online meetings, webinars, collaboration, and training.

With so much emphasis on education online, products that promote online learning must make sure that they follow the dictum “No User Left Behind.” At Blackboard Collaborate, that is precisely what we do. “No User Left Behind” is not just a tagline; it’s our core, governing philosophy. And when it comes to accessibility, Blackboard Collaborate is committed to maintaining its position at the forefront of vendors providing collaboration and networking solutions for 21st century education and training. Accessibility is also central to the mission of the overall Blackboard family, and the company strives to ensure that its platform is usable and accessible to everyone, to the greatest extent possible, regardless of age, ability, or situation. Over 100 clients participate in the Blackboard Accessibility Interest Group, and in 2010, the National Federation of the Blind awarded Blackboard its Dr. Jacob Bolotin Award for “groundbreaking work in accessibility.”

## No User Left Behind

In truth, when we first began talking about “No User Left Behind,” we meant that our platform would be available not just to those with powerful Internet connections, but also to those with low-bandwidth access. We optimized our solution so that Blackboard Collaborate web conferencing sessions can include participants from remote, rural areas and from countries with a weak Internet infrastructure. It’s easy to take high-speed Internet access for granted, but there are some users still accessing the Internet via low-speed dialup connections. With Blackboard Collaborate, the most important content—audio, text messaging, whiteboard interactions—works well at connections as low as 28.8 kbps.

Once we had made our commitment to those with low bandwidth, we extended it to multi-platform support, providing full participation to users, regardless of whether they were on a Windows PC, Mac, or Linux or Solaris workstation, and more recently, with mobile access on smartphones and tablets as well.

But we still knew we were leaving some users behind—those with disabilities.

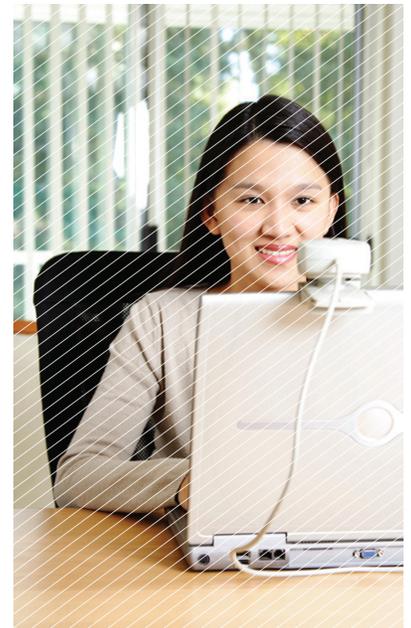
So we began adding features to support them—closed captioning for those with who are deaf or hard of hearing, support for the JAWS screen reader for those with low vision, and keyboard and shortcut input for those who have difficulty operating a mouse.

That’s how we began our journey to make our products more accessible. Along the way, we decided that we weren’t going to be satisfied if all we did was meet legal mandates or the expected checklist items on an RFP. This decision has resulted in an ongoing process to incorporate advanced accessibility features into all of our products, and to tap the insights and experience of those who advocate on the part of the disabled community (who are often people with disabilities themselves) into our development efforts.



*The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.*

Tim Berners-Lee  
W3C Director and inventor of the World Wide Web



## The Different Needs of Those with Different Disabilities

One of the things we quickly realized is that accessibility is a lot more involved and complex than supporting rural users with low bandwidth. The community of users with disabilities is not a monolith, and the needs of the different groups within the community vary widely. Features that make a product more accessible for one group may have no impact on others. And technical approaches that so many of us take for granted and that facilitate our use—operating a mouse, for example—may, in fact, represent a barrier to access for someone with limited movement or difficulty seeing.

At Blackboard Collaborate, we have focused our initiatives on those areas where we believe we can make the greatest difference in the “learning lives” of those with disabilities. These areas are vision, hearing, mobility, and learning.

For those with vision-related disabilities, this includes screen reader support, enabling text-to-speech output for menus and dialog boxes, as well as of PowerPoint and OpenOffice slides. For those with limited vision, it also includes the ability to scale content areas, and to inherit the colors and contrasts that users (e.g., those who are color blind and want to work in black-white-gray scale) have set.

Blackboard Collaborate has built closed captioning into its web conferencing solution so those who are deaf or hard of hearing can fully experience what happens during a session. To increase visibility and reduce eye strain, the closed captioning window has been enhanced with more viewing options, including font size, color, and contrast. Blackboard Collaborate preserves the captioning in web conferencing recordings when publishing them for offline viewing. Captions can be added to published recordings after the fact as well. Echo cancellation improves the listening experience for those who have difficulty hearing.

Keyboard navigation and accelerator keys for menus, navigation, and common functions provide support for those with limited mobility, as well as those with limited vision who may find navigation with a mouse difficult.

Those with cognitive disabilities are also supported in Blackboard Collaborate. Recordings recreate live events, so that users with memory and attention disabilities can relive the experience, pausing and restarting as many times as they need to focus on specific areas

*Higher education consumers worldwide benefit from product improvements that present opportunities for and remove barriers from learning. Those with learning disabilities or for whom English is a second language benefit as well. It's not just about making a better product for those who are disabled. It's about making a better product for everyone.*

Mark Turner  
Director, Center for  
Accessible Media,  
California State University  
Office of the Chancellor

that may have gone by too fast during the live session. Indexing within the recordings lets users quickly by-pass the sections they've already mastered.

The ability to hide features that may be distracting—chat, participant info—enables users to focus solely on the core content of a session. People learn in different ways, and with Blackboard Collaborate, instructors are able to incorporate the many methods they use in face-to-face classrooms. When instructors are able to combine drawing, multimedia, and voice tools as part of their presentations, those with text comprehension difficulties are better supported.

Many of our web conferencing features—breakout rooms, private chat, synchronized notes—support the needs of those with different learning disabilities.

## Focusing on What's Important

With our accessibility efforts, we recognized early on that however good our imaginations are or how empathetic we are to those with disabilities, we were drawing on incomplete judgment when we decided on our own what was important and what wasn't. We knew we needed to tap the wisdom and experience of those who encounter accessibility issues in "real life." To this end, we sought out individuals with disabilities and those who provide direct support to those individuals to provide feedback and act as beta testers for our products.

One small but important example of how important it is to involve those with disabilities in product design was in the area of keyboard navigation. Based on our research into best practices, we had determined that using the tab key was a navigation norm when moving from module to module. Our users with low vision told us that in Windows, their preferred mode of navigation was to use a function key (F6).

Another piece of feedback we received was that instructors with limited vision were having a difficult time interpreting the emoticons their students were using to signal their mood. It was hard to tell the difference between a smiley face and a frowning face. By changing the colors of the emoticons, participants can now discern at a glance who's in synch—and who's struggling.

In 2009, we formalized the process of including those with direct experience with, or as, individuals with disabilities in our development efforts, and created a task force composed of those involved with accessibility support in colleges and universities, many of them disabled themselves.

## HOW BLACKBOARD COLLABORATE SUPPORTS THE NEEDS OF OUR USERS WITH DIFFERENT DISABILITIES



- Screen reader support: text-to-speech output for menus, dialog boxes, slides, and OpenOffice documents
- Scaling of content areas
- Inheritance of color and contrast settings
- Ability to hide non-essential features
- Closed captioning support (saved in recordings)
- Keyboard navigation and accelerator keys for menus, navigation, and common functions
- Indexed recordings for replay
- Breakout rooms, private chat, synchronized notes

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Blackboard Collaborate really “gets” the value of user involvement. Their work with users is important and exemplary. It’s difficult if you have a disability and you have to rely on others to get it right for you – especially when it comes to deciding among tradeoffs. People really don’t have a clue about tradeoffs if they’re not disabled.”

Deborah Kaplan  
Director, Accessible Technology Initiative, California State University Chancellor’s Office



Not wanting to bias any input with preconceived notions of what we thought was important, we asked a member of the disabled community to chair the group. What we heard from our task force was illuminating.

While we received high marks for our accessibility efforts on behalf of those who are deaf or hard of hearing, and for the features that support those with mobility or learning disabilities, Blackboard Collaborate came up somewhat short when it came to features for those with low vision or who are blind. Because of the candid feedback we received, we intensified our efforts in this area. This led to the 2010 taskforce-inspired release of Blackboard Collaborate web conferencing dedicated to accessibility and especially rich in support for those with limited vision.

## Bringing Accessibility to Life with Blackboard Collaborate

In keeping with our commitment to No User Left Behind, Blackboard Collaborate has long incorporated accessibility features in our product set.

Hearing accessibility support includes the closed-captioning feature in Blackboard Collaborate web conferencing that enables a session moderator to grant attendees the privilege of entering closed-caption text that lets users follow what’s going on in real time. Multiple closed captionists can work simultaneously, providing multi-language support. The closed captioning transcripts are also available for playback of a recorded session. For those with limited vision, the font size of the text can be increased up to 32 points.

Simple navigation on a computer using a mouse can often stand between those with limited mobility or vision and their ability to use a computer. Blackboard Collaborate supports a full complement of keyboard shortcuts or hot keys, which let users activate the audio, and use chat, the mini controller, emoticons, and other features. Our accessibility-centered release added many new navigation features, including the ability to use the keyboard to set preferences and a number of new shortcuts and menu options.

For those with vision disabilities, Blackboard Collaborate automatically inherits user-defined color schemes, so participants can view the screens in high contrast and with larger fonts. All the content areas can be resized, and users can create a customized screen by resizing content areas to meet their personal preferences.

The overall interface can be customized to hide unneeded or distracting content. For those with visual disabilities, this may be hiding the video component of a session. For those who are deaf, this may be removing audio. Presentations can also be loaded into Blackboard Collaborate session with a preset or custom-sized resolution, and can easily be displayed in full-screen mode.

It is in the area of accessibility for blind and low-vision users that Blackboard Collaborate made the greatest strides in its 2010 accessibility-focused product release. Adding improved keyboard navigation—including the use of the F6 function key, rather than the tab, to move from module to module—became a key element of web conferencing. The Preferences section is keyboard navigable, and color-code emoticons provide enhanced visual clues.

A number of auditory cues were added, as well. Different tones are used for different functions, so that session participants can distinguish between when someone is raising a hand and when a timer has expired. Preferences information is also audible and is “remembered” from session to session.

Much of our focus has been on enhanced screen reader support, going beyond text-to-speech in menus and dialog boxes, so that Blackboard Collaborate can present PowerPoint and OpenOffice slide content to the screen reader.

One of the more significant features we provide for screen reader users is within the Activity Window. Users can “park” their screen reader in the Activity Window and use it as the locus for all of the updates that they want—everything that’s going on in the session, or a subset to keep the “noise level” down.

Blackboard Collaborate’s unified Activity Window is a key indicator of our commitment to ensuring access for all users. Designed for those using a screen reader (e.g., JAWS), the Activity Window consolidates, unifies, and tracks all activities in a single location that can receive updates from all modules within a session. The user can see everything that’s going on—a slide change, entrance/exit of participants, use of emoticons, chat messages, raised hands, who’s talking, text from slides—in a single place, without having to switch their point of focus.

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## WHY ACCESSIBILITY MATTERS IN THE WORKPLACE

Thanks to the Internet and other enabling technology, whether they’re doing so full-time, part-time, or occasionally, tens of millions of employees worldwide “telecommute.” Online conferencing technology lets telecommuters work collaboratively and attend online meetings as seamlessly as if they were in an office just down the corridor from each other. The ability to record these sessions can even make them more productive and valuable than in-person meetings, since they can be revisited to clarify points made and attended after the fact by those who missed the meeting.

Organizations promote telecommuting with an eye toward increasing employee productivity, saving money on office and travel costs and improving morale. Telecommuting also lets organizations contract with “virtual employees” who may live too far away to physically commute and to cost-effectively set up satellite offices.

And it enables organizations to tap into a workforce of employees with disabilities that may make physical commuting difficult, if not impossible. That means organizations must make sure the technology they’re using to support their telecommuters is accessible to those with disabilities.

Ensuring that employees with disabilities have the same opportunities to work from home as other employees can yield many benefits. It can help maximize workforce productivity and help build a more inclusive workplace. And it will help organizations better meet whatever accessibility imperative they have set for themselves.

# BLACKBOARD COLLABORATE WEB CONFERENCING ACCESSIBILITY AT A GLANCE

Category/Feature	Collaborate web conferencing
<b>Setup and Configuration</b>	
Installation Process fully keyboard navigable	✓
Installation process can be completed by screen reader user unassisted	✓
Audio Configuration fully keyboard navigable	✓
Audio configuration can be completed by screen reader user unassisted	✓
Teleconference connection fully keyboard navigable	✓
Teleconference connection can be completed by screen reader user unassisted	✓
<b>Navigation</b>	
Menus fully keyboard navigable	✓
User can tab navigate to all major modules	✓
Short cut key to mic on/off available	✓
Short cut keys to raise/lower hand available	✓
Short cut keys to emotion expression available	✓
Short cut keys to polling responses available	✓
Short cut keys to slide navigation available for host	✓
Alternate input option for common functions (typeable commands)	✓
CLI option to turn mic on/off	✓
CLI option to raise/lower hand	✓
CLI option to express emotion	✓
CLI option to respond to polls	✓
CLI option to send public or private chat messages	✓
Category/Feature	Collaborate web conferencing
<b>Styling</b>	
Chat inherits large font selection from OS	Windows Vista, Windows 7
Notes inherits large font selection from OS	Windows Vista, Windows 7
Color contrast inherited	✓
Closed Caption window allows text font size manual selection	✓
Closed Caption window provides high-contrast option	✓
Whiteboard content scalable by all	✓
Chat can be resized	✓
<b>Live Session Activity</b>	
PowerPoint and OpenOffice text content available to screen reader user	✓
Chat text available to screen reader user	✓
Audible notification for participant joined	✓
Text notification for participant joined	✓
Audible notification for participant left	✓
Text notification for participant left	✓
Audible notification for new chat message	✓
Text notification of new chat message	✓
Audible notification for content events (slide changes, app share started, web tour started, etc.)	✓
Text notification of web tour start/stop	✓
Web tour URL provided to screen reader for separate browsing	✓
Text notification of application share start/stop	✓
Audible notification that mic turned on/off	✓
Text notification that mic turned on/off	✓
Audible notification that hand raised/lowered	✓
Text notification that hand raised/lowered	✓
Closed Captioning available live and in recordings	✓

The Activity Window is fully keyboard navigable and configurable, so each user can select his/her preferred amount of information, cutting down on what may be to them visual “noise.” The Activity Window also provides a command-line interface for users who are unable to operate a mouse. Common session interactions like raising or lowering hand, turning on or off the microphone, or answering polling questions are commands that can be executed within the Activity Window.

One of the most powerful components of the Activity Window is the ability to display slide text from a PowerPoint or OpenOffice slide presentation. When an instructor or moderator imports a slide, the text automatically appears in the Activity Window, giving users who are blind or have low vision a means to read the text in a screen reader. Best of all, the information contained in the Activity Window is available in the archive of a session, so all users can have a rich, accessible experience.

New accessibility features—which often appear first in Blackboard Collaborate web conferencing—are subsequently extended, where relevant, to the other capabilities in our platform. We also take our commitment to No User Left Behind deep within our organization. Our documentation group is now creating accessible PDFs by adding image descriptors. Most of our training materials are captioned. And we have created an Accessibility Guide to highlight the features that specifically address the needs of users with disabilities, and to describe requirements for those using assistive technology within the Blackboard Collaborate™ environment. Our quality assurance team has been trained in testing strategies particular to accessibility needs, and we’ve set up automated testing of web-based apps. We’ve invested in JAWS for our QA, development, marketing, and sales teams. These efforts underscore our commitment to No User Left Behind.

*The Activity Window is key, especially for those of us with low vision and blindness. It’s wonderful to have one place to focus, and I like the fact that Blackboard Collaborate doesn’t put all users in the same box. Users can customize the environment so that it does what they want.*

Dr. L. Penny Rosenblum  
Adjunct Associate Professor,  
Department of Disability and  
Psychoeducational Studies,  
University of Arizona

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*It is very encouraging to work with vendors like Blackboard Collaborate that have realized the need for a Universally Accessible web conferencing tool that is accessible to everyone, including people with disabilities.*

Hadi Rangin  
Web Design and Accessibility  
Specialist, University of Illinois  
at Urbana-Champaign

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## Where Do We Go From Here?

Blackboard Collaborate's commitment to No User Left Behind doesn't end with a single initiative or development effort. The work with our task force on accessibility is ongoing. We are focused on further extending accessibility across our platform, and imbuing awareness throughout our organization of issues that impact those in the disabled community. And we're underscoring that awareness with a determination to act on it.

We understand the tremendous impact that our work can have on the lives of those with disabilities, and for Blackboard Collaborate, accessibility has become an imperative.

## About Blackboard Collaborate

Blackboard Collaborate™ technology delivers open, education-focused collaboration solutions that enhance learning, reduce costs, and improve outcomes by enabling more effective instruction, meetings, and help—anywhere, anytime. Our comprehensive platform can help colleges and universities, school systems, and corporate learning organizations reach higher goals in learning through more engaging collaboration methods such as:

- ▶ **Web, Video, and Audio Conferencing**
- ▶ **Presence and Instant Messaging**
- ▶ **Voice Authoring and Collaboration**
- ▶ **Mobile access via smartphone and tablet**

To learn more about how you can reach your academic, administrative, and financial goals through more interactive, cost-effective, and accessible collaboration, visit [blackboardcollaborate.com](http://blackboardcollaborate.com), contact us at [collaboratesales@blackboard.com](mailto:collaboratesales@blackboard.com) or try Free for 30 days at [bbcollaborate.com/try](http://bbcollaborate.com/try).