Claymation in the Elementary Classroom

$c = \sqrt{a^2 + b}$
Clay Animation SpecTECHular!

Engage and Inspire with Hands-on Curriculum Projects.

Hi! Are you interested in what our team is working on? You may recognize Abraham Lincoln with his stovepipe hat or Dr. Martin Luther King or even Thomas Jefferson, but do you recognize the other characters? That one over there is Elizabeth Cady Stanton, next to her is Samuel Gompers, next to him is Betty Friedan, and next to her is Russell Means.

Our characters are about to have a discussion about rights and freedoms. We are creating a clay animation production in which the characters are trying to write a new Declaration of Rights. As a final project for our history class, we are supposed to pick one concept and show how perspectives around this concept changed during the course of American history. Our team decided to explore rights.

After brainstorming various concepts of rights, each of our team members researched a couple of different movements and the people associated with them. Each team member then brought suggestions back to our team about who we might choose as a character to represent the movement along with some ideas about what would be important to each of these people and how they would interact with other members of this team.

Our team has tried to pull together a diverse group of people with different backgrounds and from different time periods incorporating ideas from civil rights, women’s rights, suffrage, the American Indian movement, the labor movement and American independence.

We will be presenting our final project to the rest of the class in a couple of weeks. The time has been going by so fast, I hope we can get finished in time. I think I learned more in the last two weeks than I have the whole semester!

This vignette gives a brief insight into the incredible possibilities of the clay animation process. If you are looking for ways to motivate students or are encountering reluctance to technology integration, clay animation may be your solution.

A clay animation production is a new approach to curriculum and content. During the clay animation process, students work in teams to create clay characters and tell a story. That story could be an historical event, a chemical process, a fictional story, or just about any curriculum activity.

Students learn best when they select and transform information. Clay animation requires students to write, design, organize, and implement a project from scratch. They not only research the content but must analyze how best to apply their knowledge and creativity to share the concepts and information related to the subject. Often, they get so caught up in the production that they forget they are learning.

Susan Tresner, an instructor using clay animation at the First to the Future Multimedia Camp, says “I really enjoyed watching the creativity spring forth as they began to build their creature. They got so excited about creating an original animated clip for their projects that they began building and dreaming up their plot almost simultaneously.”

Clay animation also appeals to multiple intelligences and provides an opportunity to reach the variety of learners in your class. The parts of a clay animation production help all
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Clay Animation SpecTECHular! Lesson p2

Clay learners strengthen the different intelligences as they complete their project. For example, making a clay character engages the bodily-kinesthetic intelligence, writing the story or script engages the linguistic intelligence, working in a team engages the interpersonal intelligence, creating an animated production engages the spatial intelligence, and organizing and sequencing the frames and tasks engages the logical-mathematical intelligence.

In 1991, the Secretary’s Commission on Achieving the Necessary Skills (SCANS) of the US Department of Labor issued a report entitled What Work Requires of Schools to examine today’s workplace and outline the skills necessary for success in this new work environment. Working in a collaborative team on a clay animation production teaches students to communicate freely and directly, to support their team members, and value each team member’s contribution. The various tasks necessary to complete a clay animation production encourage students to identify their strengths and weaknesses and assign tasks within their team accordingly. The skills necessary to complete a successful clay animation project prepare students for this new work environment and meet the SCANS skills and competencies.

Clay animation is a great transition into technology and blends the physical with the electronic and the nontechnical with the technical. While working with the character and planning out the animation, most clay animation producers forget about the computer, making the technology portion transparent. Because of the transparent nature of the technology, clay animation appeals to new technology users.

Technology is definitely an important part of the process, but not the central point or reason for the project. Clay animation is first and foremost about content and creativity. Project content depends on the subject area in which clay animation is implemented. Clay animation productions also encourage connections and partnerships between different educators at the same school site or at multiple sites. Much of the clay animation process relates to art and art techniques and is a fantastic time to enlist the help of an art teacher. You might also recruit a music teacher to assist in creating a sound track and a technology coordinator to help create the computer animation.

You can apply clay animation in almost any area for spectacular results. Don’t delay, clay today!

by Melinda Kolk
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Student Connections

Engaging writers with Clay Animation

"After being introduced to clay animation in a half-day workshop, I saw the potential of clay animation and was immediately hooked! I implemented clay animation as part of a unit on poetry, to align our work with state standards and follow our freshman English curriculum. The students would write ten original poems in a format we had learned and then create a clay animation of one of their poems.

Once the concept was introduced, the students were like putty in my hands. I work with students who have behavioral and learning issues, so motivation and engagement in the learning process are my two biggest hurdles. Students gave up study halls, lunch, and even came in early to work on the projects.

They were more engaged in their own writing than I had seen all year. The hands-on nature of the project especially appealed to the students with below average writing skills. It was amazing how easily the students picked up the technical aspects of the clay animation process. I watched my students as they blossomed into creative problem solvers and active learners. I also noticed that students who usually have a great deal of difficulty working together suddenly became cooperative learners."

by Anne Truger
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MULTIPLE INTELLIGENCES AND CLAY ANIMATION

"The single most powerful statement to come out of brain research in the last twenty five years is this: We are as different from one another on the inside of our heads as we appear to be different on the outside. Look around and see the infinite variety of human heads...know that on the inside such differences are even greater - what we know, how we learn, how we process information, what we remember and forget, and our strategies for functioning and cooperating."

- R. Fulghum, from *It was on fire when I lay down on it*

Howard Gardner of Harvard University shares a new view of intelligence in his ground-breaking book, *Frames of Mind: The Theory of Multiple Intelligences*. In this work, he broadly defines intelligence as "the capacity to solve problems or to fashion products that are valued in one or more cultural settings" (Gardner, 1993). He then elaborates on seven more specific types of intelligence including: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal intelligence. He has since added both naturalist and existential intelligence for a total of 9 different intelligences.

Clay Animation can help you easily engage all of these different intelligences. In fact, completing the entire clay animation project building process requires applying or using almost all of the different intelligences at one time or another. A clay animation project allows students to apply their most capable intelligence, while also developing and utilizing all of their other intelligences and learning to use the intelligences [strengths] of their peers.

ENGAGING THE MULTIPLE INTELLIGENCES

**Linguistic intelligence** is a proficiency with language and written forms of communication.

No matter what the topic, clay animation requires strong communication and effective storytelling skills. A written narrative of the animation, whether it is a story or a scientific process, should be done before work on the computer begins.

If you are trying to encourage reluctant writers or second language learners, you may want to have them make a clay character first. While creating and "playing" with the clay, stories will appear almost automatically and can facilitate a writing process some students find difficult.

**Logical-Mathematical intelligence** is a proficiency with numbers, mathematical concepts, and logic.

The clay animation process requires the completion of several distinct steps. Have students plan out the steps and sequences necessary to make their clay animation. You can also have them create a production budget for materials, time, and other needed resources.
Spatial intelligence is a proficiency with spatial relationships and the ability to think and communicate in a visual format.

To engage the spatial intelligence, have students create a project storyboard or visual map of their project. This requires them to think about how they can best portray concepts and situations visually. Creating the backgrounds, choosing colors for the characters, and modifying character movements to convey information also engage this intelligence.

Musical intelligence is an appreciation of a variety of forms of music and proficiency in using music as a form of self-expression.

Clay animations have a more dramatic and powerful effect when they include music. To engage the musical intelligence, have students create an original soundtrack or score using sound creation software such as Smart Sound or Super Duper Music Looper for their animation to set the mood and showcase conflict.

Bodily-Kinesthetic intelligence is a proficiency in using one’s own body to express oneself or to create/build/manipulate objects.

Building a clay character and setting and positioning the character for picture taking of realistic movements requires kinesthetic skill. To engage the bodily-kinesthetic intelligence, have students use a variety of materials and approaches to building the character, set, and accessories.

Interpersonal intelligence is a proficiency in understanding and responding effectively to other people.

Clay animation is easiest to manage and often most successful when it is completed by a team of students. Working in teams provides an opportunity for students to utilize their interpersonal intelligence to maximize each individual’s contribution to the team’s clay animation project.

To further facilitate student learning with this intelligence, create a check-in point to see how the team is progressing and what they are experiencing during the process.
Intrapersonal intelligence is a proficiency in knowing one's self-motivation, strengths, feelings.

To engage this intelligence, have students keep a journal to record their contributions, feelings, and experiences during the process. Knowing their own strengths and feelings will help students better contribute to their team’s clay animation. During the animation presentation, have them share some of these experiences.

Naturalist intelligence is a proficiency in identifying, understanding, organizing, and classifying patterns in the natural environment or the plant, animal and human world.

Engaging this intelligence can be done by having clay animation projects examine patterns and processes in the natural world. Awareness and observation of the environment will also help students add details to their scenes and actions that contribute to the reality, and therefore the impact, of the animation.

Existential intelligence is a proficiency in asking and examining questions about life, death, and ultimate realities.

Stories that try to answer these questions are truly compelling. A clay animation project that includes storytelling will encourage this intelligence. You can further engage the existential intelligence by specifically designing projects to answer “essential” or “big” questions.

MULTIPLE INTELLIGENCES IN A PROJECT

Here are two examples of how projects can address the different intelligences in both content and process. These projects are included as full lesson plans later in this book.

PERSONIFICATION POEMS

Introduce the technique of personification by discussing how human and nonhuman experiences might be similar (logical-mathematical, naturalist). Then, have student teams (interpersonal) choose a nonhuman object and brainstorm feelings and experiences (intrapersonal) they might apply to it.

Have each student team compose a poem (linguistic) that personifies their object. The team should work together to build a clay character (bodily-kinesthetic), design
a set, and create a clay animation (visual-spatial) that combines narration of the poem with a visual action by the clay characters. Students can add a soundtrack (musical) to further enhance the communication.

Have the students present their animation to the rest of the class in a clay animation poetry festival!

HISTORIC EVENTS
Discuss what it might have been like to live during a particular historic period, as a man, as a woman, as a child, or in different social classes (intrapersonal, interpersonal, existential). Discuss how the natural and social environment at that time contributed to the actions and feelings of different people (naturalist).

Divide students into teams and have each team choose a historic event to animate. The teams should recreate the animation from a perspective not normally chosen. For example, what was it like to hear Dr. Martin Luther King’s “I Have a Dream” speech as a child in the audience?

Each team should complete an overview and storyboard and plan the steps they will need to take to finish their animation (logical-mathematical). Once the plan is complete, teams will build clay characters and design the set for their animation (bodily-kinesthetic, spatial). They will then take pictures and complete a clay animation (visual-spatial) that includes both narration and a sound track (musical) to teach others about this historic event and how it affected different people.
Clay animation is a motivating process you can use to engage students as they explore and grapple with complex scientific topics. Science education is designed to provide students with the skills to become independent inquirers about the natural world. The National Academy of Science encourages teachers to use collaboration as a tool so that students participate in the sharing of data and development of group reports. They also suggest that students should be given opportunities to make presentations of their work and “engage with their classmates in explaining, clarifying, and justifying what they have learned.” Clay animation is perfect for supporting this learning environment!

**Make Science Processes Tangible**

First of all, clay animation helps make many science processes and concepts tangible. In What Works in Classroom Instruction, Marzano explains that humans store knowledge in linguistic and visual form. For concepts that are hard to explain in writing, creating non-linguistic representations with clay animations can help students explore and remember information. Because science topics range from very small things like atomic particles to very large structures like the solar system, it is difficult to explore many concepts in a tangible way. Clay animation allows for hands-on manipulation and the creation of physical models, helping students analyze scientific structures and processes like cell division and plate tectonics.

**Improve Thinking Skills**

While students are motivated by creating their final animation products, it is the process of making clay animation, including writing, brainstorming, planning, sequencing, team work, and management, where the real learning takes place. As they plan their clay animation to demonstrate a science process, such as plant growth, students must use logical thinking skills to sequence the steps. Critical thinking skills are required to analyze the process and determine what factors are necessary for each step in the process and movement from one step to the next. As students create the clay animation, they must evaluate the information and work together to determine the most effective way to demonstrate the concept or process they are animating.

Collaboration is a necessary component of successful classroom clay animation. Consider, for example a project on cell division. If each team attempts to animate the entire process of cell division, due to time constraints, the resulting animations might not include all of the essential information and details. On the other hand, if each team were to animate one phase in the process, the entire class could combine their animations into one presentation. The whole class will still need to look at the entire process to determine what colors and shapes to use. This ensures that models display cell structures like the nucleus and cell walls consistently throughout the animation. Each team would also have to work with the team before it and after it to ensure that no part of the cell division process was missed.

Students at Bauer Elementary in Hudsonville, Michigan create a clay animation as the culminating assessment of a unit on plant and animal life cycles.
The students choose which life cycle they want to work on, and form groups to make clay animations to demonstrate their understanding. Teacher Julie Myrmel shares, “Not only do they delve deeper into the progression of the life cycles, they get to showcase their artistic side, learn how to compromise as a member of a group, and work on a project they really care about. The element of fun, and the strong sense of ownership of the project, brings out the best in them.”

Engaging ALL Learners
Engaging the intelligences of all students in a classroom is part of what makes clay animation so motivating. Students have seen clay animations on television, and even though they are using animations to represent concepts in science, this makes the project more relevant to their lives. Creating an animation that will be viewed by other students in their class, students in other classes if they are shown at a school assembly, or students around the world if they are shared online, reinforces that the work our students are doing in the classroom is valuable and important.

Julie Myrmel also loves how clay animation engages all of the learners in her classroom:

“One of my favorite parts of working with these projects is that the kids who are often the leaders are the same ones that struggle with more traditional class work. So, instead of being the one who has to HAVE help, they are the experts the other kids go to, and they’re the ones GIVING the help. The look on their faces as they’re sought out as pros by their peers is priceless.”

Anne Truger, of Lake County, Illinois, works with students who have behavioral and learning issues. She can’t reach her students without projects that are motivating. When using clay animation, she found that her students were “more engaged...than I had seen all year. Students gave up study halls, lunch, and even came in early to work on the projects!”

This visual approach to learning also supports the multiple intelligences students use to learn in the classroom. Clay animation provides an opportunity to reach the variety of learners in your class. The parts of a clay animation production help all learners strengthen the different intelligences as they complete their project. Making a clay character engages the bodily-kinesthetic intelligence; writing the story or script engages the linguistic intelligence. Working in a team engages the interpersonal intelligence. Creating an animated production engages the spatial intelligence, and organizing and sequencing the frames and tasks engages the logical-mathematical intelligence.

Assessing for Understanding
The process of creating a clay animation also provides multiple opportunities for assessing understanding. With many traditional forms of assessment, students can recall enough rote information to guess a multiple choice question correctly or parrot back an exact definition without understanding what it means. Creating a clay animation provides many opportunities for you to assess for understanding. Lania Ho, of Barrington, Illinois, asked her students to create clay animations that demonstrated...
Claymation in the Elementary Classroom
Supporting Science Learning with Clay Animation

When students used a martial arts fight to demonstrate Newton’s Third Law of Motion – every action has an equal and opposite reaction - the questioning and planning during the process provided an opportunity to ask questions and identify misconceptions. In this instance, making sure that the students understood that while the action, one character hitting another, was obvious, the reaction was not the other character falling down.

Jean Trusedell, of Decatur, Indiana, used clay animation for a germ unit. Her students created animations that showed how viruses and bacteria attack our cells, how medicine might affect the germ and kill it, and how the cells could be protected. While building the animation, they had to discuss their ideas with their teammates as well as explain their ideas to her. “The greatest part of using clay animation is that the kids are always having to explain the process as they go, and I can constantly assess their progress. Asking them to visualize the cellular level is always difficult; the clay animation process helped make that possible,” she shares.

Making the Investment Worthwhile

The process of clay animation involves a significant time investment. Although there are ways to simplify projects and the process, you would not want to use clay animation to teach every topic in your science curriculum. You can ensure that the time investment is worthwhile by choosing your topics carefully and structuring the process to meet your classroom needs. Using clay animation to explore a difficult topic helps provide multiple opportunities to catch misconceptions, while providing students many opportunities to analyze content. If student teams create animations on many different topics at the end of the unit, sharing the finished animations is a great way to revisit concepts at the end of a unit and review for an upcoming assessment.

Remember, the learning during a clay animation project occurs during the process. Sandra Smits, of Hudsonville, Michigan, explains, “When they were done with the project, they really had a strong understanding of the life cycle because they spent so much time planning it out and talking about the steps involved to make it all work.” The visual format and popular medium appeal to students who might not otherwise engage in the content or be willing to struggle through difficult concepts. Clay animation projects require students to think, not simply recall facts and information. Jean Trusedell sums this up nicely: “Clay animation requires my students to delve deeper into their higher level thinking skills. Rather than learning that is rote, clay animation requires my students to synthesize the facts and turn that knowledge into a new understanding and THEN demonstrate their new understandings to others.”

References


Biography
Melinda Kolk is the author of Teaching with Clay Animation and has been helping educators integrate successful clay animation projects in their classrooms for over eight years.
Use this as a pacing guide when working with Clay Animation in your class.

### Time Period Activity

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Activity</th>
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<tbody>
<tr>
<td>1 period</td>
<td>Students introduce themselves</td>
</tr>
<tr>
<td></td>
<td>View sample animations</td>
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<tr>
<td></td>
<td>Brainstorm ideas</td>
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<tr>
<td>1 period</td>
<td>Form groups</td>
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<tr>
<td></td>
<td>Choose an idea</td>
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<tr>
<td></td>
<td>Create a storyboard</td>
</tr>
<tr>
<td></td>
<td>Divide group for various assignments</td>
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<tr>
<td>1 period</td>
<td>Explore working with clay</td>
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<tr>
<td></td>
<td>Learn how to create a clay figure</td>
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<tr>
<td>3 periods</td>
<td>Create background, clay figures, props, etc.</td>
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<tr>
<td>1 period</td>
<td>Take pictures</td>
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<tr>
<td></td>
<td>Review pictures</td>
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<tr>
<td></td>
<td>Transfer pictures to a folder on the computer</td>
</tr>
<tr>
<td></td>
<td>Delete the bad pictures</td>
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<tr>
<td>1 periods</td>
<td>Open Frames and import the folder of pictures</td>
</tr>
<tr>
<td></td>
<td>Introduce Frames and explore the various buttons and tools</td>
</tr>
<tr>
<td>3 periods</td>
<td>Work with your animation in Frames</td>
</tr>
<tr>
<td>1 period</td>
<td>Make a movie</td>
</tr>
<tr>
<td></td>
<td>Have an Animation Festival</td>
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</tbody>
</table>

### Suggested Supplies

These items will be useful in creating your clay animations:

- Scissors, glue, tape, markers, construction paper, paper clips, fishing wire, foil, baby wipes

Look through your house for any odds and ends that might be used:

- Yarn, fabric scraps, old calendars

www.tech4learning.com
Getting Started

Remember the KISS (Keep it Super Simple) principle the first time you tackle a claymation project. You may want to start the process with existing claymation images from the tutorials folder or have students capture images for an claymation that repeats (music video style).

A great animation starts with a great story. Be sure you have a strong script and storyboard before you begin working on the claymation itself.

Practice reading your script to see how long it takes. You will need to capture enough frames so that movement matches the length of the script.

Building Characters

It takes a bit of time to develop clay characters. While you want to keep them fairly simple, but sure to use enough detail on the character to make it appealing and interesting.

Claymations are like cartoons, so it is almost expected that details like eyes and ears can be out of proportion. And be sure to make the feet extra large or the heavy head of the character will make it unstable.

Building Backgrounds

If your animation is about habitats or a different culture, by all means create an elaborate backdrop that can stand on its own as part of the learning process. But elaborate backdrops can detract from the character and story, so it is often just as effective to use simple shapes and solid colors.

If you are looking to save time, collect old calendars to use as instant backgrounds.

Make sure the background is not too big, you don’t want to have to create really big clay characters!

Taking Pictures

Set your camera to approximately 2 megapixels (1600 x 1200). Most people share their movies on the computer and via the Web, so you will likely create a movie at a small size anyway.

It is essential to keep the camera still during image capture. Connect the camera to a tripod, clamp or somehow attach it to the table (tape!) so that it doesn’t get bumped during the image capture.

Make sure you can see the entire scene through the camera and that cropping will not need to be done later (this takes too much time).

When you are ready to take pictures, practice a run through of the animation. One person should move the character while another person takes the pictures. If there is a third person have them direct from behind the photographer.

Try to shoot the entire sequence at one time and take more frames than you think you need.

Building Claymation in Frames

If you place all of your images into one folder, you can easily import the entire folder of images into Frames. Frame menu>Add Frames From a Folder.

Move to the beginning of the animation timeline or storyboard and record all of your narration. Then adjust the timing/duration of the frames to match the narration.

The default frame duration in Frames is .5 seconds for each frame. To change the duration, simple select the frame, or group of frames, you want to change and adjust the duration at the bottom of the Options panel.

You can also add a soundtrack, but be sure to adjust the volume so that you can hear any narration you have added.

Be sure to Make your movie into a file format that can be shared. Make button on the toolbar.

Celebrate!

Be sure to host a claymation premiere to show off all of your hard work. Bring out the red carpet, share on your web site, or even submit to local access television.
Where can I find the type of clay used in clay animation?
The clay used in clay animations is non-hardening. For inexpensive clay look at discount or hobby stores, like Michaels or Hobby Lobby. Clay can also be ordered from teacher supply companies or search for Van Aken clay online.

What do I do with leftover clay?
Since the clay you use for clay animations never hardens, you can keep it year after year. Try your best to keep colors separate, but if they get mixed together, you can simply mix it all up to create a brown or gray base for future projects or leave is slightly mixed to great tie-dye style clothing.

Can I use other things besides clay?
Obviously for clay animation movies you need to use clay, but don’t limit yourself to only using clay for stopmotion animations. It is perfectly acceptable, and often faster, to use cut paper, action figures, and toys like LEGO® and PLAYMOBIL®.

Do I have to use fancy sculpting tools to create the clay characters?
You do not need purchase special tools to sculpt the clay. You can use inexpensive tools like craft/popsicle sticks, tooth picks, plastic silverware, and rolling pins.

What type of camera do I need to take the pictures?
Any digital camera will work, you simply need to be able to get the pictures to your computer. Unless you are making professional level animations, you don’t even need a great camera. If you are going to share your movies online, set your camera to a lower image size or resolution to save time and memory. You can also capture frames inside of Frames using a web cam or attached dv camera.

How do I steady the camera?
A tripod is the best way to steady the camera, but you can also tape a camera to a table. Some tripods are even attached to vice grips so you can attach them to lots of things. You can also find options online for creating your own tripods: http://bit.ly/ljAySx

How do I capture frames of a fish swimming or an airplane flying?
Place the background flat on the table, place the camera above the background (tip a tripod to a 90 degree angle) and capture the movements from above. You can also try hanging clay characters in front of a vertical background using clear filament or fishing line.

How do I create the clay characters without making them too heavy?
If you make characters completely out of clay, they can be too heavy to stand properly. To lighten your characters, create an armature to give the character strength and flexibility under the clay. Armatures can be made from chenille stems (pipe cleaners), 16 gauge aluminum wire, Styrofoam shapes, molded aluminum foil, plastic eggs, and more.

How long will it take to create a clay animation with my students?
It depends! Start with a simple project like the Idiom lesson in the Frames tutorial. This lesson will help students understand the concept of working with clay, taking the pictures and using the software. After learning the basics then branch out to other curricular areas. Keep in mind that the more pictures students take the longer it will take to edit the animation. Keeping it simple makes projects more successful.

How do I wash clay off my hands?
Clay for clay animation usually includes wax making it hard to remove with water. Soap with a degreaser usually helps, but sometimes a dry, coarse paper towel is just as successful. Clay gets stuck in the pores in your hand and if you soak your hands in water or put moisturizer on your hands before working, it will keep your hands cleaner.

How do you clean up clay?
If you get clay on carpet or other rough fabric, try to pull it off by hand as rubbing it with water usually just spreads the pigment. To protect tables or other porous furniture in your classroom, cover them with plastic table cloths, placemats, or garbage bags. Inexpensive place mats work very well to create an individual workspace for each student.
Tech4Learning recommends having the following supplies available when working on clay animation projects with students.

<table>
<thead>
<tr>
<th>Use when</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building Armatures</strong></td>
<td>Chenille Stems - Multicolor</td>
<td>10 per group</td>
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<tr>
<td></td>
<td>16 gauge or 1/16 aluminum wire</td>
<td>2 feet per group (secondary)</td>
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<tr>
<td></td>
<td>Styrofoam Balls - 1”</td>
<td>3 per group</td>
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<tr>
<td></td>
<td>Styrofoam Balls - 1.5”</td>
<td>3 per group</td>
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<tr>
<td></td>
<td>Craft Sticks (Popsicle)</td>
<td>10</td>
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<td></td>
<td>Tin Foil</td>
<td>1 Roll</td>
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<tr>
<td><strong>Adding Clay</strong></td>
<td>Modeling Clay (Plasticene)</td>
<td>4-5 blocks per group</td>
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<tr>
<td></td>
<td>Non-hardening clay, not clay that is baked. Claytoon clay recommended.</td>
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<tr>
<td></td>
<td>Toothpicks</td>
<td>10 per group</td>
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<tr>
<td></td>
<td>Baby wipes</td>
<td>For clean-up</td>
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<tr>
<td><strong>Decorating Characters</strong></td>
<td>Beads, Assorted</td>
<td>1 small bag per group</td>
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<td></td>
<td>Colored paper clips</td>
<td>10 per group</td>
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<tr>
<td></td>
<td>Sequins</td>
<td>75</td>
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<td></td>
<td>Wiggle Eyes</td>
<td>7mm 10 per group</td>
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<tr>
<td></td>
<td>Felt, yarn, cloth strips</td>
<td>assorted</td>
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<tr>
<td><strong>Designing Backgrounds</strong></td>
<td>Colored Paper</td>
<td>1 Book</td>
</tr>
<tr>
<td></td>
<td>Calendars</td>
<td>assorted</td>
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<tr>
<td></td>
<td>Glue, scissors, clear tape</td>
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<tr>
<td><strong>Online Sources</strong></td>
<td>Clay and accessories can be purchased at the following online stores:</td>
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<td></td>
<td>Sax Arts and Crafts</td>
<td><a href="http://www.saxarts.com">http://www.saxarts.com</a></td>
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<tr>
<td></td>
<td>Michaels</td>
<td><a href="http://www.michaels.com">http://www.michaels.com</a></td>
</tr>
<tr>
<td><strong>Physical Stores</strong></td>
<td>Clay and accessories can be purchased at the following retail outlets:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michaels</td>
<td>Franks Nursery and Crafts</td>
</tr>
<tr>
<td></td>
<td>Hobby</td>
<td>Lobby Oriental Trading Company</td>
</tr>
<tr>
<td><strong>Animation Clay Supply Kits</strong></td>
<td>The following kits provide a variety of modeling supplies for clay animation:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Claytoon Clay Project Studio:</td>
<td><a href="http://www.saxarts.com/">http://www.saxarts.com/</a></td>
</tr>
</tbody>
</table>
A rubric can help you assess the final claymation as well as learning that occurred during the claymation-building process.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Novice</th>
<th>Apprentice</th>
<th>Proficient</th>
<th>Distinguished</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Animation meets its purpose and skillfully answers the question posed.</strong></td>
<td>Subject knowledge is not evident. Information is confusing. Does not answer the essential question.</td>
<td>Some subject knowledge is evident. Some information is confusing. Question is stated but not clearly answered.</td>
<td>Subject knowledge is evident in much of the product. Information is clear, appropriate, and correct. Essential question is answered.</td>
<td>Project has gone above and beyond. All information is clear, appropriate and correct. Essential question is clearly answered. Subject knowledge is evident throughout.</td>
</tr>
<tr>
<td><strong>Quality of Design.</strong></td>
<td>Quality is weak. There is no evidence of logical flow or use of new ideas. No visual impact.</td>
<td>Random presentation of material with little attention paid to quality.</td>
<td>Media used demonstrates adequate and clear sequencing of material using creative graphics.</td>
<td>Media shows superior evidence of continuity. There is a logical intuitive sequence of information.</td>
</tr>
<tr>
<td><strong>Storyboarding and planning</strong></td>
<td>Did not utilize storyboard during process or storyboard is incomplete.</td>
<td>Basic storyboard. Does not answer essential question. Referred to storyboard during project building process.</td>
<td>Strong storyboard that answers the essential question. Storyboard used as a guideline for project development.</td>
<td>Fully developed storyboard that answers the question and is organized in coherent pieces. Used storyboard extensively during project development for goal-setting, organization</td>
</tr>
<tr>
<td><strong>Presentation style including, eye contact, voice, and appearance</strong></td>
<td>No eye contact. Low, soft, or monotone voice. Script reading. Appearance is too casual or sloppy. Posture is slouched.</td>
<td>Some eye contact. Voice is soft or monotone. Appearance is casual, but neat. Presenter rocks back and forth.</td>
<td>Some eye contact, but only in one direction. Voice is steady and clear. Presenter shows some facial expression, uses appropriate gestures, and knows the content well. Presenter is dressed up and has good posture.</td>
<td>Eye contact moves among the audience. Presenter is confident, expressive, and know their content. They are dressed up or in appropriate costume. They have good posture, are mobile, and use facial expressions and gestures to make their point.</td>
</tr>
</tbody>
</table>
A storyboard is a combination of outlines and visual sketches that map out the contents and direction of your story. Use this storyboard to show what will happen in each scene of your animation. A scene can be made up of multiple frames.
Claymation in the Elementary Classroom

Fantastic Fractions Lesson

Identifiers

Grade Level
2–6

Subject
Math

Duration
5 class periods

Objective
Students learn that shapes can be divided into equal parts, that each part will be equal to its counterpart(s), and that all combined parts will equal one whole.

Description
Students create an animation to demonstrate the concept of fractions and how fractions are written in mathematical terms.

Application
Clay Animation, Frames™

Process

Authentic Task
After seeing Wallace & Gromit, the people at your local public access television station think it might be a good idea to add clay animation to their animated short films that play on Saturday mornings. They want to see some samples before they make their decision. To help them, you will create a sample clay animation that teaches kids about fractions.

Procedure

Step 1: Explore Fractions
Discuss the concept of fractions with your students. Help them understand the concept of less than 1, but greater than 0. Provide everyday examples of fractions, such as slices of pizza, orange segments, or squares of a chocolate bar. You can have students work along with you as you read The Hershey’s Milk Chocolate Bar Fractions Book by Jerry Pallotta and Rob Bolster.

Show how you can divide one object into many objects and how this translates into a written fraction. For example, when 1 chocolate bar is separated into 4 pieces, each piece equals ¼ of the chocolate bar.

Step 2: Brainstorm Objects
Have students work with their parents, or other family members, to brainstorm a list of foods and household objects that can easily be divided into fractions. Have students share their ideas as you create a master list of objects. Have students bring the objects to school and work as a class to discuss how the whole object can be divided into pieces that represent fractions.

Step 3: Brainstorm and Plan
Divide students into small groups of 3–5. Have student teams choose a common object from the list that the class brainstormed. Student teams should choose the object that they think will best help other kids learn about fractions.

Have students complete a print storyboard before beginning to build their animations. Their storyboards should demonstrate how they will show the object as a whole, how it will be divided into fractions, and how these fractional parts will be labeled. This will help you evaluate for comprehension before they begin working.

Step 4: Build the Objects and Create an Animation
When the storyboards are complete, provide clay and other materials for the students to create the object they will divide into fractions, as well as a background or any other props their animations will need.

Each team should take between 15 and 40 still pictures of their objects dividing into various fractions.

On the computer, students can use Frames to combine the still images into an animation. Be sure to have them create a title screen, label the different fractions, and add their names to a credits page.

If students finish a basic animation early, have them write a School House Rock style song to go with their fraction animations. You might suggest a rap-style song, with lyrics that rhyme.

Step 5: Share the Animations
When students are finished creating their animations, celebrate their success.
Claymation in the Elementary Classroom

Steps for Students
Creating Animated Fractions in Frames

Once you take pictures of your fractions object, you can use Frames to combine them into a Fantastic Fraction animation.

1. Connect your camera to the computer.

2. Launch Frames.

3. Click the Library button to navigate to the camera and import the frames you have captured.

4. Click and drag the pictures in the storyboard to change the order.

5. Click the New blank frame button on the toolbar to add more frames.

6. Click the Text tool on the Tools panel to add text. Use the handles and Format options to change how the text looks.

7. Click the Record tool on the Tools panel to add narration.

8. Select a frame or group of frames and adjust the Duration slider on the Tools panel to change the timing.

9. Click the Save button on the toolbar to save changes.

10. Click the Project button and choose Export to create an animated movie to share.

by having each team present its animations to the rest of the class or to another class learning fractions. As they present, ask team members to share what they learned about fractions as they built their animations. You may also want to share the completed animations on your web site or during school video announcements. You could also give copies of the animation to your local access television station to help young television viewers learn this important math concept!

Assessment

Begin assessing student understanding as you work with manipulatives and explore fractions. See how many fraction ideas students come up with on their own, with family help, and then create a class list of objects.

The objects students choose can indicate comfort with the topic. Are they choosing only objects you have already worked with? Is everyone in the group comfortable with the choice? You may want to have them write an argument about why they think a given object will be the best way to teach someone else about fractions.

Be sure to check the storyboards before students begin taking pictures. This allows you to correct any misconceptions before the project proceeds too far.

As students present the final animation, ask each team member for feedback about the process and what he or she learned during it.

Resources

Adler, David. *Fraction Fun.* 
ISBN: 0823413411

Cummings, Alyce. *Painless Fractions* 
(Barron's Painless Series). 
ISBN: 0764104454

ISBN: 0439135192

Math Forum: Fractions, Decimals, and Percents
http://mathforum.org/library/topics/fractions

No Matter What Shape Your Fractions Are In
http://math.rice.edu/~lanius/Patterns/

Standards

Common Core Standards for Math: Number & Operations - Fractions

Develop understanding of fractions as numbers

3.NF.1. Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

3.NF.2. Understand a fraction as a number on the number line; represent fractions on a number line diagram. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

NETS for Students—2007

1. Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

Students:

b. create original works as a means of personal or group expression.

c. use models and simulations to explore complex systems and issues.

2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

Students:

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.
Recipes4Success™ • An invaluable time-saving tool for your classroom

Recipes4Success is a comprehensive set of online resources designed to help infuse technology into your curriculum. Recipes4Success supports technology integration, providing tutorials and just-in-time references for Tech4Learning Tools. Integrated tools help you create printable graphic organizers you can use as project foundations, rubrics and checklists to support authentic assessment, and more.

Learn more at: recipes.tech4learning.com

Trading Post • The place to find and share integration ideas

The Trading Post is the place to share your ideas and find new ways to inspire your students! You can search the Trading Post for Pixie Activities, Share templates, and Twist designs. Do you have a unique project you created to help scaffold student learning? Share it with other teachers at the Trading Post!

Learn more at: tradingpost.tech4learning.com

Connect • How do you engage, create, and share?

Tech4Learning Connect is a place where you can ask questions, raise issues, share the fabulous projects their students are building, and showcase student learning. The Tech4Learning team is constantly amazed, inspired, and awed by the work students and teachers are doing with our tools. We hope you will use this forum to connect with colleagues and celebrate the work you are doing.

Learn more at: connect.tech4learning.com

Creative Educator • Use technology to foster creativity and engage students

Published twice a year, Creative Educator supports educators who are using software creativity tools in their classrooms. Creative Educator features articles on project-based learning, stories from educators, high-level lesson ideas, software tips, and more. The curriculum and creativity team at Tech4Learning hopes this magazine will inspire you and your students to try new projects and explore new possibilities with creativity tools!

Learn more at: creativeeducator.tech4learning.com

Pics4Learning.com • Free, copyright-friendly images for student projects

Pics4Learning.com contains over 25,000 free pictures you can use in educational projects with no copyright concerns. These copyright-friendly images are perfect for use in student projects, web pages, or conference presentations. Search the collection for presentation backgrounds, images to support your arguments, and photos that help you tell your story.

Learn more at: www.pics4learning.com