

Touchboards

205 Westwood Ave, Long Branch, NJ 07740

Phone: 866-94 BOARDS (26273) / (732)-222-1511

Fax: (732)-222-7088 | E-mail: sales@touchboards.com

mimio® Vision:

Interactive Classrooms for Today's Students and Teachers



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Educating today's students means more than just getting them to pass tests. It also means improving instruction for all students — and increasing their engagement and learning. The type of classroom that handily meets this challenge is the interactive classroom.

"...CLASSROOMS LITERALLY HUM with student conversations, research activities involving Internet and library searches, presentations on the interactive whiteboard, and online communications with experts outside the classroom. Teachers plan lessons using far fewer worksheets and relying more on authentic, problem-based activities..."¹

What Is an Interactive Classroom?

Imagine students actively working with dynamic content, rather than passively listening to teacher lectures or answering questions at the end of a textbook chapter. An interactive classroom takes advantage of tools that provide students with a world of rich resources. It facilitates instruction that accommodates students' varied learning styles, and that includes timely, frequent assessments of progress. It provides many opportunities for students to acquire what have been called "21st century skills," including the ability to think critically, analyze information, comprehend new ideas, communicate, collaborate, and make the kinds of decisions necessary in today's knowledge economy.

In the interactive classroom, technology is the tool that students can use to develop these 21st century skills and to increase their information literacy and learning capabilities. Teachers provide a learning environment that exercises students' critical thinking, problem identification, and formulation and solution skills. They use multimedia in a variety of forms and contexts to develop student interest in learning.

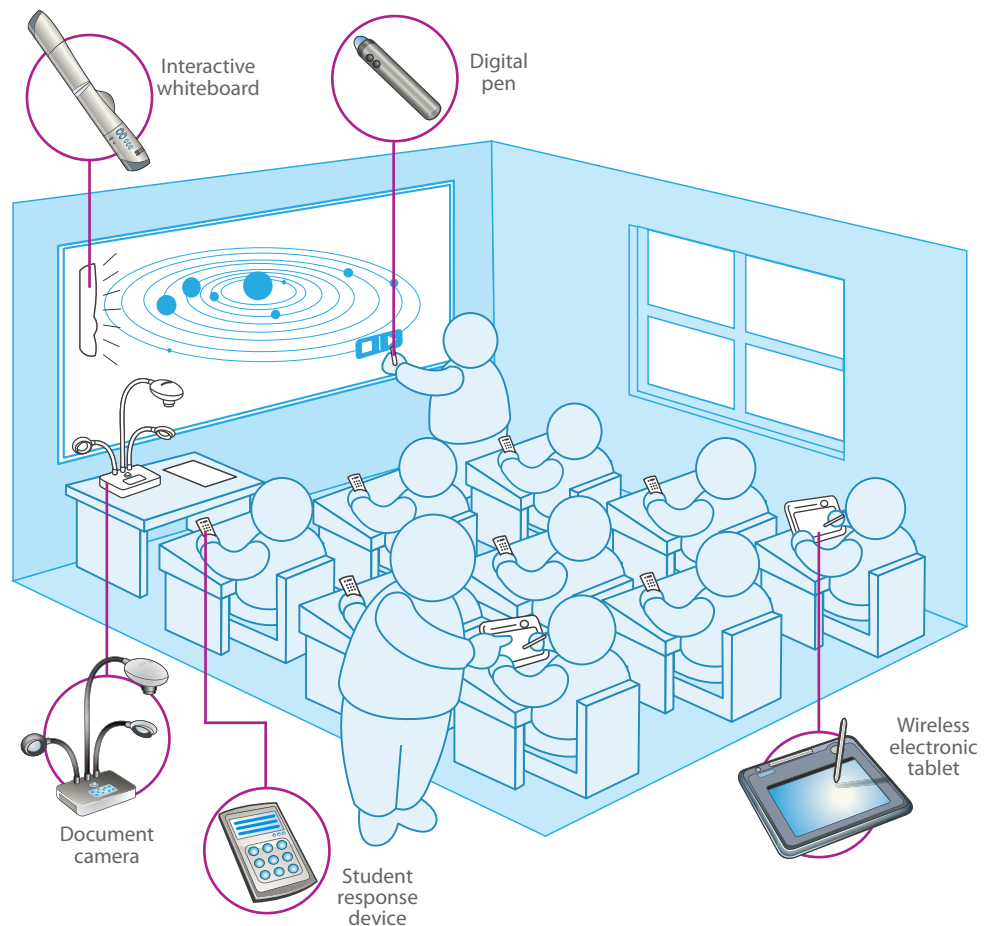
In many ways, the interactive classroom mirrors students' lives outside of school, where they communicate with friends via their cell phones or computers that interconnect with a slew of gadgets, participate in online social networks, enjoy gaming devices that respond instantaneously to their physical movements, and use the Internet to access unlimited amounts of information, including streaming audio and video clips.

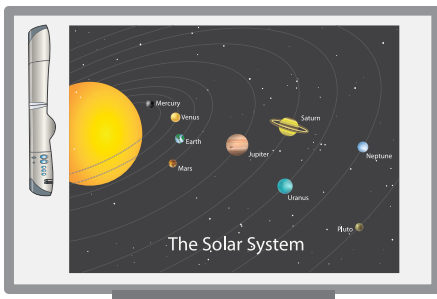
With technology at its core, the interactive classroom improves learning by illustrating new concepts clearly and effectively, increasing student motivation and helping lessons flow smoothly. Technology is not a "silver bullet," but it lets the classroom take advantage of students' familiarity and proficiency with technology and provides a learning environment that is stimulating, engaging, and productive. Furthermore, it increases the likelihood that students will achieve at the levels that standards-based systems require and that society is demanding, as evidenced by the frameworks developed by the Partnership for 21st Century Skills and other organizations.

¹ Beglau, M. Changing the Face of Education: Missouri Leads the Way. Report 2 of the Successful Practice Series. Washington, DC: CCSSO, 2007. Cited in Maximizing the Impact: The Pivotal Role of Technology in a 21st Century Education System. SETDA, ISTE, and Partnership for 21st Century Skills, p. 11. http://www.setda.org/c/document_library/get_file?folderId=191&name=P21Book_complete.pdf.

What Does an Interactive Classroom Look Like?

In this classroom, an interactive whiteboard, multiple integrated devices, and digital lesson materials elicit and encourage students' active participation and interest in demonstrating their proficiencies. Interactive lessons present salient advantages to teachers as a teaching tool, and motivate student learning through the use of quickly changing screens, color, high-quality graphics, sound, and video. Interactive lessons also enhance student understanding of complex topics that involve movement, such as physics or mathematics. At various times, the interactive whiteboard may have students engaged in hands-on activities and performance tasks that are part of the lesson plan mix. For example, students may perform simulations to explain abstract concepts; work collaboratively on writing and editing exercises, math lessons, and computer-based science experiments; or create e-folios of work samples with added narration.





Interactive Whiteboard

The **interactive whiteboard** is the hub of the interactive classroom. A large, touch-sensitive display that connects to a computer and a projector, the interactive whiteboard is like a giant computer screen that users touch to operate — similar to a touch-screen kiosk. In classrooms, the whiteboard is typically mounted to a wall or on a floor stand, offering a range of functionality. Teachers can take lessons they’ve created on their computer (including any image, text, audio file, or video file available on the Internet) and project them onto the large-format screen. Teachers and students can then interact with the whiteboard using a digital “pen,” finger, or other device; they can pull down menus; drag-and-drop text, images, and sounds; hide and reveal images and text; move and open files; write, highlight, and save annotations; and rotate, flip, and mirror graphics.



Document Camera

When connected to a computer, the whiteboard becomes a live computer desktop. Software templates such as graphs, music staves, flowcharts, and frameworks for brainstorming are usually provided with the whiteboard. Teachers who use interactive whiteboards report increased student interest and engagement. In addition, they note that students who previously had difficulty with visual or auditory activities in the traditional classroom can reinforce their learning through activities involving touch and movement of images on the whiteboard.



Wireless Electronic Tablets

Specialized devices integrated into the whiteboard further extend the capabilities of the interactive lesson. Teachers and students can use a **document camera** to convert two-dimensional objects (such as a page from a book) or three-dimensional objects (such as a frog) into digital images that appear on the whiteboard for all to see. With a “digital frog” on display in a biology class, for example, the teacher can discuss and illustrate the animal’s anatomy in the interactive whiteboard session, revealing its internal organs one by one.



Wireless Response Devices

Wireless electronic slates or tablets allow the teacher to control the whiteboard from anywhere in the classroom, eliminating the need to remain at the computer to control the flow of a lesson. Holding a remote slate or tablet makes classroom management easier, since the teacher can roam about the classroom and ensure that all students are on task. The teacher can also move about while presenting a concept to the whole class on the interactive whiteboard, and then invite students to use the tablet to interact with the images on the screen – solving a math problem or identifying the subject of a sentence, for example – while seated at their desks. Student groups can use their wireless tablets to interact with the information displayed on the whiteboard and deliver presentations to the rest of the class, directly from their desks.

With **wireless student response devices** – handheld clickers operating via infrared or radio frequency – assessment can be seamlessly integrated into the Interactive classroom. Students can use the devices to respond to material being taught, answering true/false, yes/no, and multiple-choice questions, and they can see the results displayed on the whiteboard (either anonymously or by name). Students can

“QUALITATIVE RESEARCH and field research confirm that the use of interactive whiteboards has a positive effect on student engagement and can have positive effects on teacher attitudes.”³

also input numerical or text answers to questions. These functions allow teachers to immediately gauge students’ understanding and use the results to modify instruction, or the results can be stored for later analysis. Sharing formative assessment results with students gives them valuable feedback and shows them where they might need to focus their efforts to improve results. Studies show that this type of assessment can be particularly beneficial for low-achieving students and students with special needs.²

With the interactive whiteboard as the hub of classroom instruction, the possibilities for creative, engaging lessons in all subject areas are limitless. Here are just a few possibilities:

- **In math**, students manipulate geometric shapes on the board to see how changes in angles relate to perimeter and area.
- **In English language arts**, students come up to the board and move color-coded words around the board to learn the parts of speech and create sentences with subject, verb, and object in the correct order, and modifiers placed appropriately.
- **In social studies**, students view Web-based maps of their community and learn about scale and direction as the images are zoomed in and out.
- **In physical education**, the teacher shows a video clip of a soccer game, freezes a frame, and then asks individual students to draw directional arrows and other marks over the image to represent desired movements and strategies.
- **In a special education classroom**, students with autism use the digital pen or clickers to choose images of faces on the screen that match words such as “happy,” “sad,” and “excited,” to indicate their understanding of these emotions.
- **In science**, a document camera records the dissection of a frog and projects the process on the whiteboard. The teacher freezes the image periodically, and students come up to the board to label the various organs as they are revealed on the screen. Students take printouts of the labeled image home to study in preparation for a quiz.

Today’s students place great personal value on technology. When they perform interactive activities, their motivation is high. They are excited by the opportunity to use a variety of resources and to be assessed on their proficiency with technology applications. They’re at the center of an interactive, 21st century classroom.

How Can the Interactive Classroom Benefit Students and Teachers?

Implementing the interactive classroom involves changing some aspects of traditional instruction. Static print materials give way to technology that today’s students are comfortable with and that enables them to demonstrate skills or concepts in new ways. The interactive classroom does not need to be implemented all

² Boston, C. (2002). “The Concept of Formative Assessment.” *Practical Assessment, Research, and Evaluation*, 8(9). ERIC Digest, ERIC Identifier: ED470206.

³ *Harness the Power of Projectors and Interactive Whiteboards*, Tom Snyder Productions, A Scholastic Company, p. 11.

at once, however. Various tools can be introduced gradually, allowing sufficient time for teachers to become familiar and comfortable with their features. Most teachers adapt quickly and easily to the interactive tools, finding them tightly integrated and user-friendly. And because the interactive whiteboard allows teachers to do what they've been doing for years at a chalkboard – but with far more powerful tools at their fingertips – it sparks their enthusiasm for using technology for lesson planning and instruction. Ease of use for both the teacher and the student means that the emphasis is on the lesson plan, not on the technology.

It's important to recognize that teaching methods are still the critical ingredient in the interactive classroom. Skilled instruction has always been – and always will be – a critical factor in student achievement.

But well-organized interactive classrooms that use interactive whiteboards enjoy some definite advantages over the traditional classroom. In addition to the benefits mentioned earlier, such as greater student engagement, embedded assessment capabilities, and the ability to address various learning styles and special needs, here are some additional advantages:

- **Less boredom.** Students who are engaged and actively participating in a lesson are less likely to be bored. This benefit can translate into major gains for school districts: Surveys indicate that boredom, not failure, is the main reason why high-school students in the United States drop out of school.⁴
- **Elimination of note taking.** As students or teachers write on the digital images, the annotated “pages” can be saved or printed for future reference, such as for review before a test. Instead of spending time writing notes in a notebook, students can focus on the images and participate in the group discussion. Notes can also be posted on the Web, where students who were absent can access them.
- **Support for collaborative learning.** When students with varying abilities and learning styles are focused on a common learning task that everyone finds engaging, the context for group discussion and collaboration among students is enhanced. Again, the potential benefits in terms of student learning are noteworthy: Research has shown that “collaboration can boost student achievement.”⁵
- **Digitized lessons for future use, teacher collaboration, and remote access.** With lessons created and saved in a computer file, teachers can easily access them for future use, share them with fellow teachers via email or district networks, and make them available for students and parents to access from home.
- **Leveraging existing technology.** In classrooms with just one computer, multimedia displays from Web-based and other sources can be seen by all students, no matter where they're seated. Students no longer need to crowd around a single computer screen.

⁴Walser, N. “Teaching 21st Century Skills.” Harvard Education Letter. Sept.–Oct. 2008.

⁵Vosniadu, S. How Children Learn. International Academy of Education, Educational Practices Series–7, p. 9.

Tackling the Dual Challenges of Standards and Skills

The move toward classrooms that are more interactive can help educators meet the challenges created by important forces that are driving much of the current conversation about education: standards-based education systems and related calls for accountability, and the demand for 21st century skills.

The emphasis on standards and accountability has had a profound effect on curriculum, instruction, and assessment in U.S. schools over the past decade. Teachers and administrators are working hard to ensure that their schools meet student achievement goals, and are looking for ways to strengthen teaching and learning for all students, at all ability levels. The interactive classroom can help in this effort by creating an environment that engages students in learning, motivating them to gain a deeper understanding of the typical textbook lesson. It also enables formative assessment, providing both teachers and students with quick, actionable feedback about students' knowledge and understanding.

The importance of 21st century skills such as collaboration, communication, information analysis, and problem solving has been emphasized by a number of national and international organizations, including the Partnership for 21st Century Skills in the United States. The Partnership calls upon schools to integrate such skills into their subject area instruction, and it notes that teaching strategies that incorporate today's advanced technologies "yield research-proven learning benefits."⁶

Realizing the Vision

The power behind the interactive classroom is its impact on student learning – the transformation that takes place when students are fully engaged in classroom curriculum. Interactive classrooms leverage the use of computer technology as an educational best practice, taking advantage of students' digital skills and interests. Teachers get excited about using technology for lesson planning and instruction, and they discover how easy it is to share lessons and learn from one another. A successful interactive classroom environment does not replace or require a new learning paradigm. Integrated products designed specifically for the classroom, with "one-button" ease of use, let teachers replicate what they have been doing for years, while standing at the chalkboard. The difference is that now they have powerful digital capabilities at their fingertips.

The rewards of this environment include improved student performance, an enriched context for learning, more efficient classroom teachers, an extension of the learning environment beyond the school walls, better connections between schools and families and between schools and global communities, and students who have the skills needed to succeed in the 21st century workplace.

In the real world of education, the vision is just beginning to be fulfilled, but widespread change is evident. It is forecast that one in six classrooms worldwide will

⁶ Partnership for 21st Century Skills. 21st Century Curriculum and Instruction, p. 1.

be using interactive whiteboard technology by 2012. Vendors such as mimio® are at the forefront of developing tools that are easy to use and that integrate well into existing classroom environments. In the hands of skilled teachers, these tools can help schools realize the vision, one step at a time.