

Interactive Display

Buyer's Guide





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Introduction

The key to purchasing education technology is finding the right formula for your classrooms. But of course there's no standard formula for student success. Every student, every teacher, every classroom, and every school has different needs.

Buying any new piece of technology for your school can therefore be an understandably daunting task. There are hundreds of variables and components to consider, and often not enough guidance to navigate the buying journey. And interactive displays are no different.

You're probably asking yourself questions such as:

- What is an interactive display?
- Is it the same as an interactive whiteboard?
- Is the value it brings to the classroom really worth it?
- How do I know which interactive display is right for my learning space?

We've made this guide to not only answer these questions, but also help you and your team to start making an informed decision about which interactive display fits your classroom's unique needs.

SMART has had the pleasure of being in the ed-tech industry for over 35 years and we want to share everything we've learned so that teachers and IT teams can make class time quality time.

We hope you enjoy learning about interactive displays!



#ConnectionsThatMatter

What is an interactive display?

Interactive displays are LCD or LED screens, and though they look like big TVs, they can do so much more.

The key difference between an interactive display and a regular TV display is right in the name: **interactive**.

Interactive displays are touch and pen-enabled, allowing you to interact with them like you would with a tablet or smartphone. They come in sizes typically between 65" and 86", but can be even smaller or larger. You can share content, interact with digital material, and in some cases host online lessons from them.

Many interactive displays have a built-in Android operating system, with options to connect a personal device or use a dedicated OPS module.

In today's market, there are now many different makes and models of interactive display that offer a broad range of features, functionality, and learning experiences.

How long do interactive displays last?

The right interactive display can serve your classroom for up to 10 years, with an average lifespan of 50,000hrs. If they have an Android-based OS, then you can expect support updates for 3-5 years, depending on the specs.

The best interactive display providers, however, provide extended lifespan support that can include upgrades to new OS versions, or upgrades utilizing the display's OPS slot. More on this later!



Key takeaway: Interactive displays are giant touchscreens that can make almost any content interactive

Why is interactivity important?

It's easy to gravitate toward standard TV displays because they're readily available, low-cost, and often from well-known consumer brands.

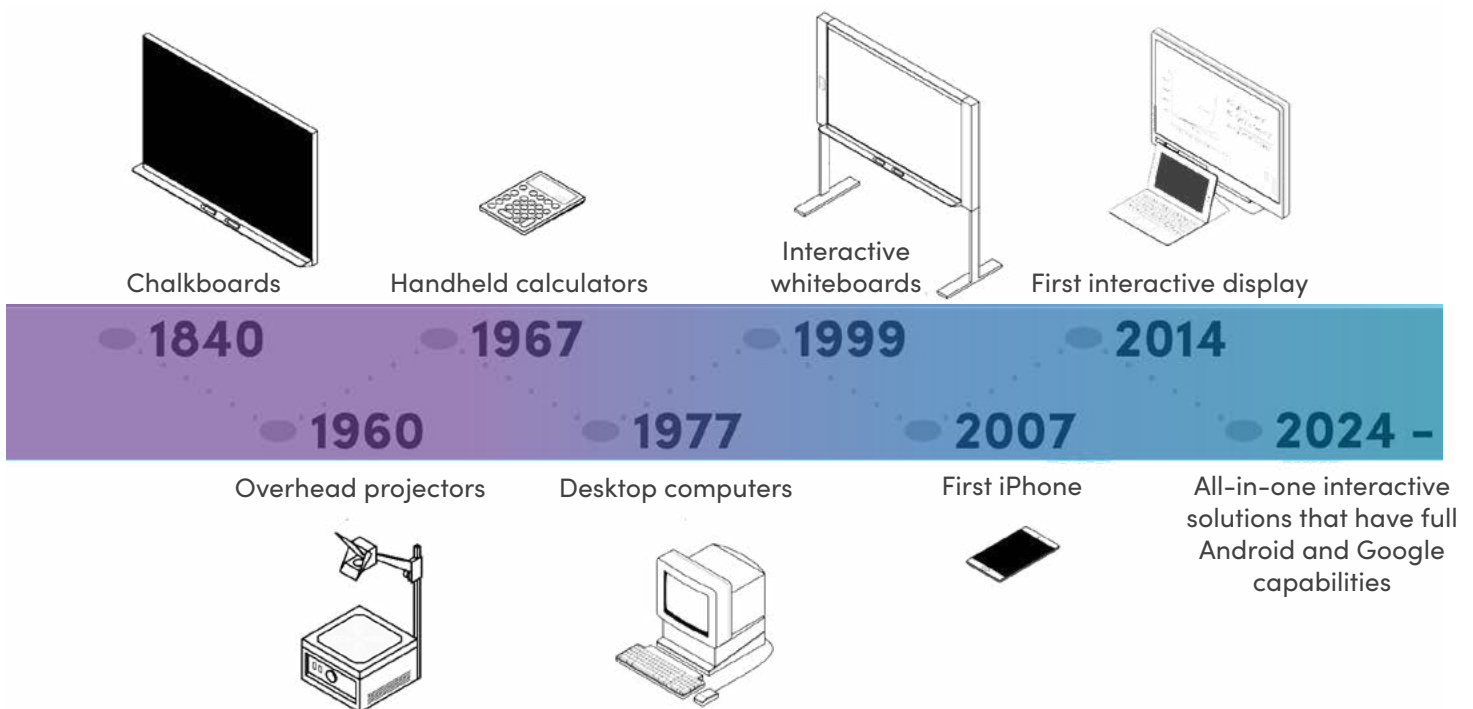
But interactivity is an easy way to empower teachers, engage students, and encourage whole-class participation.

An interactive display can be a place for teachers to guide learning more dynamically with tools such as collaborative whiteboarding and interactive activities. It can also be a place where students work together, interact with content, and problem solve.

Today's most innovative interactive displays include built-in embedded computing that can connect your existing technology, cloud-based services, and education platforms to your classrooms.

Different learning types and teaching styles can all find a home on an interactive display: no matter what your classroom's formula for success is, an interactive display has the potential to fulfil it.

Evolution of interactive technologies



Key takeaway: Interactive displays encourages engagement, participation, and dynamic learning

Interactive displays vs projector-based technologies

Many people who first look into interactive ed-tech make the common mistake that interactive displays are the same as interactive whiteboards or interactive projectors. While all three encourage dynamic learning, there are several key differences between them that must be understood before investing in one or the other.

What are interactive whiteboards and projectors?

The original interactive whiteboard was invented by SMART back in 1991, and since its inception many variations from several manufacturers have entered the market.

An interactive whiteboard (commonly referred to as an **IWB**) usually utilizes infrared scanning and/or a simple resistive touch-based surface that gets displayed via a laser display projector. Users then interact with the board with a finger or dedicated pen. An interactive projector (IPJ) gives similar functionality, however with just a projector.

Meanwhile, **an interactive display is a modernized solution that doesn't use a projector**. Its interactivity comes directly from the screen – similar to how a smartphone or tablet works.

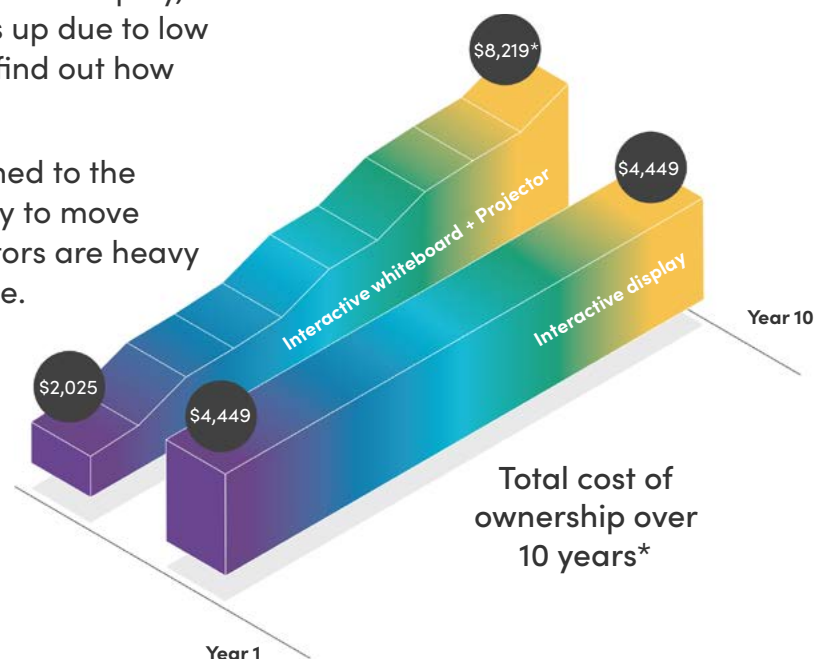
The problems with interactive whiteboards and projectors

Lower image quality: Projectors often have a low quality image resolution and sharpness, making it more difficult for students to see lessons, which leads to lower engagement.

User experience: Projector-based technology means shadows, hot-spots, and lower performance in bright light conditions – this can often be a problem on sunny days.

Running costs: The initial purchase of a projector-based technology is often less than that of an interactive display, but the costs of maintaining it quickly catches up due to low energy efficiency. See the diagram below to find out how IWBs compare to interactive displays.

Reduced mobility: Most projectors are attached to the room's ceiling and therefore have no flexibility to move around. And even IWBs with mounted projectors are heavy and cumbersome to move from place to place.



Comparing interactive ed-tech

Below is a brief summary of the differences between an interactive whiteboard and an interactive display:



	Interactive whiteboard	Interactive display
Projector required?	Yes	No
Image quality	Greatly depends on the classroom's lighting and light coming from the outdoors	Up to 4K UHD in any environment or deployment
Average lifespan	Lamp projector bulbs need replacing every 3,000 - 5,000hrs (eco-mode)	Backlit touchscreen can last up to 50,000hrs
Energy usage	Almost 4x higher than an interactive display	Almost 4x lower than an interactive whiteboard
Interactivity	Fewer points of touch than an interactive display. Affected by shadows, hot-spots, and lighting	Like using a giant, modern smart phone or tablet
Flexible deployment?	Fixed in one position that must face a projector	Can be mounted or put on a mobile stand
Noise	Projector fans often noisy, especially during warm weather	Virtually silent
Average initial cost	Lower than an interactive display	Higher than an interactive whiteboard
Embedded OS?	N/A	Android

Key takeaway: Interactive displays may have a higher initial cost, but work out far cheaper in the long-term

The role of interactive displays in today's learning environments

We've talked about what an interactive display is and how it's a better value investment than an interactive whiteboard, so now it's time to explore what part it has to play in modern learning environments.

Getting more from student devices

Engaging today's learners means providing active learning environments where students can go beyond just scrolling or broadcasting their screens. An interactive display can add this active element, particularly if it has the ability to let students explore the teacher's lesson at their own pace, and contribute to the lesson from their devices.

The best interactive displays go one step further with tools designed for meaningful student contributions, such as:

- Polling and voting
- Multi-way inking with attribution
- End of lesson feedback forms
- Question and reflection exercises
- Freeform or categorized brainstorming
- Prior knowledge activation exercises

Key takeaway: Self-paced learning and multi-way interactions between a student device and an interactive display is essential

Students observe:

1.5x

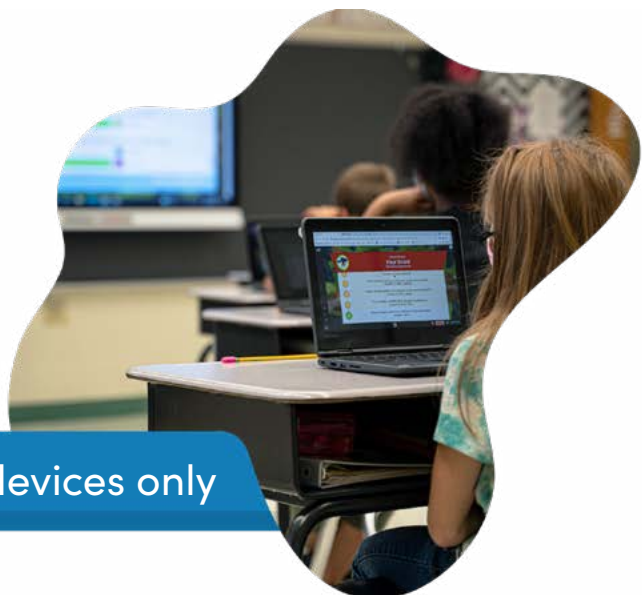
more when using an interactive display with a student device in a classroom

Both

36%

Student devices only

24%



Content sharing

The best interactive displays enable sharing content between student devices and the board in ways that increase student participation and engagement.

Whiteboard sharing

A display that allows teachers to broadcast whiteboards to student devices is essential so that every student can see the content.

To avoid classroom disruption, some interactive displays have access options through a QR code or shared link which saves a lot of time and hassle. The best whiteboard sharing tools for education update in real time, and give teachers control of when to implement “follow me mode”, and when to allow students to explore the shared content at their own pace.

Inclusive access to lesson content

For learning to be inclusive and engaging, students not only need to be able to connect their devices to the lesson, but also need to be able to interact with digital tools and content.

Teachers need a solution that can act as a nerve-center for student devices, tools, and content to work together. Great interactive displays enable students to access and navigate content according to their own needs and to collaborate in a digital space from wherever they are.

Collaborative whiteboard

Multi-way inking in a shared whiteboard is important for enabling real-time collaboration.

Allowing students to add a variety of content including ink and text from their devices helps them to showcase their understanding and facilitates active, collaborative learning.

Screen sharing

Screen sharing from student devices to the display allows students to showcase their work and teachers to provide real-time feedback. The best screenshare clients provide:

- Easy connection options for students through an app, browser, or natively from any kind of device (Google Cast, Airplay, Miracast, etc)
- Teacher control over who shares, with a lobby that lets every student queue until it's their turn to go live

57%

Devices +
interactive
displays

44%

Student
devices

Active listening
goes up by:

13%





Key takeaway: Accessible and inclusive classrooms are rapidly becoming requirements for schools

Accessibility and inclusivity

Every learner matters. Inclusivity is about empowering all students, regardless of how they think and learn. The right tools reduce barriers to learning so all students can thrive.

Interactive displays can do much more for students than just display content on a bigger screen.

Built-in digital manipulatives and games make lessons more fun and provide multi-modal opportunities for interaction

Reduce visual barriers by adjusting the brightness and contrast of the display

Assistive technologies integrate with displays through Bluetooth or HTML5 protocols, enabling students to bring their own solutions into the classroom

Interactive displays can be placed on mobile stands that are height adjustable so that all students can easily interact with the content

Some interactive displays come with customizable stamp-tools (pictured above) that allow learners who express themselves non-verbally to engage in a whole new way

The demand for inclusive classrooms has never been stronger, and if your school or institution wants to keep up with this demand, then an interactive display is a must-have.

Tools that save teachers' time

Today's interactive displays include more features than ever to make lessons more efficient so that teachers save time. They enable more connected classrooms and engaged learning. Here are some of the top features and functionalities that the best interactive displays offer.

Touch and ink

Touch and ink are the heart of an interactive display's functionality:

Inking experience



Writing on an interactive display should be as simple as picking up a pen. The best interactive displays allow you to write, navigate, change applications and browser tabs, then continue writing without using a frozen overlay or special ink mode on a connected computer.

If your teachers use Microsoft Office or PDFs, consider getting a display that has a natural plug-and-play integration with Microsoft Ink and PDF Markup.

Interactive displays allow for multi-user writing, but with some displays, changing tools makes collaboration break down. The best interactive displays allow every student to freely write, erase, and move content without their tool choice impacting another's.

Multi-user interactivity should be the default setting across platforms without the need to switch modes.

Multi-user interactions



Points of touch



Touch technology should offer a true walk-up-and-use experience. This means the interactive display automatically detects touch, pens, tools, and palms across applications and doesn't require a menu or tool selection to get going. Ensure that any interactive display you look at supports multi-user touch on your school's preferred operating system.

“

Interactive flat panels allow kids to feel more engaged in their learning...*

”

Peter Yackus, Technology Integration Coordinator
at Fort Bend School District, Texas

[*See the full interview here](#)

Embedded computing capabilities

Most interactive displays are powered by a built-in Android OS, with pre-installed apps for walk-up and use functionality. Displays designed for education often also include educational apps and lesson delivery tools designed to empower teaching and learning.

A built-in OS eliminates the hassle and expense of connecting a laptop or dedicated PC to the interactive display.

Digital whiteboard for education

Practically all interactive displays have a native whiteboarding app that acts as a digital blank canvas for teachers to bring instruction to life. Features such as built-in templates, digital manipulatives, graphic organizers, widgets, measurement tools, integrated multi-media, and student brainstorming activities plus deep student device integration help enable active, engaged learning.

Cloud storage workflows

Whiteboarding apps that facilitate quick opening of common file types directly from Google Drive or Microsoft OneDrive gives teachers what they need, when they need it, and saves valuable prep time.

Android apps and Google Play

The newest advancement in interactive displays is the opportunity to become **Google EDLA-certified**. Displays without this certification cannot access Google services, impacting not only access to the Play store but essential backend functionality needed to run most Android apps. Google EDLA-certified displays also provide administrator controls to remotely manage or lock down access to install apps for added security if you don't have a dedicated remote management system.

Simple sign-in and multi-user profiles

Some interactive displays let teachers set up their own profile, home screen, and settings. If **available sign-in options include a QR code, device authentication, or NFC-card**, teachers then don't have to worry about typing out long passwords in front of students.

Secure sign-out and clean up

The best interactive displays have a one click sign-out or reset function that clears the display and logs out of all and any apps or browsers. This is essential to securing teacher and student data - especially in multi-use learning spaces.



Key takeaway: Embedded computing needs to be easy to use, support multiple profiles, and offer a secure environment



How interactive displays fit into learning spaces

As we said at the start of this guide, every school and every classroom is unique. It's therefore essential that any ed-tech solution you're looking into fits both your physical space and tech stack. In this section we're going to explore what needs to be considered when deploying an interactive display into an educational space.

Integrations

No matter how you choose to upgrade your ed-tech deployment, it's essential to consider how it will fit in with your current tech-stack.



Integration with classroom computers

Many schools are walking away from connecting computers to their interactive displays in favor of embedded Android experiences. However others still prefer the experience of connecting their interactive displays to computers. These schools should look for an interactive display that integrates well with Windows, Mac, and Chrome operating systems. If your school uses Mac computers, a minimum of 20 touch points should be a requirement.



In-built EDLA certification by Google

If your school primarily uses Google for education, Microsoft Office 365, or other Android platforms, then you're in luck, because some interactive display manufacturers now have Android EDLA certification. This provides full access to Google Play Services, so teachers can securely use the apps they know and love without a connected computer.



Cloud storage integrations

Teachers must be able to easily access content from any cloud storage solution they use. Make sure the display can access their storage without the need for a connected computer.



Built-in, integrated Wi-Fi

A few interactive displays include integrated Wi-Fi that eliminates the need for additional dongles - with some even boasting having Wi-Fi 6. In addition to the reduced time and money, embedded Wi-Fi is also often more reliable, reducing the chance of connection failures.

Key takeaway:

Google EDLA certification isn't just for Google users - it's also very useful for Microsoft environments too

Connectivity and peripherals

An interactive display's network connectivity and ports make a big difference to how easily teachers can incorporate devices and media in their lessons. Here's an overview of common ports and what you should look for in each one.

USB-C

The all-in-one cable for modern interactive displays. USB-C ports can provide power, interactivity, video, audio, charging, and Ethernet connectivity for connected devices.

USB-A, USB-B

The other two main USB ports are the base standard used for a whole variety of functions. Interactive displays can use these types of USB in order to accommodate flash drives, enable interactivity, and facilitate data transfer.

HDMI*

Most interactive displays will have at least one HDMI port. The question you'll want to ask is how many you need and if the video inputs are touch enabled through corresponding USB Type-B ports. Also, know that HDMI 2.0, not HDMI 1.4, ensures compatibility with high-bandwidth video signals, like 4K.**

Audio

Almost all interactive displays include internal speakers, but for larger learning spaces where you might want to attach external speakers, most interactive displays do have the right ports for the job.

VGA

Although rapidly falling out of popularity, some interactive displays do still support a VGA connection. If you need a VGA port, just be certain that your audio inputs correspond with the VGA connection, or you won't be able to get sound. If you're using a VGA connection for video, you will require a separate audio connection and cable for audio.

Integrated microphone array

Integrated mic-arrays are very useful, as they mean you don't have to worry about kitting the classroom out with additional hardware. A built-in microphone array that provides crisp, high-quality audio capture enables remote and blended learning, and takes the guess work out of setting up lesson recordings for teachers!

UVC webcams

A good interactive display should work with UVC webcams. If you're able to plug in an Android compatible UVC webcam, even one with a built-in microphone, to connect with students wherever they are learning, then video conferencing deployment is made much easier.

* Another option for carrying audio/video and other data is a Display Port

** Manufacturer-certified installers ensure true fidelity 4K signals

Positioning

Screen sizes for interactive displays generally range from 55" to 86". The larger the screen the more expensive it's going to be and the harder it's going to be to fit into a space. Let's dig in to what you need to think about if you decide to go for an interactive display.

Viewing distance

The 5X rule of thumb is a handy trick to calculate a comfortable viewing distance for 20pt font on an HD interactive display.

The formula is simple: multiply the screen size by 5 and divide by 12 to get the answer in feet. Let's use a 65" display as an example:

$$65" \times 5 = 325"/12 = 27 \text{ ft (8.2 m)}$$

Viewing angle

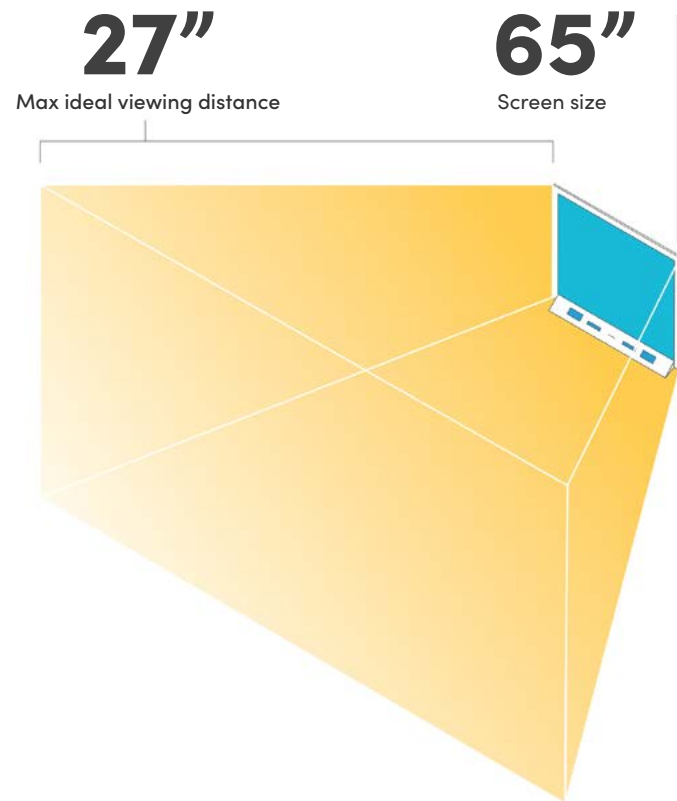
Even if students are close to the interactive display, the angle they're looking at it from matters. Many interactive display manufacturers say they address this by having a 178° field of view. It is important to note, however, that most displays suffer a reduction in clarity and brightness at extreme angles.

Collaboration

Consider how many students you want to have working together on the interactive display. Don't forget the height of your classroom and your students! Make sure any display you look at is compatible with an adjustable wall mount.

Room sensors

Some interactive displays now have in-built room sensors that can monitor ambient light levels, particulate matter, volatile organic compounds, and temperature.



Eye care and eye strain reduction

Manufacturers should value your wellbeing and hold themselves to high health and safety standards. Look for interactive displays that include features such as anti-glare glass, flicker-free displays, and controllable light settings to ensure eye comfort.

Key takeaway: Look for an interactive display that follows high health and safety standards

Privacy and Security

Every interactive display manufacturer offers privacy features in some form. But what some displays can suffer from is having security protocols that limit their interactive functionality. Displays that balance both do exist, however, so it's worth keeping an eye out for them.

Trusted data storage and processing

Top interactive display providers use best-in-class data centers that have industry-standard certifications such as ISO 27001 and SOC 2/3. They also ensure their European customers' product user data is stored in the EU, in accordance with EU and GDPR legislation.

Remotely manage and administer control

As said previously, most interactive displays come with mobile device management software that easily enables administration of interactive displays remotely at scale. This ensures that your deployment remains consistent, and easy to manage.

Built-in protection

Interactive displays often offer automatic over-the-air (OTA) updates, that help to ensure security settings are always up to date. They can also support certificates for authenticating and accessing different networks.

Web and content filtering

It's useful for teachers to be able to pull content from the web to aid in their teaching - but it's important for them to be safe while doing so. Interactive displays that are properly built for the classroom will utilize content filtering and ad-blockers.

Privacy and user profiles

One privacy feature that's becoming more popular is single sign-on, which enables teachers to sign into their interactive display through a trusted identity provider like Google or Microsoft. This capability means a teacher can keep their applications, cloud storage files and personal settings secure behind their login, and also provides consistency across an ed-tech deployment. The very best interactive displays offer multiple ways to do single sign-on so that schools can choose the method they prefer.



Product lifespan and sustainability

Let's face it, there's no point investing in a new solution if you're just going to have to replace it every few years – it's not just damaging for your budget, but also for the environment too.

Quality that stands the test of time

Modern interactive displays that are worth your investment should have the latest tech specs and software capabilities that will keep your new solution relevant for many years to come. Let's explore some things to keep an eye out for:

Touch surface quality

Because your display is being used so frequently, touch surface is very important. Look for a display that has heat-tempered, anti-glare, anti-smudge, and anti-fingerprint glass.

Accelerated life testing

Interactive displays in a classroom are used continuously. The best interactive displays have therefore been rigorously tested for: intensive use, extreme temperatures, humidity, and heavy impacts.

Image quality

In today's market, the base standards are now 4K Ultra HD resolution, 8ms response time, and 60 Hz refresh rate.

Upgradability

The most conscientious interactive display manufacturers go one step further to ensure that their customers remain satisfied with their investment long after purchase: optional upgrade modules that sit behind the display.



OPS PC module

For users who aren't interested in embedded software, then interactive display manufacturers provide a slot for a permanent computing module that can host your operating system of choice. This means that your interactive display stays as up-to-date as the PC you provide it.

Appliance modules

A recent innovation in the IFP space are 'appliance modules' that refresh their displays' software capabilities at a fraction of the cost of buying a new display. These modules can greatly extend the lifespan of an IFP by several years.

Energy consumption

There's no beating around the bush: any large display is going to have an energy cost associated with it and interactive displays are no different. If your school or district have certain energy standards, then it's good to think about this sooner rather than later.

Sustainability certifications

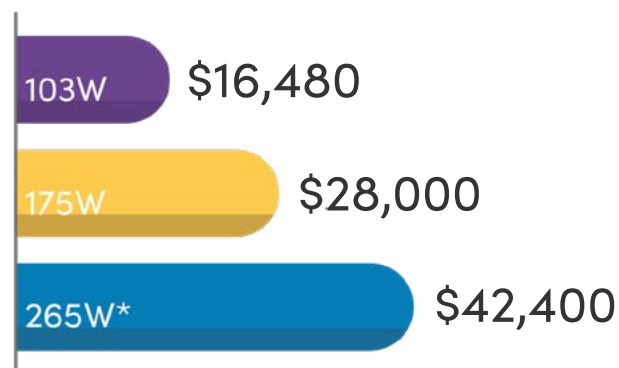
The two main certifications that demonstrate exceptional energy efficiency are **ENERGY STAR®** and **EU Ecodesign** compliance. Interactive displays without these two certifications are likely to have a higher operating cost than those that do.

Wattage

Interactive displays vary in wattage depending on the size, complexity, and quality of their design. A lower wattage is of course more energy efficient, and depending on the manufacturer it doesn't necessarily mean that performance is compromised.

The graphs below demonstrate how wattage can affect running costs and environmental impact:

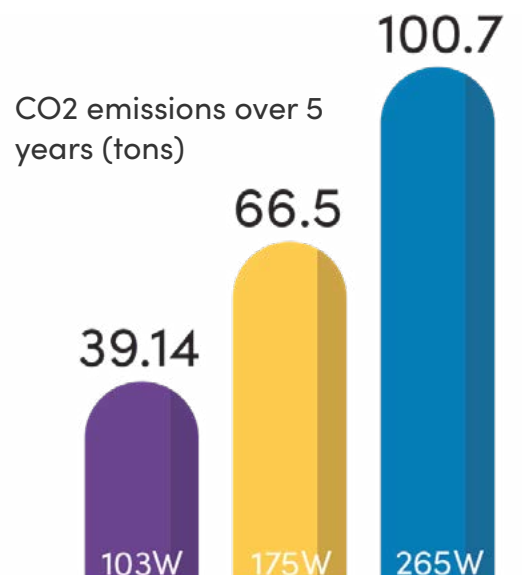
Electricity cost over 5 years



*Interactive whiteboard

A 103W interactive display can be more than **2x more efficient** than a 265W interactive whiteboard

Key takeaway: You'd need to plant 3694 trees to offset the CO2 emissions of running a 265W interactive whiteboard for 5 years



Next steps: questions to ask

We hope by now that you have a better understanding of what an interactive display is, what the benefits of them are, and how they can fit into your learning spaces. With this new understanding, your next steps will be to shop around and compare different interactive display providers so that you can find the best solution for your classrooms.

Consideration checklist

We've covered a lot in this guide, so to help you in the next stage of your buying journey we've come up with a checklist of the top ten things to think about when you're looking:

1

Built for education: How does the interactive display work with your teaching workflows, and your Google or Microsoft implementation?

2

Multi-user interactivity: Can multiple people touch, draw, **and erase** at the same time without interfering with one another?

3

Complete OS support: Do annotations work within your operating system without screen freezing?

4

Energy saving features: Will the display match your school's energy efficiency standards?

5

Lifespan: How long will the display last? Are there options to upgrade the OS?

Security: What features utilize student data? Where will your data be stored?

6

Student devices: What tools does the display offer for real-time student participation?

7

Inclusive learning: Does your interactive display have multiple options for student interaction?

8

Setup and support: How easy is the day one setup? Does the display come with live support options?

9

Software and learning tools: What additional learning tools are included? Do they require an ongoing subscription?

10

Final Thoughts

At the start of this guide, we aimed to answer four key questions about interactive displays:

- What is an interactive display?
- Is it the same as an interactive whiteboard?
- Is the value it brings to the classroom really worth it?
- How do I know which interactive display is right for my learning space?

We hope that the answers to the first three questions are clear: interactive displays are giant touch panels that integrate both physically and digitally into a learning space. They don't require projectors (therefore making them different from interactive whiteboards), and come packed with a whole host of modern functionalities.

Interactive displays are not just flashy tech-toys, but are now a vital part of the everyday classroom experience for teachers and students. Whether it's making lessons more engaging, or enabling remote learning, or creating an inclusive learning space, interactive displays can adapt to any need. The value they bring to the classroom is absolutely worth it for the extra cost.

As for question four, we've explored the initial elements to think about when first looking at interactive displays, but to again reference the start of this guide: every classroom has its own unique formula. **And only you and your team know the ins and outs of that formula.**

If you and your team need more guidance, however, SMART is always happy to help. We've been working with educators for over 35 years to bring interactive technology to classrooms globally and help them make the connections that matter.

Thank you for reading this guide, we hope it's been useful!

For more information on interactive displays, or to get in touch, visit smarttech.com



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