

Presenting in the Classroom

Key Question:

- How can ‘presentation technologies’ improve interactivity and engagement in classrooms?



Learning Context

Over the past ten years, projectors and interactive whiteboards (IWBs) have been extensively used in classrooms to bring more interactivity and engagement into teaching and learning. With IWBs interactivity and engagement is generally achieved by touching the board and engaging with its associated software tools and content. Though IWBs can be used very effectively for teaching and learning they can sometimes restrict teachers to teaching from the front of the classroom. Also having pupils come to the IWB may in some cases limit pupil engagement, while having pupils moving from the seats to and from the board may in some cases disrupt the flow of a lesson or learning activity.

One may ask if more effective ICT enabled approaches might be possible to improve the learning environment and achieve engagement and interactivity in classrooms from anywhere in the classroom, without the teacher or students having to physically engage with IWBs.

Though schools have much in common, in terms of learning objectives, each school is different in terms of its own unique blend of requirements, priorities, and challenges. When considering alternative ways of ‘**Presenting in the Classroom**’, school management and the ICT coordinating team need to first consider school learning priorities and outcomes rather than just focus on the technology aspects. This may include:

- As part of school self-evaluation process, identify school learning priorities and outcomes
- School e-Learning plans should form an integral part of wider school planning
- Consider how effective use of ICT could help achieve the learning outcomes

Some target classroom objectives 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 achieve more flexibility for teachers to experiment with different approaches, and/or adopt their teaching styles for different situations
- To facilitate more effective peer to peer communication and collaboration between students
- To look at better use of time in the classroom
- To experiment with more recent technologies to improve the learning environment

Presenting in the Classroom

- To more effectively utilise students owned technologies (eg., BYOD) in classrooms
- To investigate if ICTs can assist in achieving these objectives

The good news is that yes, some more recent technologies exist, which have the potential to achieve these objectives, however with any technology achieving this potential requires range of other factors to be in place, some of which may be within the remit of the teacher themselves, while others may require support from management, the ICT coordinating team or colleagues within the school.

We'll refer to some of these technologies in this article. One good starting point is an excellent resource shown below, developed by teacher and technologist Tony Vincent called '10 ways to display your iPad on a projector screen'

	VGA or HDMI Adapter	Document Camera	Apple TV	AirServer	Annotate.net	Mirroring360	AirServer	X-Mirage	Teach	OS X 10.10 Yosemite
How to	Connect directly from your device to a projector's video cable	Put your device under a camera connected to a projector	Connect an Apple TV to your projector and use device's AirPlay feature to mirror the screen	Install software on your projector-connected computer and use device's AirPlay feature to mirror the screen	Install software on your projector-connected computer and use device's AirPlay feature to mirror the screen	Install software on your projector-connected computer and use device's AirPlay feature to mirror the screen	Install software on your projector-connected computer and use device's AirPlay feature to mirror the screen	Install software on your projector-connected computer and use device's AirPlay feature to mirror the screen	Install software on your projector-connected computer and attach device using its USB cable. Choose Live Streaming in Teach.	Update to OS X Yosemite on your projector-connected Mac and attach device using its Lightning cable. Open QuickTime & Connect iPad on the remote control.
Web link	apple.com/ledisplay	www.digitizer.com	apple.com/ledisplay	airserver.com	annotatetech.com	mirroring360.com	airserver.com	x-mirage.com	teach.com/ledisplay	apple.com/ledisplay
Price	\$25-\$45 (Apple TV device which requires you read)	\$65 and up	\$99.99	\$14.99 (one-time pricing) \$11.99 (subscription pricing) (license discount available)	\$8.99 per year	\$6.99 (single computer) (license discount available)	\$12.99 (single computer) \$14.99 (3 computers) (license discount available)	\$14.88 (single user) (license discount available)	Free	Free
Free trial	No	No	No	7 days	10 minutes per day	7 days	7 days	7 days	Free	Free
Windows/Mac/OS	No	No	Yes	Yes	Yes	Yes	Yes	Yes	AirPlay to Mac only	No
Requires a Mac or Windows Computer	No	No (unless using USB camera)	No	Yes	Yes	Yes	Yes	Yes	Yes	The Macintosh only
See your Engage or partner	No	Yes	No	No	No	No	No	No	No	No
Built in screen recording	No	No	No	Yes (Audio in support)	Yes	No	Yes	Only available on Mac OS X 10.7 or later	Yes	Yes
Selectable frames to match your device	No	No	No	No	No	No	Yes	No	No	No
Works with iPad 1 & older iPad touch	No	Yes	No	No	No	No	No	No	USB only	No (Requires iOS 6 & Lightning)
Can be password-protected	Not necessary	Not necessary	Yes	Yes	Yes	Yes	Yes	Yes	No	Not Necessary
Works with all apps	No	Yes	No	No	No	No	No	No	No	No
Multiple devices at once	No	No	No	Yes	No	No	Yes	Yes	No	No
Mirrors non-Apple devices	No	Yes	No	No	Yes (Android)	Yes (Chromebook)	No	No	No	No
Notes	Often fails off iPad and needs to be reconnected	Close from device's glass screen cap for an hour	May require an HDMI to VGA adapter for your projector. apple.com/ledisplay Network must allow Airplay. Mirror Apple TV capable of peer-to-peer connections	Max OS X 10.8 or later / Windows 10 or later. Network must allow Airplay. Login required	Max OS X 10.8 or later / Windows 10 or later. Network must allow Airplay. Login required	Max OS X 10.7 or later / Windows 10 or later. Network must allow Airplay	Max OS X 10.8 or later / Windows 10 or later. Network must allow Airplay	Max OS X 10.8 or later / Windows 10 or later. Network must allow Airplay	Max OS X 10.8 or later / Windows 10 or later. Network must allow display for wireless mirroring. Bugs = No help support	Max OS X 10.10 or later. Coming Fall 2014.

Note: All these solutions allow for control of your device from an interactive whiteboard. Chart updated September 28, 2014 by Tony Vincent - learninginhand.com/ways

Click this link to access resource:

<http://learninginhand.com/blog/5-ways-to-show-your-ipad-on-a-projector-screen.html>

Note that though this resource refers primarily to the iPad, some of the options listed can be used to project or mirror other devices (such as Android, Chromebook etc) to a projector or large smart screen.

The resource refers to a number of different ways to achieve the objective, three of which involve a direct cabled connection and as such do not allow movement within the classroom, while the other methods work wirelessly, and facilitate teaching from anywhere in the classroom

Cabled approaches (note: these do not facilitate teacher movement within the classroom):

- Using a VGA or HDMI adapter cable connected to
- Using a Visualiser (ie a document camera) pointed at any computing device screen
- Using OS X Yosemite with a Mac connected to a projector and using the Mac's lightning cable

Wireless approaches (these allow flexibility of teacher movement within the classroom):

- Using Apple TV to wirelessly connect an iPad to a projector or large screen
- Using 'Airserver' software on a projector-connected computer to mirror the iPad screen
- Using 'Annotate.net' software on a projector-connected computer to mirror the iPad or Android screen
- Using 'Mirroring360' software on a projector-connected computer to mirror an iPad or Chromebook screen

Presenting in the Classroom

5. Using 'Reflector' software on a projector-connected computer to mirror an iPad screen
6. Using 'X-Mirage' software on a projector-connected computer to mirror an iPad screen
7. Using 'iTools' software on a projector-connected computer to mirror an iPad screen

Costs: The costs of the different solutions are provided in the online resource.

Apple TV:

One of the better known of these technologies is the Apple TV, which has been available for a number of years. Apple TV allows a teacher with an iPad (or iPhone or Mac Pro) to project or mirror their screen on to the classroom projector / large screen wirelessly from anywhere in the classroom. Also where students have iPads their screens can also be projected or mirrored to the classroom large screen. This allows for more flexibility of teaching position for the teacher and also allows students to share their work to the rest of the classroom without having to touch the IWB. This can allow sharing to happen more quickly and effectively and improve the flow of the classroom activities. It has the potential to facilitate a more accessible classroom environment for student with disabilities or who may be reticent to be up at the IWB. Apples 'AirPlay' mode allows a user to wirelessly stream what's on an iOS device or Mac to a projector or large screen. This can take place over a school wireless network or if no network exists it can take place via 'peer to peer Airplay', however refer to the note below and Apple support website for more specific information.

Teachers and students can wirelessly stream content from their iPad or Mac to a classroom projector or HDTV via Apple TV using AirPlay. You can preconfigure systems to connect with specific AirPlay destinations. MDM can also be used to prompt a student to mirror their iPad or Mac on a specific Apple TV, so they can do a presentation to the entire class without complex configurations. And with iOS 8, you can wirelessly connect to Apple TV without first connecting to the school's network.

Peer-to-peer AirPlay (<http://support.apple.com/en-ie/HT204317>)

With peer-to-peer AirPlay, your iOS device and Apple TV don't need to be on the same Wi-Fi network. If you have one of the products below, you can use peer-to-peer AirPlay:

- * iPhone 5 or later, iPad (4th generation or later), iPad mini, or iPod touch (5th generation) using iOS 8 or later.
- * Apple TV (3rd generation rev A, model A1469 or later) with Apple TV software 7.0 or later.

To use peer-to-peer AirPlay, your iOS device needs to have both Wi-Fi and Bluetooth turned on.

Videos in which Apple TV is used with Ipads

Though this video does not refer to Apple TV, one can see that the teacher is freely moving around the classroom while still being able to engage with what is being displayed on the large screen.



<http://www.pdsttechnologyineducation.ie/en/Good-Practice/Videos/#114674789>

Presenting in the Classroom

In this video of a Chemistry class, in a similar way to the previous video, the Apple TV is being used but not referred to, one can again see that the teacher is freely moving around the classroom while still being able to engage with what is being displayed on the large screen.



<http://www.pdsttechnologyineducation.ie/en/Good-Practice/Videos/#114545385>

In this video US schools video (from 2012), the teacher has integrated Apple TV into his curriculum. Watch how his students collaborate on a project using Comic Life and share their creation with the rest of the class. Using the Airplay feature on the iPads, students can display their work in real-time through the Apple TV. These revolutionary tools open up unprecedented avenues for student collaboration and demonstration in the classroom.



https://www.youtube.com/watch?v=U_ruUC0rLZk

In the US video shows how you can connect an Apple TV in your classroom. It is featuring Apple Distinguished Educator, Mark Hammons. In here, Mark talks about how to connect, awesome apps, and fantastic accessories to be used in conjunction with your Apple TV.



<https://www.youtube.com/watch?v=8rM7qcfh4hc>

Working with Wireless Networks

It is possible to use an iPad and AppleTV as described above using peer to peer Airplay, without having a wireless or wi-fi network in the school. However all of the other wireless solutions referred to above require a fit for purpose wireless network to be in place. A school using mobile learning devices for teachers or students will need to have a **'fit-for-purpose' wireless network** in place, so that these devices can access the internet. Schools should review the **Guidelines on Wireless Networking** at network or www.pdsttechnologyineducation.ie/technology.

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 one or more of these approaches is an excellent way of getting relevant up to date information and feedback. This could also be achieved by evaluating some of these approaches in one or two classrooms with one or two teachers. Following this evaluation the school should be in a better situation to make a decision. Given that this approach is still evolving and improving, the newer versions of tablets, Apple TV, and software solutions listed generally work better than older versions. In order to be in a better position to make informed choices, schools should check out relevant websites, (refer to weblinks below).

Other relevant links

The links below provide additional relevant information for schools.

Apple TV vs Interactive Whiteboards in the Classroom

<http://instructionaltechtalk.com/apple-tv-vs-interactive-whiteboards-in-the-classroom/>

Why AppleTV & iPad beats Interactive Whiteboard....every time.

<https://ryanorilio.wordpress.com/2013/01/20/why-appletv-an-ipad-beats-a-smartboard-everytime/>

Connecting the Apple TV

<https://www.youtube.com/watch?v=PPFdks-irDU>

15 Presentation Tools for Teachers

<http://www.teachthought.com/technology/15-presentation-tools-for-teachers-from-edshelf/>

5 ways to use Apple TV in the Classroom

<http://www.edudemic.com/5-ways-to-use-apple-tv-in-the-classroom/>

How to Use Air Server on Your Desktop PC

<https://www.youtube.com/watch?v=4DO1cBCmJTw>

Note: While advice is intended to act as a guide, the inclusion of any products and company names does not imply approval by PDST Technology in Education, nor does the exclusion imply the reverse. We not accept responsibility for any opinions, advice or recommendations on external web sites linked to the PDST Technology in Education site.

This advice and other relevant information are available at:

www.pdsttechnologyineducation.ie/technology