Purchasing a Projector for Education

Understanding computer projectors may seem overwhelming at first. If you're not a technical person, terms like contrast ratio and digital keystone adjustment may leave your head spinning. However, all projectors share some very basic features that are the most important to note and understand when considering which unit will work best for you and your school's needs.

Weight

The first thing to think about is weight and size. If you are planning to travel with your projector or even to move it on a regular basis from room to room, you should consider a portable unit. These are models that weigh less than 10 lbs. and are designed to be compact and small enough to easily tote along with you.

Multipurpose projectors are a little larger and weigh between 10 lbs. and 25 lbs. These models are typically brighter and may offer more features than their lighter counterparts. They are an ideal option to consider if your needs require a unit that will be used in one centralized location or moved infrequently. The extra weight will likely be worth the bump up in standard features.

Fixed units weigh more than 25 lbs. and are designed for permanent installation. With the ability to project the brightest, sharpest images possible, these models are perfect for large venues such as auditoriums or lecture halls.

Lumens

A projector's brightness is expressed in lumens. Most units offer at least 1,000 lumens, which is fairly bright and perfect for presenting to a small group while interior lights are kept on and ambient light, such as that coming in through a window, is at a minimum.

In the education arena, your audience will most likely be taking notes; therefore, it will be important to have a projector bright enough to guarantee a "lights on" presentation. Additionally, it's important to consider your audience and the room(s) in which you'll be using the projector. Larger locations will require a brighter unit to ensure a picture that is consistently clear and brilliant.

When considering brightness, it is also important to know what kind of screen you'll be using. Traveling presenters will often find that their projection surface will vary from location to location; they may even have to use a blank white wall at times. Without a good screen to provide significant light reflection, an image can appear dull and faded. High-quality screens are available for any application, but if you're unsure of your day-to-day presentation conditions, look into a brighter unit.

Resolution

The next step is to determine the kind of applications you'll be projecting. Will the images be simple graphics and text, or more detailed, like blueprints? The types of images that will be projected go a long way in determining the resolution you'll need to consider.

Resolution, which is the number of pixels a projector uses to create a picture, is a factor in determining how clear an image is going to be. The more pixels, the more detailed the projected image.

The two most common native resolution standards available are SVGA (800x600) and XGA (1024x768). Both of these are compatible with computers and work well to display basic graphics, such as those created in PowerPoint and other office programs. SVGA and XGA resolution is available in units of varying weights, including portable projectors weighing less than 5 lbs. Most units offer a feature called compression, which allows the projector to utilize resolutions other than its native one(s).

For presenters relying on very detailed images, such as pictures or paintings for an art history class, projectors capable of higher resolution such as SXGA (1280x1024), although more expensive, are ideal. This type of resolution detail is generally available only in multipurpose or fixed models.

LCD vs. DLP™

There are two different kinds of projectors, and they create images in different ways: with Liquid Crystal Display

(LCD) or with Digital Light Processing™ (DLP) technology.

LCD was first developed in 1968 by RCA. LCD operates as a valve, allowing light either to pass through or to be blocked by using a combination of electronics, optics, and chemicals. The projectors usually have three separate glass panels, one each for the red, green, and blue elements of the image signal being fed into the projector. As light passes through the LCD panels, individual pixels (picture elements) can be opened to allow light to pass through or be closed to block the light. This activity regulates the light and produces the projected image on the screen.

DLP reflects light off the surface of a digital micromirror device to project an image on a screen. The device is made up of hundreds of thousands of tiny mirrors. Each mirror represents a pixel that is turned on or off to create an image. DLP creates color by placing a color wheel (made up of red, green, blue, and sometimes white) in the path of the light source.

Both LCD and DLP units have come a long way in recent years. Each offers distinct advantages, so it's important to know which one would be most appropriate for your presentation needs.

Advantages of LCD include:

- **Sharp Image:** LCD projectors deliver a sharp image at all resolutions. This precise focus is especially important when projecting data such as spreadsheets, but not as important for video projection.
- **No Distortion:** There is zero geometric distortion at the native resolution, meaning that images are clearer and free of pixelation.
- **Controlled Brightness:** Red, green, and blue are controlled independently through three separate LCD panels, meaning that the brightness and contrast of each color channel can be adjusted individually. The image will clearly project even in brightly lit environments.
- **Vibrant Color:** LCD units have exceptional color reliability and project true color; for example, reds will project as intended, in red instead of in light red or orange.
- **Efficient Light Transmission:** Higher lumens are produced using a lamp of the same wattage as that for DLP, meaning that the projected image is brighter on the screen. Using MicroLens Array (MLA) boosts the efficiency of light transmission through XGA-resolution LCD panels, resulting in reduced pixel visibility and taking away the "screen door" or graininess effect. (Not all LCD units come standard with the MLA feature.)

Advantages of DLP include:

- **Brightness:** DLP technology brings more light from lamp to screen, resulting in more efficient use of lumens. This is very effective when using the projector in a room where it is difficult to control the lighting. Also, it allows the image to be projected in a room with lights on and shades up.
- **Precise Image:** DLP units project a sharper image because the unique reflective technology produces a very close mirror image of an incoming video or graphic signal, resulting in seamless projection at any resolution.
- **Smaller Unit:** DLP technology consists of a single chip rather than three LCD panels, allowing projectors to be small and light, sometimes weighing as little as 2 lbs. This makes these projectors versatile enough for a traveling presenter who needs maximum portability for presenting in small to medium-size venues.
- **Reliability:** Display systems using DLP technology are able to recreate their incoming source material, ensuring a full-impact projection experience that will not fade over time.
- **High Video Quality:** DLP is widely accepted for home theater or video projection because it produces a smooth, high-contrast image with very minimal pixelation or graininess.
- **High Contrast Ratio:** Both technologies have improved in recent years, but DLP still outperforms LCD in contrast ratio. The larger the contrast ratio, the greater the ability of a projector to show subtle color details and to tolerate a lighted venue.

Both projector display types can handle a variety of applications. For a traveling presenter or in situations where the projector will need to be moved from room to room, a small DLP unit may be your best bet. For large-venue, stationary presentations that require higher light output, a LCD projector is an ideal solution.

Price

From unit to unit, price varies as much as a projector's features. Basic units can sell for under $1,000, while option-filled models are more expensive. You should view your projector purchase as an investment-a trusted presentation companion that will stay by your side for years to come. A general rule of thumb is to purchase the best and brightest unit your budget will allow.

If the cost of purchasing a new projector does not fit into your school's budget, many projector companies offer leasing and rental programs. Web-based leasing programs offer low monthly payments with flexible terms and purchase options. With fast, on-line credit approval, your projector can be shipped the same day.

Manufacturer Support

Your new projector will be a valued presentation partner; that's why it's important to remember that whom you buy your projector from is just as important as what features it offers. Research several manufacturers' service and support policies and warranties, and you'll find that they vary widely from company to company. By doing your homework, you won't be left in the dark if your new unit stops functioning properly.

Optional Accessories and Warranties

Computer projectors offer numerous accessories for making the unit easier to use. These include a wide complement of cables and adapters for connecting various peripherals such as mice, VCRs, DVD players, wireless remotes, and monitors.

Depending on the unit, other optional accessories can help do everything from data backup to locking up the unit to prevent theft. Before you purchase, be sure to take a look at available accessories. Even if you're not interested now, you might find a need for them in the future.

Many computer projectors can also be permanently installed. This is especially useful when the unit is going to be used in one central location, like an auditorium or lecture hall. Professional installation is available through many computer projector companies and resellers or IT departments may choose to purchase mounting kits and do the job themselves. Most projector manufacturers and resellers sell do-it-yourself packages, which make easy work out of installing a unit.

Extended warranties should also be considered with a new computer projector. Many manufacturers offer plans at a discounted rate when bundled with a purchase. Depending on the package and service options, these can cost from as little as a few hundred dollars to over a few thousand. While this may seem like a lot of money initially, the warranty will more than pay for itself if you ever need to send your unit in for service. In addition, many warranty packages also include free technical support, which can be priceless when trying to troubleshoot problems.