

Document Cameras – Taking the Problem Solving Out of the Maths

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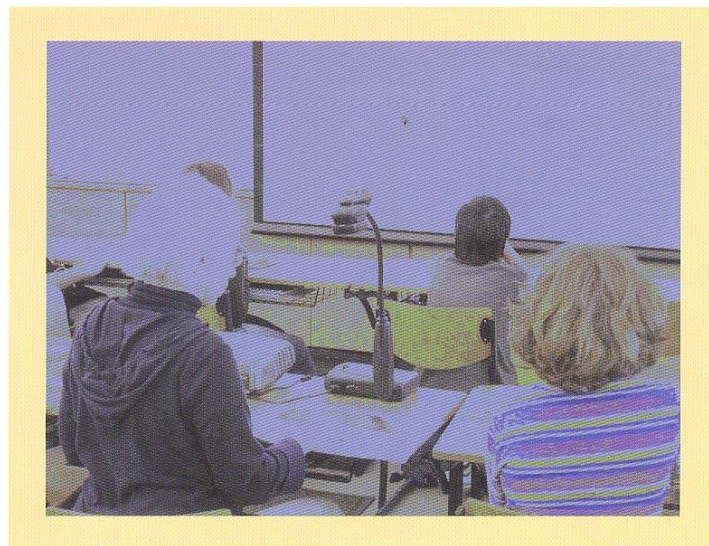
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Picture this. You have a class full of 25 first grade students all clamouring around the one desk trying to watch you demonstrate a subtraction problem with coloured blocks. There are students peering over each others shoulders struggling to get a view, not to mention those at the back of the pack who have given up on viewing the demonstration and are now distracting those around them. Now picture the above example again, but this time you have placed the coloured blocks underneath a document camera which in turn, is projecting onto a screen in full view of all students. Problem solved?

A document camera is a special video camera that when connected to a projector, can display any object (whether it be 2 or 3 dimensional) giving students a "birds eye"

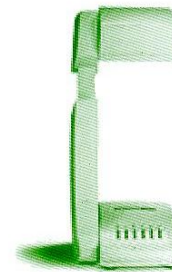
view. Document cameras are fast finding a home in classrooms across the country, and are migrating from simply replacing overhead projectors to now connecting the four-walled classroom with the outside world. As a Maths teacher it allows you to walk students through the steps of an equation and project it onto a screen for all to see clearly as you work through it before arriving at a final solution.

By making use of a document camera, maps, graphs and charts suddenly become more accessible to your students and the very fact that document cameras display everything in colour makes colour coding and maps much more significant. Document Cameras particularly work well with primary school children especially when they are initially learning to count.



For example, you can place 20 blocks on the document camera and then invite individual students to the front of the class to show different ways to group or unfix the blocks. All the while this is being displayed on a screen so that those not at the front of the class demonstrating, need not move from their seat to see what is going on.

For slightly more advanced math lessons, teachers can easily display how to use a ruler, protractor, calculator or even a compass. Instead of having to redraw Geometry sketches (as we all know that these can take a while to draw!), you can project sketches from a textbook onto a whiteboard and then work out the problem with the entire class. Math work book pages and worksheets can be enlarged, which not only saves paper but also the time spent on class preparation. Document cameras essentially eliminate the time spent making overheads or handouts to pass out during class.



Additionally, student works that are not created in electronic format (i.e. hand written workings to a problem) can

be captured, saved and added to their portfolio, saving the teacher from having to scan the document. The teacher can take a picture of each stage of the problem solving process with the document camera. These images can then be saved and replayed as a presentation for the next class or alternatively can be printed out or emailed to students.

However, perhaps one of the most valuable benefits to come from the use of document cameras as part of math lessons is the ability to have students share their work with the class. This immediate feedback enables other students to understand how one solved a problem and allows a class to review a student's work for accuracy and completeness. It also gives students the opportunity to view how another student may have solved a problem differently. Teachers can go over class tests to show the correct workings of answers and even allow the student to come to the document camera and "be the teacher". What better way to involve students more in each lesson than asking them to demonstrate how they solved a problem?

Document cameras can be a tremendous asset to a math lesson, as they allow students to clearly focus on what the teacher is demonstrating. Whether it be words, graphs or the workings to a problem, high quality images are relayed to the class in an instant, enhancing class discussions and increasing the effectiveness of communicating to a large group. Suddenly maths comes alive and the class becomes an interactive playground for both staff and students.