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☆ Prologue

Few technologies have spread to school classrooms as quickly and pervasively as the document camera. Single-handedly, this device has rapidly forced antiquated overhead projectors into back room cupboards or surplus equipment auctions. Few technologies are also so easy to use. Still, few educators employ the true capabilities, flexibility and potential of this richly visual tool to transform classroom instruction. That is, until now.

★ What's in a Name?

- | | |
|-------------------|----------------------------|
| ★ Document Camera | ★ Digital Visual Presenter |
| ☆ Doc Cam | ☆ Visualiser |
| ★ Docucam | ★ Digital Visualiser |
| ☆ Image Presenter | ☆ Donkey Cam? |

~Special thanks to Aver Information, ELMOUSA, Lumens Ladibug Document Cameras, Pathway Innovations, Samsung Techwin America and QOMO for access to their images and other resources

★ It All Starts with a Story ...

As the teacher moves from behind his desk to a small table holding his document camera, a student cheerfully cries out, 'Are we using the "donkey cam" today, Mr Allen?' As he grins and nods affirmatively in the direction of his young charge, Mr Allen reaches for the mechanical arm of his document camera. Quickly and deliberately, he twists the arm of the device, making the necessary precise adjustments, and aims the camera directly at his desktop computer's thin panel monitor. Students look puzzled. Usually Mr Allen will place a map, chart, newspaper article or artefact underneath the revealing lens of the document camera. Several students ask, 'Why are you aiming the document camera at the monitor, Mr Allen?' He chuckles as he zooms in with the document camera's lens to focus on a small video found on a web page that he just loaded. He answers: 'I want to show you this short video on the daily hardships experienced by infantry soldiers in World War I, but the website won't allow me to expand the video to a comfortable size so that you can see it. So I am using the document camera to make the video more life-sized for the classroom. Watch,' he reassures them. What previously appeared as merely a small video panel now fills the entire classroom projection screen. Mr Allen proudly presses the play button on the video segment.



Figure 1.1
Mr Allen's
renowned
'donkeycam'

I selected this story to begin the first steps of our journey into the adventurous world of document cameras because it is insightful on two levels. First, students really appreciate the visual allure and conceptual clarity provided when document cameras are used well. Lovingly calling this modern audio-visual device a 'donkey cam', it is clear that this young lady was extremely pleased that the day's lesson might be forthcoming using the visual approach that reaches her best as a 21st Century visual learner. One can imagine that she would like to use the device herself, when asked to give an oral presentation later in the class.

Second, this story exemplifies the organic flexibility of the document camera as an instructional tool for the teacher. Although modern browsers have the ability to zoom in on a non-expandable video segment, this teacher was limited by an older browser. He had to find some way to enable his students to gather the learning nuggets from this short video, even if they were sitting at the back of the room.

Early, before school started, he creatively wondered if focusing the document camera lens on his computer monitor would solve this simple problem. He tried it, and it worked! Our adaptable teacher was clearly thinking outside the box. Yet his spontaneous idea turned out to be quite successful because the classroom document camera is a far more flexible, a far less boring tool, than we can imagine. In every way, it's a classroom chameleon, a teaching shapeshifter, a willing and eager Proteus, a jack-of-all-trades – a digital Swiss Army knife for teaching and learning.

★ Introducing the Digital Swiss Army Knife

'I can add colours to the chameleon, change shapes with Proteus for advantages ...'

Richard, Henry VI, Part III

The document camera does not necessarily become all things to all people, but it comes fairly close. Few educators realise that the quietly unassuming document camera actually serves as eight tools in one, all neatly and compactly rolled into a single mechanical wonder. I know it sounds like an infomercial, but it's simply true! Without a doubt, your classroom document camera is nothing less than a digital 'Swiss Army knife', with eight different 'blades' or tools:

- 🕒 It's an overhead projector, without the need for transparency sheets or special pens.
- 🕒 It's an opaque projector, without the bulky size.
- 🕒 It's a scanner, only faster.
- 🕒 It's a document viewer, in full colour.
- 🕒 It's a 3D object/artefact projector for use with hard-to-handle realia.
- 🕒 It's a micro-lens for seeing the hidden world.
- 🕒 It's a digital still camera for capturing those special moments.
- 🕒 It's a digital video camera for planned or spontaneous recording.

Delivering your doc-cast

Once you've completed a doc-cast, you will want to deliver it in the best way possible to your desired audience. Of course, doc-casts are almost always too large to email. Usually recorded in AVI format, a simple doc-cast can range from three to seventy megs in file size (translation: very large). That just won't do for email. So how do we get the doc-cast delivered to its intended audience? Any of these techniques will work nicely.

- Use a free file delivery service (like yousendit.com) to send students or colleagues an email [link](#) that enables the recipient to download the file.
- Post the doc-cast to your private YouTube video space, share it and make the link privately available to your intended audience.
- Upload the doc-cast in its entirety to your LMS (Learning Management System) or website for viewing there.
- Place the doc-cast in a student's folder or in a common folder on your school's server.
- Play it live in your classroom.

Where you place your doc-cast will depend, in part, upon the level of privacy required. For formative assessment or other learning feedback, a more private approach is preferred. For group instructions and information of a non-personal nature, it will be fine to post your doc-cast openly on a website or blog.

The advantages of doc-casts

Now that you've learned how to make a doc-cast, let's conclude with a few thoughts as to the advantages of producing your own doc-casts. Doc-casts can be:

- *Helpful.* Doc-casts really work. They help learners learn and improve.
- *Scalable.* You can easily develop doc-casts for smaller topics (e.g. how to fill out a form, how to avoid a common grammar mistake) or even larger themes (e.g. detailed feedback on a test, an entire lecture or on a challenging science topic that needs the extra coverage). Still, it is best not to exceed 10 minutes for a quality doc-cast.

★ Selecting the Right Document Camera

Selecting a document camera does not have to be an uncomfortable hurdle. Still, there are two dogged problems involved in the seemingly simple task of selecting the right document camera for your needs: 1) a constantly evolving universe of models to select from and 2) a confusing carnival of competing features. These challenges voice a strong decibel level of extraneous cognitive load, making it hard to know if we are selecting the right tool for our needs.

On the first count, document manufacturers need to slow down their constant feature improvements and create a sense of stability in their offerings for schools. I recall an old story:

A distinguished doctor, having spent years living among and serving the native people of the upper Amazon, once organised a journey through the dense jungle to reach a remote village. The party made extraordinary speed for the first two days, but on the third morning, when it was time to start, all of the carriers who were hired to carry the group's medical and food supplies were still sitting on their haunches, looking very solemn and making no preparation to leave. 'They are waiting,' the lead carrier explained. 'They cannot move forward until their souls have caught up with their bodies.'

Document camera manufacturers certainly need to slow down the constant rate of product and feature change in order for our 'souls' to catch up with this innovation in schools.

On the second count, the cacophony of available features for your document camera is so loud that it becomes difficult to make sense of what really matters. Although features are in a constant state of flux, my recommendation for what really matters are found in the table shown on the next page. Please remember that, in particular school or classroom settings, some features may need to move pliantly to the top of the 'must have' list. For example:

- If latency is an issue in an art classroom, that feature should be a 'must have'.
- If location placement is a primary concern, then wireless capability would move to top of the list.

- If portability is important for a travelling teacher, size or ability to collapse for easy transport is needed.
- If resolution is critical in a secondary school classroom, high definition output is required.

'Must have' features	'Nice to have' features	Other desirable features
<ul style="list-style-type: none"> • Low cost • Long warranty • High resolution (720p) • Low latency (frame rate 30+) • Auto-tuning • Zoom (optical and digital) or flexible gooseneck • Built-in lamp • Interactive software • Image freeze • Image rotation • Connect via VGA and USB 	<ul style="list-style-type: none"> • USB media storage slot • SD card slot • On-board AV recording • On-board annotation • Built-in microphone 	<ul style="list-style-type: none"> • High definition (more than 1080p) • Microscope adapters • Wireless • Size • Collapsibility • Masking • Comparing pictures • Assessment scoring • Scanning to PDF

It is best to involve both classroom teachers (who will use these tools in their classrooms on a daily basis) and technical staff (who will support and maintain these tools) before making purchasing decisions.