

Ditch That Overhead Projector

for a

Document Camera



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These materials are to be used for educational purposes only.

Why You Need a Document Camera in Your Classroom

The 8-track, Betamax tapes, and roll-up car windows - What do they all have in common? They are old technologies. If you are still using an overhead projector in your classroom, that technology will soon be in the past, too. The document camera is rapidly becoming the next piece of "need to have" classroom technology.

There are a large variety of document cameras on the market. We have included definitions for some of some of the common document camera features you might find. These definitions will assist you in selecting the document camera that is best for you. At this time, document cameras are not self-projecting, so you will need to have a digital projector or purchase a document camera that connects to a television in order to view your images. The document camera is a very handy replacement for the overhead, but it is a very versatile technology tool and can be used for a lot more than just projecting images to a screen or whiteboard. Most teachers unequivocally state that once they use a document camera, they don't want to go back to using the overhead projector.

We are convinced that if you are not using a document camera now, after reading through the many classroom uses in this article for the document camera, you will be one of the many teachers asking "How can I get a document camera in my classroom?" If you are already using a document camera, hopefully, you will find new uses for what is probably already an important technology tool in your classroom.

Most document cameras can be connected directly to your digital projector or television with VGA output or S-video. Using this method of connectivity is perfect for classrooms that do not have access to a computer, but using the document camera connected through a computer will provide more functionality. Combining your document camera with your computer will let you take pictures, record audio, and record video. Some of these features may not be available unless you are using the software that comes with your document camera. Connecting your document camera directly to your projector or television will not require software.

Definition of Features

Resolution - The amount of pixels in your image that will be displayed.

Pixel - The word pixel is short for *Picture Element*, a pixel is a single point in a graphic image. An image is divided into millions of pixels. The pixels are so close together that they appear connected. The more pixels you have, the better the image.

Optical Zoom - Optical zoom is true zoom. It allows you to zoom in or out on an object in the lens. This will enable you to get a closer view of the object. Optical zoom changes the magnification of the image. Optical zoom allows for better photo quality than digital zoom.

Digital Zoom - Digital zoom on a document camera works the same as enlarging a photo in a graphics program. This type of zoom will result in a loss of quality and image resolution because the image is simply being enlarged without any extra pixels being added.

Images - Most document cameras lets you snap and store images. Depending on the camera, you can store the images on the camera and/or your computer. This is a handy feature that eliminates the need for a scanner.

Video Recording - Document cameras that allow video recording take AVI or MOV film clips. The amount and quality of the video you can record depends on the device. Some document cameras also support the recording of audio also.

Memory storage - Some document cameras allow you to store not only images on your computer, but also a limited amount of images on the camera itself.

Auto Focus - Having an auto focus on your document camera eliminates the need for manually adjusting the focus as you zoom in and out on an object.

Mirror and Flip - These commands let you manipulate your images to change the way they are viewed by your audience.

Negative/Positive/B&W - Images can be shown as negative, positive or black and white.

Freeze - By freezing the projected image, you can manipulate and change the image without the audience viewing your actions until you are ready.

Frame Refresh Rate - The frame rate refers to the amount of times an image refreshes per second. If a document camera refreshes at 40 frames per second it will have smoother movement than a document camera that refreshes 20 frames a second.

Rotating Head - The rotating head lets you move the head on the camera instead of rotating the actual object. This comes in handy with science experiments where you do not want to touch your displayed media as often.

Lamp - Having an anti-glare lamp on your document camera will cut down on glare. Document cameras without the lamp, come with an anti-glare sheet that you can place on top of your object, usually print images, to help eliminate glare.

VGA Out - Video Graphics Array or VGA refers to an analog computer display standard or the 640x480 resolution. Most document cameras have the ability to display at a higher resolution than 640x480.

DVI Out - The Digital Visual Interface or DVI is a video interface standard designed to maximize the visual quality of digital display devices such as LCD computer displays and digital projectors.

Composite Out - Composite is the format of an analog television (picture only) signal. This is the format that lets you connect your document camera to a television set.

S-Video Out - Also called Super Video, s-video allows you to send your video image to s-video capable devices using a special cord.

VGA Pass-thru - This function lets you show images from your computer without turning on the document camera. The signal passes-thru the connected device.

USB Port - USB is short for *Universal Serial Bus* . Devices connect to the USB port using a USB cord often provided with the device. USB provides a faster connection rate than old serial connections. USB also supports Plug and Play and Hot Swapping which allows you to connect your device without the need for restarting the device it is being attached to after it is connected. The newest standard is USB 2.0.

Remote Control - A remote control is a "must have". The ability to manipulative the camera from afar provides you much more flexibility. You will want to make sure your remote has all the basic features on it like freeze, focus, zoom in and out, and flip.

Split Screen - The split screen feature is becoming available on more and more document cameras, and it will let you view objects side-by-side.

Kensington Lock - Kensington is the standard for external locking systems for technology equipment. Document cameras that are "Kensington lock compatible" will work with Kensington brand locks.

Document cameras have many other features not addressed in the definition of features list, and features are being added exponentially. You will want to compare features carefully and make sure you are getting the best product in your budget range.



Projects and Activities for the Document Camera

Perplexing Puzzles

Subject Area

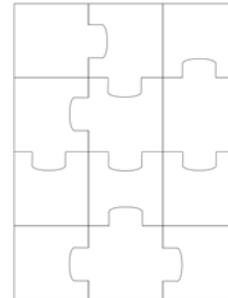
Cross Curricular

Description

In this activity the students will attempt to put together a teacher-made or pre-made puzzle. The more time you have for your activity, the larger the puzzle you can use. Number the backs of the puzzle and then let the students pull puzzle pieces from a bag or the box without seeing the numbers.

The teachers will call the numbers one at a time and the students come up and place the puzzles pieces under the document camera, trying to put the puzzle together as they place them.

If you would like to create your own puzzle, print your picture, then turn your picture over and print your puzzle template on the back. Use scissors or and Exacto knife to cut out the pieces.



ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Jigsaw Puzzle Template - <http://www.dltk-kids.com/crafts/miscellaneous/puzzle.htm>

Teacher produced Bingo games - <http://www.preschoolprintables.com>

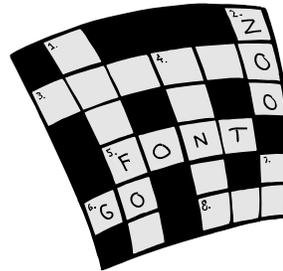
More Puzzles

Subject Area

Language Arts - Puzzles can be created for other curriculum areas can be used.

Description

Give each student a copy of a crossword, word search or other puzzle. Have the students work the puzzle independently, then call on random students to come up to the projector and write in their answers for the whole group to view.



ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Puzzle Generator - <http://puzzlemaker.discoveryeducation.com/>

Bingo!

Subject Area

Cross Curricular

Description

Use your document camera as the call sheet viewer when playing Bingo! The students will be able to visually see what has been called as the caller marks the call sheet placed under the document camera. This activity will work for store bought or teacher-made Bingo games. You may need to create a smaller call sheet to place under your camera lens if you are using a store bought game.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Teacher produced Bingo games - <http://www.dltk-cards.com>

B-I-N-G-O!

The Dailies

Subject Area

Cross Curricular

Description

Your document camera can serve as a vehicle for viewing a multitude of "daily activities".

Just a few are listed below:

- Newspaper or Internet article of the day
- A Daily Calendar
- The Word of the Day
- Math Problem of the Day
- Writing Prompt of the Day
- "On This Date"
- Analogy of the Day
- Picture of the Day



ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Web Resources

Daily Dose Activities for the Classroom -

http://www.internet4classrooms.com/subject_area.htm

What Word?

Subject Area

Language Arts

Description

The teacher or student pulls a pre-selected number of letter tiles from a bag and randomly places those tiles under the document camera. The students are given a limited number of minutes to create as many words as they can using some or all the tiles. The students can then come up to the document camera and create words, or they can spell the words from their seats.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Web Resources

Online word builder for primary students -
<http://www.readwritethink.org/materials/wordbuild/>

e h t ord?

q

w

a

What Time is it?

Subject Area

Math

Description

Student put the missing hand on the analog clock to make the time.

ISTE Standards

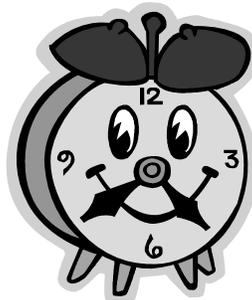
Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Printable Clock Face - <http://www.printfree.com/Kids/ClockFace.htm>

Printable Clock Face -

<http://www.enchantedlearning.com/crafts/clocks/clock/>



Tracking the Time

Subject Area

Cross Curricular

Description

Help your students keep track of timed activities, by placing your digital timer underneath your document camera lens.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.



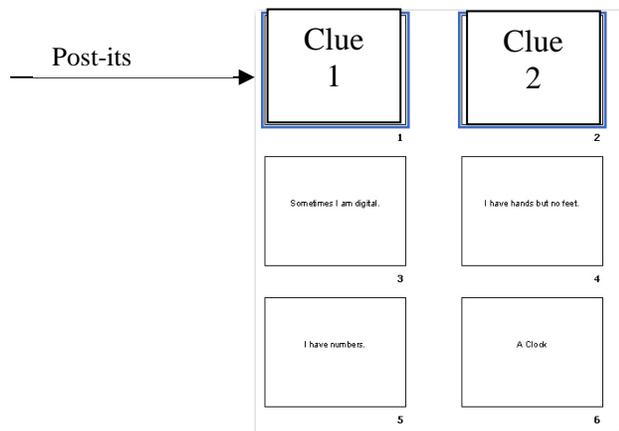
What is it?

Subject Area

Cross Curricular

Description

Create 5 PowerPoint slides with a different clue on each slide. The clues will lead up to the answer on slide 6. Print your clue and answer sheet out as a 6 slide per page handout. Cover each clue with a Post-it. Place the clue sheet under the document camera and reveal each clue one at a time. As the students think they have the answer, have them write down their guess and give it to you. Keep the answers grouped as to when they turned them in after each clue. At the end of the activity, check the answers and tally to see how many answers were correct after each clue.



ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Magnifying Math

Subject Area

Math

Description

When teaching math, your document camera will come in very handy to view and do many activities like the these:

- Show the steps in solving a math problem
- Show answers to a math sheet
- View Math Manipulatives
- View Flash Cards

TIP: Use the "Freeze" feature when using math sheets or flash cards. Show the items without the answers, then freeze the screen while the students formulate their answers, then unfreeze the camera and show the answers.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Free Printable Math Worksheets - <http://www.kidzone.ws/math/index.htm>

Printable Math Manipulatives -

<http://mason.gmu.edu/~mmankus/Handson/manipulatives.htm>

Math Flashcard Creator -

http://www.aplusmath.com/Flashcards/Flashcard_Creator.html

$$4 + 1 =$$

Everything in its Place

Subject Area

Language Arts

Description

Activities like sequencing and fill-in the missing word or line can become interactive when used with your document camera. Let your students complete the activity at their seats and then self-check using the document camera to show the answers.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Sequencing Cards for Primary Students -
<http://www.enchantedlearning.com/rhymes/seq/>

1

2

3

4

Tell Me a Story

Subject Area

Language Arts

Description

Bring your story characters to life by placing pictures or 3-D replicas of the characters under the document camera lens and making the characters act as you tell your stories. Your document camera can also take the place of felt and magnetic board stories.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Berenstain Bears Characters - www.berenstainbears.com/dressup.html

Primary Story Characters - http://www.dltk-kids.com/type/felt_board.htm

Jan Brett Characters - <http://www.janbrett.com>



On Broadway

Subject Area

Language Arts

Description

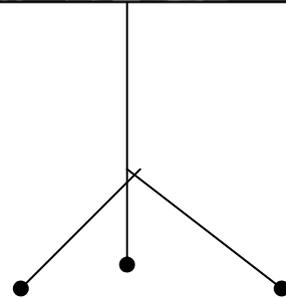
The document camera makes an excellent backdrop for play acting. Place a background picture on your document camera. Let the students stand in front of the projected picture as they act out the story. If you place your projector at a 45 degree angle to your screen the background will view behind the students.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.



Project your scenery to a screen



Character Story Cards

Subject Area

Reading

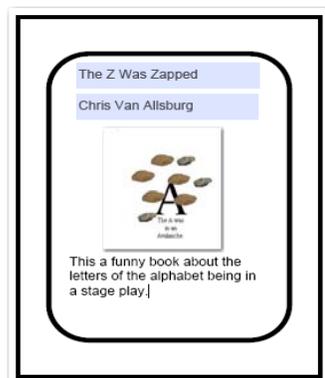
Description

The students select four different books and tell why they like the book or a particular character. Using an online Adobe form, they enter the book title, author, and any additional information. The cards are printed on cover stock and then the students illustrate them by hand.

From the 4 cards, the students keep one, give one to the librarian, give one to the teacher and trade one with another student in the class. Before the giveaway activity, the students use the document camera to show their cards to the rest of the class. Since the cards are small, the document camera is a great way for the class to view the cards.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.



Story Cube

Subject Area

Reading

Description

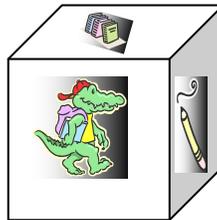
Create a story cube with selected clip art telling about a selected story on each side of the cube. Students can also create the story cubes. Students can roll the story cube and then a selected person must tell how the picture relates to the story.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Cube Pattern - <http://www.enchantedlearning.com>



Number Cubes

Subject Area

Math

Description

There are many uses for number cubes in the classroom. Rolling your number cubes or random number generators under the document camera lens will make them easier for the whole class to see and may afford you more time for your activities. Using the document camera also eliminates the need for special transparency dice.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.



Web Resources

Printable Dice Pattern -

<http://www.glc.k12.ga.us/passwd/trc/ttools/attach/math/dice.doc>

Money Makes the World Go Round!

Subject Area

Math

Description

Viewing the attributes of real money up close is a breeze with the document camera. See the tiny owl perched in the upper right-hand corner? See the year 1776 is spelled out in roman numerals at the bottom of the pyramid? You can also get close-up views of real coins and the required inscriptions "E Pluribus Unum," "In God We Trust," on the edge of many newly minted coins. You can do your money math problems for the whole class to see with using special overhead projector money.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Web Resources

Lessons and Resources for Teaching About U.S. Money - <http://www.usmint.gov/>



Predictable Books

Subject Area

Cross Curricular

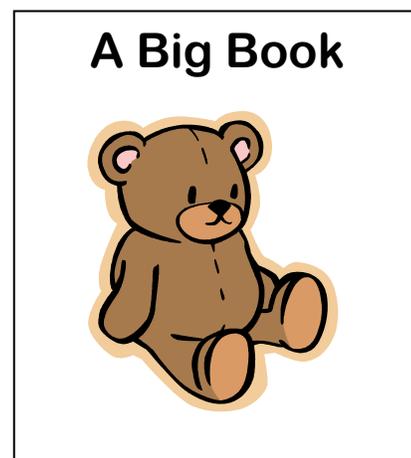
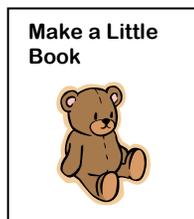
Description

Teachers love the way illustrations and the text of their favorite books becomes screen-size by using the document camera. Picture books become really Big Books when used with a document camera. Using the "Freeze" feature with your favorite predictable books is a great way to let the students guess what comes next without their seeing you turn the page. Freezing the page lets you change the page without giving the students any accidental advance help.

ISTE Standards

Web Resources

Listing of Predictable Books and Authors -
<http://www.monroe.lib.in.us/childrens/predict.html#chain>



Map It!

Subject Area

Social Studies

Description

Once you have a document camera, there really isn't a need to use pull-down maps. You can put maps from your textbooks right under the lens. You will never be forced to make do with an out-of-date map, because you can print just-in-time maps from the Internet, place them under your lens, and make notations on the map.

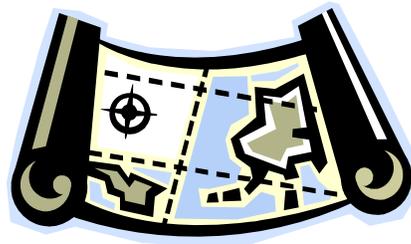
ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Web Resources

Online Maps - <http://www.mapquest.com>

Online Maps - <http://maps.google.com/>



See You in the Funny Papers

Subject Area

Language Arts

Description

Using comics is a great way to bring humor into the classroom. You might have a comic strip of the day that you place under the document camera lens to start your instructional session. You can show a comic strip with the last balloon blanked out, and it is up to the students to provide the punch-line.

ISTE Standards

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

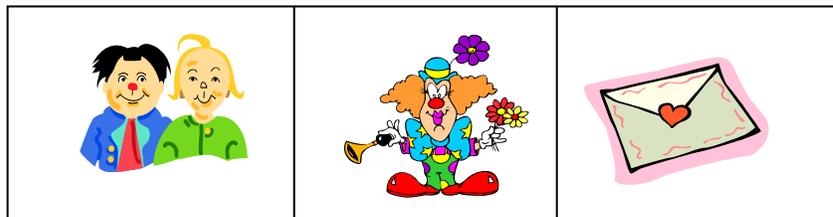
Web Resources

Interactive Comic Creator -

<http://www.readwritethink.org/materials/comic/>

Lessons for Using Comics in the Classroom -

<http://www.emints.org/ethemes/resources/S00001222.shtml>



The Lines Are Our Friends

Subject Area

Cross Curricular

Description

Projecting your writing paper lines on your chalkboard or wipe-off whiteboard is a great way for you and your students to keep your writing straight while writing on the board with chalk or markers.

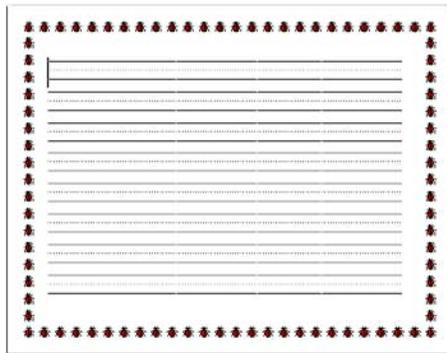
ISTE Standards

Use technology tools for individual and collaborative writing, communication, and publishing activities.

Web Resources

Printable Lined Paper -

http://www.primarygames.com/print_zone/print_zone.htm



What's the Difference?

Subject Area

Problem Solving

Description

Find the difference between two almost identical pictures is a great activity for enhancing focus and attention to detail.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Web Resources

Online "Spot the Difference" Puzzles -
<http://www.allstarpuzzles.com/home.html>



What's Missing?

Subject Area

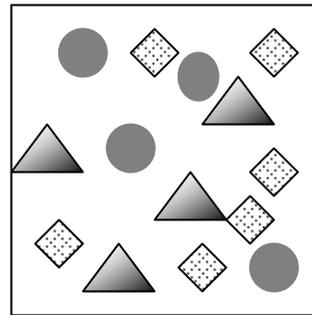
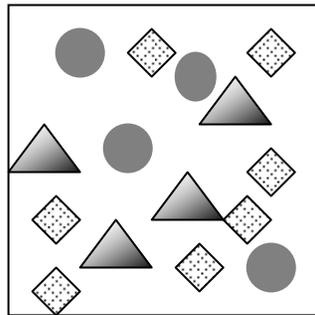
Problem Solving

Description

Place a number of items under the document camera, and then freeze the scene. Using a piece of paper to shield your movements from the class, remove one of the objects and then unfreeze the scene. Have the students write down what object they think is missing. Make this activity even more of a challenge by using objects that are like in color or type.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.



Memory Game

Subject Area

Problem Solving

Description

Place your memory cards under the document camera face down, and then challenge the students to make matches. The students can come up to the projected image and point to the cards they want you to turn over.

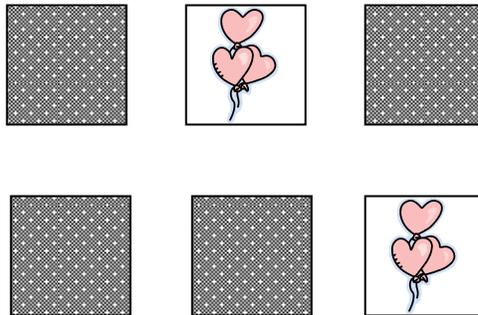
ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Web Resources

Memory Match Cards -

<http://www.kidsdomain.com/brain/read/memorymatchcards.html>



Mini-Word Wall

Subject Area

Cross Curricular

Description

Use your document camera to expand your word wall space. Word walls can be an integral part of any classroom, but the more words you add, the more space becomes a problem. You can now create mini-word walls of those specialty words that your students do not use all the time. When you need your students to use those words, use the document camera to make the word list word wall size.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.



Barn	Grow
Farm	Horse
Farmer	Pig
Cow	Corn
Crop	Plant

Dominoes

Subject Area

Math

Description

Play a group game of dominoes and get the whole class involved by passing out the pieces to the class and playing the game under the document camera lens. Pick someone to start, and then go around the room selecting students until you get to a student that has a domino to play.

ISTE Standards

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Web Resources

Printable Dominoes - <http://www.enchantedlearning.com/dominoes/>



Other activities that work well with the document camera

- Art Brush Strokes
- Editing Student Writing
- Making Lists
- Modeling With Clay
- Notating Music Scores
- Replace Your Scanner
- Show and Tell
- Showing Calculators
- Showing Science Slides
- Showing Science Specimens
- Use Your Old Transparencies
- Using 3-D Models
- Viewing Dissections
- Viewing Items that Might be Damaged by Repeated Touching

Document Camera Idea Links:

http://www.umesd.k12.or.us/techlinks_100ideas

<http://www.pre-kpages.com/elmo.html>

<http://www.timbedley.com/articles/article05.htm>

<http://www.pnc.edu/ms/101%20Ways%20Teachers%20Use%20Document%20Cameras.doc> (Word Document)

If you have successful document camera activities to share, please email them to beverly.burks@fwisd.org or henry.tate@fwisd.org.

Thank You