

Why DLP Projector Technology is the Right Choice for Education



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ABSTRACT

Digitizing education and modernizing classrooms have become an important aspect of teaching and learning, especially with the availability of various online and digital content. It is important to select a practical and effective technology that can meet the various needs of the classroom for both teachers and students, the key users of this technology. Unlike newer technologies like Interactive Flat Panels (IFP), projector technology has enhanced classrooms for multiple decades, continuing to innovate and elevate as time passes. Known for its unwavering reliability, DLP® projector technology overcomes the various challenges in today’s classroom environment and is the right choice for education when it comes to digitizing classrooms

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1 Why Projection and Why DLP Technology



Figure 1-1. Projected Image Fit to Teach Lessons in a Classroom

1.1 Screen Size and Cost

A number of factors impact the choice of a display in the classroom. However, the one that matters the most is the screen size. The screen needs to be large enough to accommodate all students in the room, not just the students in the front few rows. For classrooms, it is highly recommended to have a display greater than 100 inches to ensure that all students can clearly see the contents on the screen. Typically, the screen size needs to increase by 5 to 10 inches for every two feet of increased viewing distance in the classroom. Projectors offer this flexibility to adjust the screen size depending on the needs of the classroom and the teacher. If teacher needs to make it interactive and be able to reach the corners, the screen size can be adjusted to 65 inches or thereabouts. If there is a dense amount of content to be presented, the screen size can be adjusted to a higher dimension, say 100 inches or above, so that all the students in the classroom can view the content clearly without any strain on their eyes. DLP projection display enables these flexibilities in screen size adjustments and due to its superior image quality with sharp images and texts, the content can be viewed very clearly from the back benches as well.

DLP projectors are a cost-effective option with respect to IFP for screen sizes beyond 75 inches, which is a practical use case in class rooms to ensure readability for all students in the class.

1.2 Portability and Form Factor

In addition to the screen size flexibility, another main advantage compared to a fixed IFP is the portability of a DLP projector. DLP projectors are small in form factor compared to any other projection technology for similar specifications. It is easy to unmount, carry and use it in another classroom. IFPs are bulky and once fixed, are difficult to move. Even if not used, it occupies valuable board space in the classrooms. In the case of DLP projectors, a whiteboard or a wall can be used as the display screen, saving wall space in the classroom.



Figure 1-2. Easy-to-Move Projection Systems

1.3 Safe and Reduced Strain on Eyes

Imagine a teacher standing in front of 500 or 1000 nits display and writing on the IFP. This may put a tremendous strain on teacher's eyes, especially at such close distances. Blue light, flickering, and reflective glare may lead to eye fatigue and headaches. IFP may not be good for students as they are directly looking into the light emitted from the source. Unlike flat panel displays, images displayed by DLP projectors have low ambient light glare, which makes the image much easier to view.

Projection technology ensures that the teachers and students are looking at the reflected light and not directly at the light source. This drastically reduces the strain on the eyes of teachers as well as students and is a healthier option for them.



Figure 1-3. Teacher and Student Interacting Closely to Technology During Interactive Lessons

1.4 Viewing Angle

In case of IFP, the content is not visible beyond a certain field of view. It is not effective and not recommended for a classroom setting. DLP projector technology does not have the field of view problem, so lessons can be seen from any angle and is ideal for a classroom setting.



Figure 1-4. Students Viewing Lesson at Various Angles in a Classroom

2 DLP Projector Displays – Superior Image and Color Performance

DLP technology-based projection displays offer superior performance compared to competitive display technologies in terms of brightness, color, image quality, uniformity, form factor and energy efficiencies.

DLP technology provides a projected image that is always 100% pixel converged regardless of the environment. It provides a crisp, sharp and clear image for the classroom, enabling students to see the content clearly. DLP technology also reproduces accurate colors and makes use of colorimetric standards that are approved by worldwide standards bodies. In contrast, color light output (CLO) is an unreliable marketing metric created and promoted by 3LCD.

DLP Projectors maintain their color performance over an extended period of time, thus providing consistent performance over the life of the product unlike 3LCD projectors, which can experience permanent color change after extended use.

3 Latest Advancements and Reduced Total Cost of Ownership

3.1 Solid State Illumination – Laser, LED or Hybrid

DLP projector technology is one of the only technologies that is light-source agnostic. It can use LED, laser, or lamp illumination sources with laser and LED providing particularly long lifetimes and vibrant colors. Laser and LEDs have a long lifespan of 30000 hours of operation as compared to traditional light sources like lamps which have a lifespan of up to 5000 hours. With the use of Laser and LEDs as the light source in current projection systems, there is no need to replace the lamps at regular intervals making the projection systems maintenance free. While the initial cost of the laser or LED systems would be higher with respect to the traditional lamp-based projection systems, the total cost of ownership over the long life-span of the projection systems will be lower, resulting in overall savings.

Along with laser, LED illumination provides fast startup and restart, a long usage lifetime, and high perceived brightness due to the color saturation of the LEDs

3.2 Ultra-Short-Throw and Interactivity

With advancements in optics, ultra-short-throw projectors can help remove shadows by projecting and driving screen sizes more than 80 inches with-in 1-foot from the wall. There are solutions available from vendors that adds interactivity to the projectors.

4 DLP Technology – Proven for Quality Across Various Applications

A Scientific and Technical Academy Award® of Merit was made for the invention of DMD technology as used in DLP Cinema projection, which is the preferred technology for Digital Cinemas, with over 90% market share. This technology is also an innovation leader in consumer, industrial and automotive market segments with varied applications ranging from display, stereo lithography for manufacturing, spectroscopy, 3D printing, machine vision, augmented reality heads-up displays in automotive, assisted driving beams in headlight applications and many more. DLP technology stands out from the competing technologies in terms of image quality, durability and reliability.

For more information on why DLP technology is best suited for education, watch this [video](#).

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