

Interactive Flat Screens vs Digital Projectors

Key Questions:

- Are 'interactive flat screens' a more fit for purpose technology than 'projectors' for presenting in classrooms?
- What are the advantages and disadvantages of both?



Are projectors still the better purchasing option for schools?

Learning Context

Over the past ten years, digital projectors used on their own or used with interactive whiteboards (IWBs) have been extensively used as 'the large screen' in classrooms, for presenting and to bring more interactivity and engagement into teaching and learning. Over that time projector technology has evolved from portable or long throw projectors to short throw, and more recently 'ultra-short throw' and 'ultra-short throw interactive' projectors. The shorter throw projectors are more fit-for-purpose than the longer throw, however despite these improvements, projectors still have a number of issues which cause problems and frustration to schools.

Projector problems experienced by schools include:

- Projector image brightness fading over time, leading to difficulty clearly viewing screen content
- Projector lamp unit failures
- Inability of new spare lamp units to fully recapture the original brightness of new projectors
- The cost and inconvenience of replacing faulty lamp units in projectors
- The warranty provided on replacement lamp units is typically just for 3 months, which is too short

Some relevant questions include:

- Can these problems be overcome?
- If not are there more 'fit for purpose' technologies available as alternatives to projectors?

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Some 'Projection' target objectives in the classroom might be:

- To facilitate a better learning environment in classrooms
- To transform the learning environment to improve learning experiences and outcomes
- To facilitate more effective engagement and interactivity with students
- To provide better quality images on the large screen
- To facilitate high levels of natural external light in classrooms, where possible.
- To avoid having to close window blinds or dim classroom lights to improve image quality
- To use technologies that consume lower level of energy

The more recent technology that is challenging Projectors is **Interactive Flat Screens (IFS)**. This is the same type technology that is used in flat screen TVs. Interactive flat screen technology has the potential to achieve the 'objectives' stated above, however the initial purchase cost is generally higher than the cost of a digital projector. The following table (Table 1) provides a summary comparison between Projectors and Interactive Flat Screens.

Digital Projectors	Interactive Flat Screens (IFS)
Uses conventional 'projection' technology to project the image on to a surface or IWB. Note interactive projectors do not require an IWB	Uses integrated interactive flat screen TV technology, so a projector is <u>not</u> required
Image resolution quality can vary, though some projectors support high definition (HD)	High definition (HD) image resolution quality or better is standard
Image brightness fades over time requiring lamp unit replacement	Image brightness does not fade over time
A new replacement 'lamp unit' does not fully restore projector image brightness to its original quality	Not an issue – no replaceable 'lamp unit' type parts required
Only a very limited warranty (generally 3 months) on spare lamp units	Not an issue – no replaceable 'lamp unit' type parts required
Image fading may require classroom lights to be turned off or the closing of classroom blinds (leading to darker classrooms)	Image brightness does not fade over time, and so classrooms can remain bright – supporting a more appropriate learning environment
Projector uses relatively more power	Flat screen LED technology uses relatively less power than projectors
Relatively higher running cost	Relatively lower running cost
Noise factor: projectors usually have a fan, so some can be noisy. Though projectors have an 'eco-mode' to reduce noise, this mode also unfortunately reduces image brightness so is of little value.	No noise, so runs silently
Equipment warranty is generally 3-5 years, but can be less from some suppliers	Equipment warranty is generally a min' of 3-5 years
Projector image size is generally bigger (typically 80 inch) than interactive flat screens (typically 65-70 inch)	Interactive flat screens image size is generally smaller (typically 65-70 inch) than projector produced images The larger interactive screens (80-84 inch) are much more expensive
Projectors are lower cost than interactive flat screens	Interactive flat screens are higher purchase cost than projectors, however include interactive
Total cost of ownership (including replacement lamp units or purchasing a new projector after a few years, can be significantly higher than the original purchase cost	Apart from the initial purchase cost, the total cost of ownership should not be significantly higher than original purchase cost
Integrated speakers in some units	Integrated speakers in some units

Table 1: Comparison between Projectors and Interactive Flat Screens

Interactive Flat Screens vs Projectors

Many of us are aware of this technology on the newer larger flat screen high definition (HD) TVs. While interactive touch-screen capability may not be important for TVs, it is still important in (mainly Primary) classrooms where IWBs are mostly used, and more especially for younger pupils who enjoy interacting using 'touch' in classrooms.

Though interactive flat screens are more expensive to purchase (ie., initial purchase price) than projectors, Table 1 shows that interactive flat screens have a number of advantages for teaching and learning in classrooms in comparison to digital projectors and interactive whiteboards. They have better image quality in terms of image resolution, giving a clearer and brighter image, and they can maintain this higher quality image over a longer number of years.

When taken over a number of years rather than based on initial purchase price, the 'total cost of ownership' of interactive flat screens may be quite competitive with projectors. This is because Interactive flat panel screens use a very different technology to digital projectors. They do not require replacement lamp units, and produce a higher quality image over a longer number of years than digital projectors or projector lamp units. The reasons are that although projectors were until quite recently the most appropriate and cost effective equipment for projection in school classrooms, this is no longer the case:

Specifically this is because:

- Images projected by all Projectors (regardless of manufacturer) fade significantly after a few years, and continue to degrade
- This becomes more of a problem when a classroom is bright (either from natural external light or lights within the classroom) and in these situations it's more difficult to see a fading projector image, requiring the window blinds to be used to darken the classroom.
- A fading image projector's value in the classroom can become compromised as they are unable to project the high quality image that is required
- Projectors can suffer from reliability issues, including failing lamp units, and these can be quite expensive to replace.
- The image from a new spare lamp unit is generally not of the same quality as the original new projector.
- The industry standard warranty on new spare lamp units is generally 3 months, which represents very poor value.

Note Regarding Window Blinds in Classrooms

The problem with projectors in schools is that the image quality fades over time, and schools resort to either closing the blinds or turning the lights off in the classroom to try and more clearly see a fading projected image. In some cases schools resort to purchasing more expensive or heavy window blinds to block out the light, and this is not a recommended or healthy response to the problem of fading projector image quality.

The Interactive smart screens display are of higher quality, brighter, and will not require the type of heavy blinds to shut out the light. As such there is a potential cost saving to be made per classroom on having lower density and more cost effective blinds as a trade-off against the higher initial purchase cost of interactive flat screens.

Size of Interactive Flat screen

There are a number of different sizes of interactive flat screens. Though other sizes may be relevant in some situations, the two sizes that are generally being considered for school classrooms are the 65 inch and 70 inch sizes. (measured diagonally). Screen sizes of 80-84 inches are also available, and in an ideal world would be very attractive, however in practical terms, the cost increases for larger screen sizes, and as such these very large screens are very expensive and outside the budgets of schools.

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Deciding on a suitable solution

Before a school makes a decision on a suitable solution, it would be important that the school is confident that the chosen approach is the 'right learning choice' for the school. Seeking advice from a similar type of school that is already successfully using interactive flat screens is an excellent way of getting relevant up to date information and feedback. Providers of interactive flat screens should be able to provide your school with details of other schools which have already purchased the technology, and if circumstances allow it is recommended to visit the school to see first-hand the interactive flat screens being used in the classroom.

Following this evaluation the school should be in a better situation to make a decision. Given that this technology is still evolving and improving, and that costs should reduce somewhat over the next year or two, better value may be available in the future.

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