

Innovative Classrooms Technology Funding

Classroom
Technology
Considerations

For the Innovative Classroom Technology Funding initiative, Alberta Education has not attempted to identify or document any specific technical specifications for the key classroom technologies. However, there are certain key considerations and functional capabilities that jurisdictions may want to consider when making purchasing decisions.

OVERALL CONSIDERATIONS

Warranties and Customer Support

Some manufacturers offer warranties and customer support, including unique education programs.

Green Technology

When possible, consideration should be given to acquiring technology products that are environmentally friendly. Many of today's technologies are designed to maximize energy efficiency, reduce the use of hazardous materials, promote recyclability and reduce electronic waste.

Education Standing Offers

Alberta Education has established Education Standing Offers (ESO) with participating vendors to enable school jurisdictions purchase select technology hardware and software at the best possible educational price. Further information on ESOs can be found on Alberta Education's Learning Resource Centre website at <http://lrc.education.gov.ab.ca/pro/gen/eso.html>.

PROJECTION DEVICES

Data Projectors

The following items should be taken into consideration when acquiring data projector technology:

- **Projector Lumen Rating** – This rating is typically used to measure the light output of projection devices. Generally speaking, a higher lumen rating means a brighter image. The American National Standards Institute (ANSI) has developed a procedure for testing projectors, although not all manufacturers use this method. Care should be taken when comparing products to determine the testing method used to ensure accurate comparisons.

The venue the data projector will be used in may also be a consideration when determining its lumen rating requirement. External light sources and the size of the room will affect the quality of the projected image.

- **Projector Bulb** – The bulbs used in data projectors are a fairly expensive consumable item and have a rated life expectancy. It is important to identify and compare the rated life span of the bulb used in the data projectors being considered. Manufacturers' warranties may be different from that of the projector and some manufacturers do not have a warranty for the bulb at all. The bulb warranty is often pro-rated based on the hours of use.
- **Security** – Most data projectors have security devices, such as Kensington locks, incorporated into their design. It is important to determine what security options are available and whether or not they are suitable for the mounting method chosen.
- **Mounting Hardware** – Consider how the data projector will be incorporated into each classroom. Most manufacturers offer various styles of mounting hardware and installation options. These costs and other and other potential installation costs should be considered.
- **Resolution** – The resolution of the data projector determines the sharpness and clarity of the projected image. Although XGA resolution (1024 x 768) is standard in most data projector product lines, it is recommended that high definition (720p, 1080i, or 1080p) data projectors be considered as a minimum resolution level. The resolution level chosen for the data projector must also be supported on the instructional computer that it is being connected to in order to enable the specified resolution.
- **Noise Level** – Most data projectors have a fan to keep the components cool, as the bulb can generate a lot of heat. Care should be taken to ensure that the decibel level of the fan is not excessive and does not interfere with students' ability to hear properly.
- **Screen** – A good quality screen will produce a clearer and sharper image than a wall. The screen should be appropriate for the size of image required and throw distance of the projector.
- **Other Considerations** – Other factors to consider when choosing data projectors include contrast ratio, input/output connections and projection technology (liquid crystal display (LCD) vs. digital light processing (DLP)).

Electronic Whiteboards

The following items should be taken into consideration when acquiring electronic whiteboard technology:

- **Projection Type** – Electronic whiteboards are available in three projection styles – front projection, rear projection and plasma screen overlays. All three of these projection styles have unique capabilities and features. The style chosen should be based on its anticipated use, classroom size and configuration.
- **Screen Size** – Electronic whiteboards are available in a variety of screen sizes. The size chosen should be based on its anticipated use, classroom size, and configuration. The weight of the electronic whiteboard should also be taken into consideration when choosing mounting hardware.

Flat Panel Displays

LCD and plasma flat panel displays are an alternative to data projectors and electronic whiteboards. The cost of this type of technology has dropped significantly and depending on the size of the display, making LCD screens and plasma displays a viable alternative.

The following items should be taken into consideration when acquiring LCD/plasma flat panel display technology:

- **Display Technology** – Flat panel displays offer excellent resolution and image quality. Things to consider when choosing a flat panel display technology are contrast ratio, viewing angle, aspect ratio (standard definition versus high definition), screen resolution, and power consumption. A new organic

light emitting diode (OLED) flat panel technology called is just beginning to be released. However, this technology is significantly more expensive and the display sizes available are currently very limited.

- **Screen Size** – The screen size selected should be appropriate for the instructional space the display will be used in. Too small a display will be difficult to see from a distance.
- **Input/Output Connections** – Care should be taken to ensure the flat panel display has the appropriate input/output connections for the instructional space it is being used in. All manufacturers offer different input/output configurations depending on the model and size of the panel. At a minimum the panel should include PC, Audio, HDMI, and serial input connections.
- **Wireless Capability** – Some models of flat panel displays support wireless connectivity, which should be considered where infrastructure or use would make this feature beneficial.
- **Mounting Hardware** – Mounting hardware for flat panel displays is available in a variety of configurations to support horizontal and vertical swiveling and tilting.

INSTRUCTIONAL COMPUTERS

The following items should be taken into consideration when acquiring instructional computers:

- **Portability** – It is strongly recommended that consideration is given to using laptops as instructional computers. Laptops provide greater flexibility in classroom configuration and promote use by both instructors and students. In addition, laptops allow instructors to develop lesson plans and presentations off-site.
- **Docking Station** - If using laptops, it is recommended that they be equipped with docking stations for easy connection to school network resources. External monitors may also be considered.
- **Wireless Keyboard and Mouse** - Wireless USB keyboards and mice provide access to the instructional computer by students from anywhere in the room, adding to the flexibility of the device.
- **Operating System** – It is recommended that instructional computers be certified to run the latest version of the appropriate operating system software (Vista or OS X). The following websites describe the minimum hardware technical requirements recommended by the operating system developers.

Vista

<http://www.microsoft.com/windows/products/windowsvista/editions/systemrequirements.mspx>

OS X - <http://www.apple.com/macosx/techspecs/>

- **Multimedia Capabilities and LearnAlberta.ca Compatibility** – Instructional computer are often used to present a wide variety of multimedia content. Consideration should be made to ensure that the instructional computer has sufficient processor speed, system memory, video memory, and DVD drive capabilities to properly process the applications and content being used. If LearnAlberta.ca content will be accessed with the computer, software and hardware compatibility recommendations are available online at <http://www.learnalberta.ca/Browse.aspx?View=Software>.
- **Security** – Most desktop and laptop computers have security devices, such as Kensington locks, incorporated into their design. It is important to determine what security options are available on the instructional laptops you are considering.