

Interactive Displays

2021 Buyer's Guide



Table of Contents

Introduction	3
A closer look at interactive displays	3
What is an interactive display?	3
The power of interactivity	3
The role of an interactive display in today's learning environments	4
Getting more from student devices	4
Remote and blended learning	4
Integrations	5
Features that make a difference	6
Touch and Ink	6
Embedded computing	7
App experience	8
Video conferencing	8
Sharing content between displays and student devices	9
Ease of maintenance and futureproofing	9
Connectivity	10
Screen size	11
Consider who you are buying from	12
Privacy & Security	12
Certifications and Compliance	13
Social responsibility	13
Implementing your new technology	14
Training and Support	14
Final Thoughts	15

Introduction

There is no standard formula for student success. Every student, every teacher, every school, and every district has different needs. When purchasing education technology, the key is to find the right formula for your classrooms.

This guide is designed to help you make an informed decision. It takes into consideration everything, from today's learning environments to key interactive display features that matter most to post-purchase support, all with the intent of helping you purchase the right interactive display for the unique requirements of your learning environments.

A closer look at interactive displays

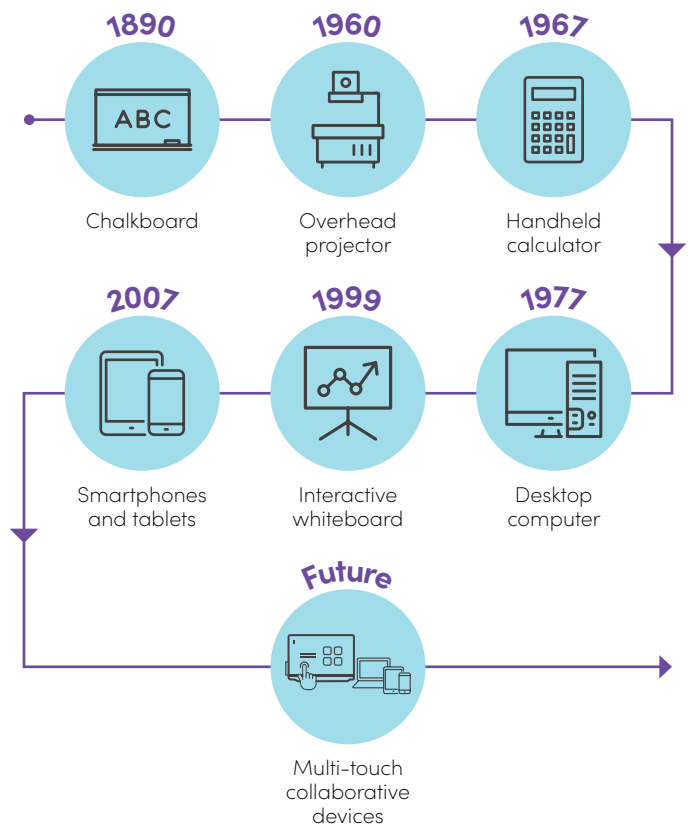
There is an array of display technologies available for the classroom. Making an informed choice between the many options can be a daunting task. In this guide, we'll look at interactive displays, how they work in different learning environments, and what to look for in an interactive display and the manufacturer.

What is an interactive display?

Interactive displays are LCD or LED screens, and though they look like big TVs, they can do much more. They are touch and pen-enabled, allowing you to interact with them as you would with a tablet. Multiple people can use them at once, on screens as large as 86" and beyond. You can also connect a computer and other devices or get an interactive display with an embedded computer to share content and interact with digital and online material.

There are many different makes and models of interactive displays that offer a broad range of features, functionality, and learning experiences.

Evolution of classroom technologies



The power of interactivity

The key difference between an interactive display and a regular TV display is right in the name: Interactivity. It's easy to gravitate toward standard TV displays because they're readily available, likely less expensive, and often from well-known consumer brands. But interactivity is a powerful way to empower teachers, engage students and encourage participation.

In an interactive display, teachers have a tool that supports blended or hybrid instruction, whole class, small group, and individual learning, and allows teachers to easily transition between them. It can be a place for teachers to present and guide learning, but also a place where students work together, interact with content and problem solve. Different learning types, different teaching styles; they all find a home on an interactive display.

The role of an interactive display in today's learning environments

Schools around the world have rapidly begun to adopt student devices like laptops, tablets and smart phones inside and outside of their classrooms. The influx of these consumer products in the classroom offers great opportunities for education, and interactive displays can help both students and teachers get even more value from them.

Getting more from student devices

The image of students sitting, looking down at their tablets and passively consuming content is not one that reflects 21st century learning. 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.

To create active, student device-enabled learning environments, look for an interactive display that enables students to share ideas in engaging, meaningful ways by letting them send text and images to a shared space in the whiteboard and tagging their individual contributions. This functionality can help give students equal, active opportunities to share and develop their voice and ideas.

Remote and blended learning

In remote and blended learning environments, teachers and students not only need devices to connect, they also need digital tools and content to engage in active learning experiences. For effective remote and blended learning, teachers need their interactive display to act as a nerve center where they can orchestrate these devices, tools, and content, as well as the learning experiences of students in and out of class. All this needs to happen in the easiest way possible.

Empower your teachers with interactive displays, purpose-built for classrooms where students learn with devices. With a high-quality interactive display, teachers can share screens and whiteboards out to students and launch collaborative whiteboards for an engaging learning experience.

Integrations

It's important to choose an interactive display that gives teachers the ability to bring together student devices, computers and peripherals, learning software and content. Your interactive display should provide one streamlined, continuous platform for lesson delivery, interactivity and engagement by integrating seamlessly with your technology environment.



Integration with classroom computers

Many schools are walking away from connecting computers to their interactive displays in favor of embedded Android experiences. (More details on what to look for in embedded computing are listed on Page 7.) However, many schools still prefer the experience of connecting their interactive displays to a computer. These schools should look for an interactive display that integrates well with Windows, Mac and Chrome operating systems. For example, some brands of interactive display can support 20 or more points of touch on Windows and Mac. If your school uses Chrome OS computers, a minimum of 10 touch points on Chrome OS should be a pre-requisite.



Cloud storage integration and easy access to Google and Microsoft® applications

Teachers must be able to easily access documents from Google Drive or OneDrive, particularly within an interactive display's standalone embedded experience. Direct access to verified Microsoft apps and Google Workspace for Education web apps, without a connected computer must be checked off the list as well.



Built-in, integrated Wi-Fi

A select few interactive displays include integrated Wi-Fi for easier implementation and cost savings, providing connectivity out of the box. Choose an interactive display that requires no additional setup or support for third-party connectors and eliminates replacement costs for external Wi-Fi dongles.



Features that make a difference

Today's interactive displays include more features than ever and cutting-edge technology for a competitive price. They enable more connected classrooms and engaged learning. Navigate the difference between specifications that look good on paper and the features that make for a valuable, future-proofed investment for classrooms.

Touch and Ink

Touch and ink are the heart of an interactive display's functionality. Here are some of the features to look for:

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. Multiple users should be able to write, erase, use tools and move at the same time, enabled by up to 40 points of touch.

Multi-user touch

An interactive display that lets multiple users write, erase and move content at the same time is a must-have. Look for an interactive display that enables multiple users to touch, write or gesture without the need to use menus, select tools, or switch modes. Interactive display models that automatically detect touch, pens, tools and palms without the need for software menu selections lowers barriers to use for both teachers and students.

Inking experience

Can you write into PDFs and Microsoft Office files, and over applications and browsers, without an overlay or special ink mode with a connected computer? Are you able to ink over applications, inputs, browsers, and shared screens by simply picking up a pen? Think about everywhere you ink, and compare the experience. Do the tools and ink always behave like you expect? A more consistent experience means less surprises, and an interactive display that's easier to use.

These factors combined make for a true walk up and use experience that enables multi-user collaboration and uninterrupted workflows.

* Zakara Tormala, Stanford, 2014 bloomberg.com/news/articles/2014-07-10/say-it-with-stick-figures-your-crude-drawings-are-more-effective-than-powerpoint, Stanford, 2014

“Watching people writing out the content helps people remember more, not only immediately after, but also after a period of time.”

~ Zakara Tormala,
Stanford, 2014*



Embedded computing

Most interactive displays include a built-in computer. This eliminates the expense of connecting a laptop or dedicated PC to the interactive display and provides quick access to files and applications, a web browser, a digital whiteboard and screen sharing. Here are some specific features to look for in an embedded computer.

Simple to use features essential for increased adoption

Ease of use should be the first and most important consideration when choosing an embedded experience. Embedded computing that offers teachers a simple to use experience with intuitive tools, simple workflows, tight integrations and easy navigation means more teachers will use the display, regardless of their technology comfort level. It also means lower training costs, fewer support calls and more usage.

Choose a built-in whiteboard with learning-specific features

Ensure that the embedded whiteboard includes a large instructional toolset and features to help teachers 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

More and more, schools are using cloud storage, such as Google Drive, Microsoft OneDrive and Dropbox, so teachers can access their lesson content from anywhere. Having cloud files available right from the interactive display allows teachers to get going quickly.



Value-add versus added time

Your EdTech needs to add value – not extra time. Look for simple walk up and use features and sign-ins that save teacher preferences like their favorite apps and files. Ready-made activities, templates and widgets like timers, dice and rulers streamline lessons and hold students' attention.

Remote display management

When you add up all the technology in your school, make sure the displays' embedded computer can be managed through a cloud-based solution that allows IT administrators to remotely control them and update settings from any web browser and any location.

Resetting the display

If your school has multi-use classrooms and workspaces, being able to quickly scrub work from the display for the next user or class with a clean-up or reset room feature is important as it helps secure teachers' and students' data.

App experience

The ability to flexibly install verified Android apps to an interactive display makes a huge difference. Many interactive display brands don't offer an app store, instead leaving their customers to time-consuming and even risky app installation workarounds. Look for displays that offer a verified app store, as well as options for remote installation, so you can support users' app needs from anywhere.

Check if the native app store has verified apps and allows teachers to easily install their favorite apps, without sideloading or making a support call. This saves support teams valuable time so they can focus on bigger implementation projects.

Also look for a customizable app experience that lets teachers favorite frequently used apps on their interactive display, ideally on the home screen itself.

In summary, you want to make sure that users can install and use apps worry-free and none of the app installations create security or other risks.

Look for displays that offer a verified app store, as well as options for remote installation

Video conferencing

With the ever-increasing need to support blended and distance learning, interactive displays can facilitate audio and video conferencing in classrooms in a variety of ways.

With the right features, an interactive display can help enable consistent, high-quality instruction, whether in-person or at a distance.

Integrated microphone array

Does the manufacturer offer an integrated microphone array option within their lineup? A built-in microphone array offers user convenience and frees up ports to connect additional peripherals. It provides crisp, high-quality audio for clear sound in any learning environment. It also makes it easier for teachers to connect with students by capturing lessons for later review.

Works with UVC webcams

Your interactive display must work with UVC webcams. For example, 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, you've made the right choice.

Access to web-conferencing platforms

Interactive displays that provide direct access to leading video conferencing platforms like Zoom, Microsoft Teams™ and WebEx apps through a native app store and Google Meet™ and more must be a strong pre-requisite to support remote or blended learning.

Divine Savior, USA
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Sharing content between displays and student devices

Screen sharing

Screensharing from student devices to the display allows students to showcase their work and teachers to provide real-time feedback. Look for screensharing solutions that offer the ability to share a minimum of four screens with touchback support. Select a screensharing solution that works for your technology environment whether that be through native platforms, such as Google Cast, Airplay, or Miracast, dedicated apps or a browser-based solution that doesn't require network configuration.

Whiteboard sharing

An interactive display that allows teachers to share whiteboards to student devices is important so that every student can see the content. However, interactive displays that enable this functionality without requiring students to log in makes it easier, faster, and less disruptive. Once the whiteboard is shared to student devices, it is essential that teachers maintain control of the lesson with the ability to toggle between teacher-paced (teacher controls what the students see) and student-paced (students have the freedom to explore the shared content at their own pace) instruction at any time.

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 allows them to showcase their understanding and facilitates active, collaborative learning.

Ease of maintenance and futureproofing

When choosing an interactive display, understanding what brands offer in terms of automatic updates, product quality, warranty and support can make a major difference in the long-term return on your investment, the impact on your time, and your total cost of ownership.

Automatic over-the-air updates and continuous feature improvements

Check if your interactive display updates automatically over-the-air (OTA), and what those updates provide. Automatic OTA updates ensure security settings are always up to date and patches and fixes are reliably deployed. Consider looking for a brand that also provides continual feature improvements over the air. At a minimum, you should get patches, fixes, and security updates, without having to manually deploy these updates. Not only can this help the individual user get more from the interactive display over the years; it can help ensure equity between schools and classrooms that may receive different models over a multi-year deployment.

Image quality

Leading edge technology empowers quality teaching and learning. When considering an interactive display purchase, ensure the manufacturer is in line with the industries' latest and greatest technology. In terms of image quality, some of the basic specifications to look for, at a minimum, are 4K Ultra HD resolution, 8ms response time, and 60 Hz refresh rate.

Purpose-built for learning

Your interactive display should be purpose-built for learning environments, and not a repurposed consumer or commercial touch screen. Consider how rigorously the manufacturer has tested the interactive display for classroom use. For example, a touch display in an office may be used for an hour or two per day, whereas an interactive display in a classroom can be in use much of the day, throughout the school year. Make sure you choose a brand that's been built for classrooms and tested for durability. Market-leading interactive display manufacturers put their products through rigorous life testing, including for temperature, humidity and voltage extremes, which can have an impact on the life of your product.

Warranty

Leading interactive display warranties include advanced hardware replacement with 2-way shipping, coordination and onsite replacement support, as well as remote product support.

Look for a manufacturer that keeps warranties simple for you. Check to see if your manufacturer warranty requires your products to be registered before it's activated. Some manufacturers' warranties cover the interactive display the minute it's shipped without the need to register the display, which can provide additional peace of mind and hassle-free support.

Also check to see how long a company has been around in the interactive display market. Getting a 5-year warranty promise from a company that has only been around for 2 or 3 years has the potential to turn into sleepless nights.

Mobile device management

Make sure you are easily able to manage your technology at scale. Many brands include mobile device management software with their displays, to let you maintain, control, support and secure devices from a web browser, reducing the need for classroom visits.

Accessories and extras

The cost of accessories and extras can add up quickly, especially on a large-scale deployment. Look for an interactive display that comes with additional extras such as a remote control, high-quality speakers and wall mount included with the purchase of a display to save on implementation costs.

Technical support

This is a big requirement. Beyond downloads and guides, ask whether prospective interactive display manufacturers offer ongoing technical support online, over the phone and in person.

Connectivity

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



There are three types of USB ports. Type-A is the one we all use for flash drives and other peripherals. Type-B is lesser known, but also important, as it's used for touch input on the interactive display. Type-C is the most advanced type and is capable of providing data (e.g., audio and video), touch and power through a single connection. Accessibility to powerful inputs that support video, touch, audio and data needs



to be conveniently accessible. USB-C memory key support and enough charging capability to charge a wide range of devices is a must.

HDMI*

If you connect your laptop to a TV to watch Netflix®, you know what an HDMI port is. It allows high resolution, digital video and audio signals to be displayed and heard. Most interactive displays will have at least one. 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.*

* Another option for carrying audio/video and other data is a DisplayPort ** Manufacturer-certified installers ensure true fidelity 4K signals*

VGA

A VGA port carries lower resolution analog video signals (so it's not as modern as an HDMI or DisplayPort connection or interface). 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 & cable for audio. Be sure to confirm that the interactive display supports this configuration.

Audio

There is nothing worse than preparing a lesson with some great, engaging multimedia content and then discovering half the class can't hear it. Almost all interactive displays include internal speakers, so do your best to test them out in your learning environment(s). If you want to hook external speakers up to your interactive display, you'll need an audio output.

Screen size

Screen sizes for interactive displays generally range from 55" to 86". The larger end of that spectrum is more expensive, so let's see what role the size of your interactive display plays in achieving your objectives.

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. Please note, most panels exhibit a reduction in clarity and brightness at extreme angles.

Collaboration

A less thought of, but equally important consideration is how many students you want to have working together on the interactive display. Don't forget to consider the height of your classroom and your students! Installing an adjustable wall mount helps students reach all four corners of the interactive display.

Eye care and Eye strain reduction

Look for an interactive display manufacturer that values your wellbeing and holds themselves to high health and safety standards. The interactive display must include features such as anti-glare glass, flicker-free displays and controllable blue-light settings to ensure eye comfort, health and safety.

Consider who you are buying from

We've had a closer look at interactive displays, examined the importance of learning environments, and explored the features and specifications that have the greatest impact in the classroom. A final consideration is what to look for in the company you purchase from.

Privacy & Security

Most interactive display manufacturers will say they offer privacy features. It's important to ask whether interactive features need to be turned off to realize these privacy benefits. Look for an interactive display that provides advanced privacy and security features without compromising on interactivity. Your interactive displays should allow for interactive and collaborative workflows to be enabled while keeping product user data protected.

Trusted data storage and processing

Where is your data hosted? Does the interactive display company use best-in-class data centers that have industry-standard certifications such as ISO 27001 and SOC 2/3? Are European customers able to have their product user data stored in the EU in accordance with EU and GDPR legislation? These are important questions that must be asked before purchasing an interactive display.

Built-in protection

Look for an interactive display that offers automatic over-the-air updates, as this will help you ensure your security settings are always up to date. Also consider whether the interactive display can support certificates for authenticating and accessing networks. Another feature to look for is the ability for an administrator to remotely clear content from a display to save time, protect user data and manage interactive displays across schools.

Look for an interactive display that offers automatic over-the-air updates

Remotely manage and administer control

As we said on page 10, most interactive displays come with mobile device management software that enables administration of your interactive displays easily and remotely at scale. Look for whether the mobile device management (MDM) tool included with your purchase can limit functionality based on role so you can prevent teachers from installing unsanctioned apps or changing Android settings. Look for a tool that lets you remotely set or change the settings on your interactive displays. And finally, make sure these capabilities are included in the version of the MDM tool that comes with your purchase. In some cases, advanced MDM features are a paid add-on.

Privacy and single sign-on

One privacy feature to consider 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. If an interactive display enables single sign on using teachers' existing accounts, this enables you to maintain the same level of controls for your interactive displays that you use to secure your other organizational information.

Equally useful in a display with sign in capability is the ability to sign out, which resets the display for the next user and prevents unauthorized access to data and settings.

Web and content filtering

Is safe web search the default setting in the embedded browser? With safe web search, you can be comfortable knowing no ads will be displayed and all results will be filtered to only show appropriate content.

Data rights

When purchasing an interactive display, make sure that you own your own data. This means you can request to have it erased at any time and the manufacturer does not sell your personal data.

Certifications and Compliance

ENERGY STAR® certification and EU Ecodesign compliance

If an interactive display is certified for ENERGY STAR® and EU Ecodesign compliance, it is designed for exceptional energy efficiency and lower operating costs. Check to see if your interactive display is ENERGY STAR® certified and EU Ecodesign compliant.

Safety and regulatory compliance

Check whether the interactive display you're considering meets standards for product safety, environmental compliance, regulatory and interoperability, using accredited third-party testing and verification. When a vendor says they comply, ask for it in writing.

Social responsibility

Purchasing technology like an interactive display goes beyond your classroom, school and district. It has global implications. Does the manufacturer hold themselves and their partners to high environmental and social responsibility standards? Here are a few areas relevant to interactive display production to ask about:

Supplier and sub-supplier fair workplace and human rights standards

Does the interactive display provider have a supplier Code of Conduct? This policy means the manufacturer requires suppliers to adhere to standards for working conditions, human rights, health and safety, ethics and the environment. To ensure the use of ethical materials, make sure the company and its direct and indirect suppliers comply to the SAI certification standard for decent workplaces (SA8000). Certification is based on the UN Declaration of Human Rights, conventions of the International Labor Organization (ILO), the UN and national law.

A rigorous supplier code of conduct will require a manufacturer's direct suppliers to submit to periodic audits and commit to process improvements. Does the manufacturer have a stringent audit process? Do they have dedicated employees residing in all regions where products are produced who make regular visits to oversee production and quality? These are important questions to ask before buying an interactive display.

Digital rights management

Look for a vendor that is committed to protecting the use, modification, and distribution of copyrighted works (such as software and multimedia content).



Future Learning Lab, Austria
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Implementing your new technology

Finding the right interactive display is one thing, but ensuring it's adopted by your teachers and having the desired impact in your classrooms is another. The company you buy from should be able to work with you on a customized implementation plan that covers the development and tracking of your desired educational objectives. This should encompass the following areas:

Technical

District-wide technical setup to roll out the implementation.

Pedagogical

Customized professional learning plans, aligned to district-developed goals and outcomes.

Ongoing support

Programs designed to empower your educators to help lead your interactive classroom implementation.

Resources

Access to online resources, lesson plans and templates, as well as webinars, phone and in-person support to facilitate a smooth and quick deployment.

Training and Support

The effectiveness of your interactive display is dependent on it being used regularly and being used well. To help ensure that teachers adopt the new technology, and that students are getting the most out of it, ask about the training resources each interactive display provider offers. There are several options that you should look for:

Self-serve training resources

Live and On-Demand training webinars provided by certified educators and trainers. Resources that provide both application and teaching practice guidance for teachers.

In-person training

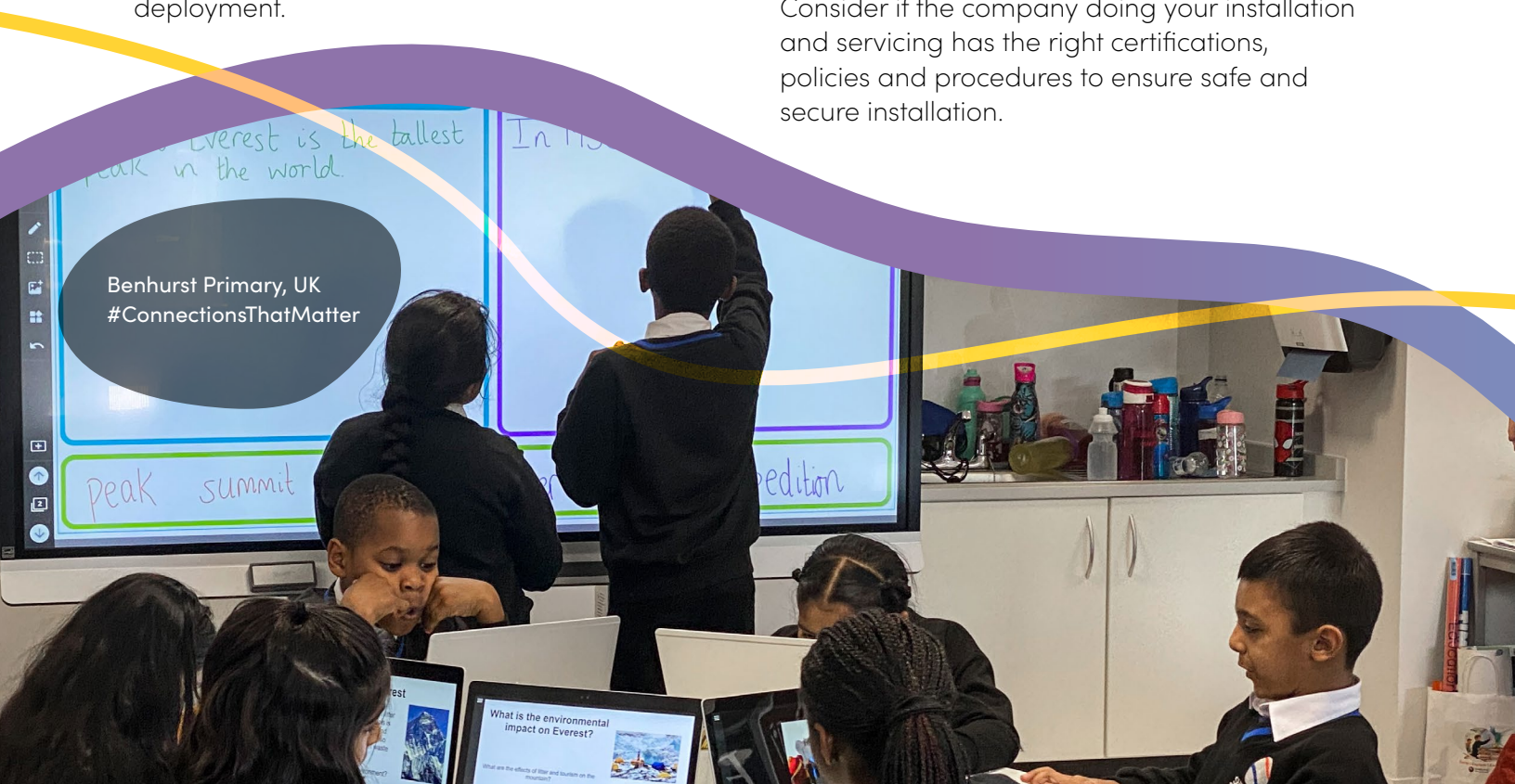
Does the company have approved trainers, with an education background that will provide custom training for you and your staff?

Training certification

Programs that certify and empower teachers to deliver ongoing training within your district.

Installation and service support

When you purchase an interactive display, it's not just the manufacturer you're buying from. Consider if the company doing your installation and servicing has the right certifications, policies and procedures to ensure safe and secure installation.




Final Thoughts

Working with educators for over 30 years

An interactive display is not just an important investment; it's a vital part of the everyday experience of your teachers and students. A holistic, comprehensive offering is essential to a successful interactive display implementation and, ultimately, to meeting your educational objectives. SMART Technologies has been creating technology specifically for classrooms for over 30 years, purpose-designing our displays for learning. Our SMART interactive displays are designed specifically to help teachers engage students and connect their classroom technology in the simplest ways possible. We work tirelessly with educators to identify design opportunities and evolve our products to address them. We invite you to try our interactive displays and test them against the competition.

To learn more about SMART or to contact one of our resellers, visit smarttech.com.



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