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Sensor attachments/Capture technology. Some interactive whiteboards have little to do with the board itself. Separately attached systems or capture technology can be an affordable way to interact with a surface. These system attachments clip or stick onto the wall or existing whiteboard. Mimeo boards are an example of this technology. The biggest benefit is cost. Not only is the infrared or sonic technology less expensive; it also has fewer components to ship and install; consequently, there are fewer parts to break. If the surface gets damaged, the sensors can be moved to another surface.

Interactive Projectors and Displays

Some interactive whiteboard systems have no boards at all: Interactive projectors are new to the classroom scene. An interactive projector has an additional component that builds interactivity right into the projector and the pen. Epson, BOXLIGHT, InFocus, Dell, EIKI, Hitachi, SMART and other brands offer their own versions. The largest benefit to this option is cost: Aside from the projector, the pen is typically the only other device required. The second biggest benefit is the projector's facility to use any other interactive software with it, provided that the appropriate licensing is purchased. In addition, an interactive projector can be easily adjusted for the teacher's and students' heights by changing the tilt of the projector. No mechanical adjustment needs to be made to accommodate the people using it.

Interactive projectors do come with a fault, although it is relatively minor: The surface projected onto needs to be flat and smooth. Cinderblock, brick and many typical classroom walls with uneven textures may not work well with an interactive projector. The pen will respond to the bumps on such walls and the image will have a wobbly appearance. Smooth drywall can be damaged over time using this type of system. The best-case scenario for an interactive projector is projecting onto an existing white whiteboard. The next best is melamine board or other smooth surfaces purchased from a hardware or big-box store. Boards usually come in 2400-by-1200-mm sheets and cost less than $10 apiece. Some

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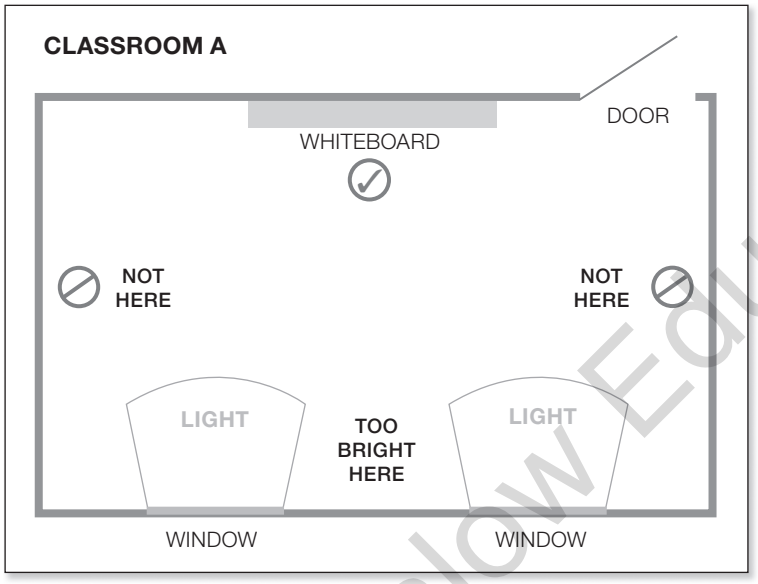
interactive projectors have the option of a special mount so they can be turned vertically on a table; then the table surface becomes the interactive area.

Also new on the education scene are interactive displays – LCD flat-panel televisions or monitors that have touch capabilities. The upside to these is the ease of installation: They mount just like a flat-panel home television. There is no need for a projector and no shadowing effect. Interactive displays do tend to have higher upfront costs than other interactive solutions, but total cost of ownership may be similar to other interactive board solutions, considering there are no projector bulbs to replace. The downside of interactive displays is the relatively small size of the display. If students in the back of the classroom can't easily read from the device, this system loses much of its interactive advantage. As sizes increase and costs continue to decrease, however, these interactive televisions and monitors should become viable options for more and more classrooms.

Whatever form your IWB takes, it needs to work in your space and for your day-to-day teaching functions. If you have influence on the choice of an IWB, look for a system that can withstand the rough conditions of constant use. No matter how slick the design or innovative the technology looks, the system must be user-friendly enough to be naturally integrated into the classroom.

Interactive Whiteboard Software

Good software can go a long way toward making the IWB useful to both students and teachers. Not all the bells and whistles are needed, but they can help. The more flexibility that the software allows, the more teacher creativity can shine through. The larger interactive whiteboard manufacturers offer in-depth, constantly updated software that is more than just texta colour, eraser and shape creator. The additional functionality of these IWBs adds the wow factor without requiring much time for the teacher to create the wow.



Pay close attention to where the projector shines in relation to the ceiling lights. If a bulb is located above or between the projector and the board, it may have a washout effect on the image. A simple solution here, if maintenance or facility staff cannot move fixtures, would be to remove the bulbs from the lights directly above the projector and the board. Having too much light, natural or artificial, adversely impacts the majority of boards on the market. The location of the board in relation to lighting is just as important as other placement considerations.

Computer location. If possible, the computer connected to the board should be near the front of the class alongside the board. Young students have short attention spans and asking a group of young learners to wait while the teacher moves across the room to type something on the computer may cause a loss of momentum in a lesson. Being able to turn instantly from reading a story on a chair, to the computer for typing a website address, to the board itself for interacting with an online activity can mean the difference between a successful lesson and one with distractions that require the teacher to refocus students' attention.

Standard 2: Communication and Collaboration. Meeting this standard is facilitated by best-practice interactive whiteboard use. This includes multiple students doing an activity together, such as playing a game or students working as a group to solve a teacher's puzzle. Students verbally interact with one another and also interact with the teacher. The board is not considered a personal device like a laptop or tablet. Different types of digital media created by others can be displayed through the whiteboard's projector and then marked up with the pen. Additionally, multimedia files can be created via the board software, so other students both locally and from a distance can learn a concept. The distant students can learn concepts on an interactive whiteboard in the same way that the local students did in the classroom.

Standard 3: Research and Information Fluency and **Standard 4: Critical Thinking, Problem Solving and Decision Making.** Using an interactive whiteboard's ability to display collected information helps students meet these two standards by allowing them to organise the information in different ways and by helping them process what was discovered. Let's say that students, as a whole class or by group, are conducting research for a project. Once they have gathered information from multiple digital resources, that data needs to be displayed and organised. Using graphic organisers, collecting and displaying images and drawing on charts can help students analyse what was found and help the group come to agreement on how to proceed with the project. In addition to collecting and holding the data, the final product or results can be shown using the interactive whiteboard. The end result may include various multimedia, both from other sources and from those originally created via the board software or the computer connected to the board.

Standard 5: Digital Citizenship. Digital citizenship is demonstrated by maintaining a positive attitude when using the interactive whiteboard technology. Students who enjoy using technology in school are developing healthy habits needed in a digital age. These students are developing a love for learning that

Coolmath Games

www.coolmath-games.com

Just as the name suggests, this free site is all about maths games. Unique to this website are puzzles and board games that are ideal for projecting onto an interactive whiteboard. This website's design is a little congested, but the games are fun once you find the ones you want.

Count Us In

www.abc.net.au/countusin

The basic activities from this site get right to the point: They are all designed around basic mathematics concepts. There is no advertising or cost, just very simple activities that get right to the skill. They are particularly good for very young students struggling with counting and numeric order.

Funbrain

www.funbrain.com

Online games, books and comics are included in this free resource from Pearson Education. The Funbrain games are developed for students through middle school. Maths and literacy games are found by going to the 'All Games' tab, which is categorised by year levels. Included are some fun word-play games such as *Mad Libs*.

Funschool

http://funschool.kaboose.com

Plenty of original free online games are found at this website. Clicking on 'All Games' brings up a choice of subject areas and clicking a subject shows you the list of games. Each game has an informative description so you know what it is about before entering it. There are many games to choose from.

GameGoo

www.earobics.com/gamegoo

This free, professional website has a variety of literacy activities designed by the same company that developed the Earobics reading intervention program, a paid program for students who struggle with reading. The activities are categorised by difficulty level. Games are geared for Prep through second years.

Place a simple sentence on the board to teach verbs. The verb of the sentence can be left blank. The noun can also be left blank for fun. In playing this game, the noun should be decided at random by the teacher, a picture dice or some other method. For example, the format of the sentence could be "The _____ can _____." Once the noun is chosen, the student gets to fill in the verb for fun in the same way that *Mad Libs* are played.

If your software has a dice graphic that allows it, add a letter to each side of the dice. The letters should be a mix of vowels and consonants found frequently in words. Place the dice side-by-side on your display to form a word. To start off easy, begin with three dice, with the first and third full of consonants and the middle one containing vowels only. Students should tap the dice for the dice to spin and land on a randomly selected letter. Have students read the entire word aloud and determine if it is a nonsense word or not. A student or teacher can write the randomly generated words on the bottom in T-chart form. One side is for nonsense words and the other for real words.

Show a picture that has great detail and is of great interest to students. It can be one taken with a camera or one found on the web. Ask students to generate a list of adjectives to describe what they see. Students can write the list below the picture on the board.

To help students learn about nouns, place circles, squares or a pre-created chart on the board and write 'person, place or thing' next to each one of the areas. Place clip art of nouns on the board. Have students drag the clip art to the correct area that describes that type of noun.

Sentence starters for emerging writers can help a student with writer's block. Display a graphic of an animal, a location or a toy that would provide an idea or a topic to write about. On lined paper displayed on the board, start off with

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