

By Candace Hackett Shively

Grow Creativity!

Focusing on **fluency**, **flexibility**, **originality**, and **elaboration** skills gives teachers and students an effective shortcut to developing creativity together.

Creativity matters. The world needs creative thinkers, scientists, engineers, leaders, and contributing workers. Yet research repeatedly shows that creativity is schooled out of us.

A shared vocabulary and lens for creativity helps teachers and students know what it means to “be creative” and where to start. J. P. Guilford’s FFOE model of divergent thinking from the 1950s offers four dimensions to describe creativity:

Fluency
Flexibility
Originality
Elaboration

If you think you don’t have time to incorporate creativity development into your curriculum, consider that FFOE makes time spent on projects worthwhile because creativity is supported, deliberate, and meaningful while still connected to the curriculum. Promoting and analyzing

creativity becomes a simpler matter of using the terms and involving the students, not teaching separate lessons or developing new materials. In fact, your student projects may already be building creativity but may just not have a vocabulary to talk about it.

Though imagined long before Web 2.0, this model is evergreen, and I have used it for decades with students and teachers. The terms are simple enough to use with students from kindergarten to AP, as well as with parents to publicly value and promote creativity across the curriculum.



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Fluency

The first step to problem solving or any creative endeavor is having as many ideas as possible to choose from, play with, research, or evaluate. Fluency is the ability to generate lots of ideas, which loosens up the creative wheels.

Brainstorming builds fluency. There's just one rule: Make sure everyone accepts all responses during brainstorming without argument. "Yeah, but" kills fluency and risk-taking.

Brainstorm together as a class or in groups to build fluency by making ongoing lists or concept maps. Talk about creative fluency as you brainstorm. Brainstorming on a "fluency wall," which could reside on an

interactive whiteboard (IWB), a wiki page, or a piece of butcher paper taped to the actual classroom wall, promotes longer-term fluency because it allows students to add more ideas as they come to them.

Kathy Hrabik of St. Mary's Catholic School in Berea, Ohio, suggests using Wordle word clouds, as her fifth graders do, to develop fluency while learning character analysis. Students first work together to brainstorm the characteristics of Santa Claus (or another character) and create a Wordle as a class, repeating the most important characteristics in the list so they appear larger in the word cloud. The students then create their own character-analysis word clouds, allowing them to master a literary concept while building creativity skills.

Here are some fluency prompts to get the juices flowing in the different curriculum areas:

Math. Describe ways to see the number 24 (number sense).

Science. List things that require energy.

Social studies. List things that can affect an election or the "costs" of human rights violations.

Reading or language arts. List word choice options, alternatives to "said," or words to describe anguish.

Some technology tools that help build fluency are Bubbl.us, Dabbleboard, Edistorm, Scribblar, Webspiration, and word cloud tools, such as Tagul, Tagxedo, or Worditout. (See "Creativity Tools" on page 14.)





Flexibility

Flexibility is the ability to look at a question or topic from a different angle. You can do this by shifting to an opposing viewpoint, angle, direction, time, place, or modality, or by putting yourself in someone else's shoes.

Flexibility generates a variety of ideas. Limiting one's point of view to a sole perspective limits possibilities. Flexible thinkers discover whole new areas of possibility, including different interpretations of scientific data. Flexibility also promotes interpersonal and cross-cultural understanding. Flexibility may also lead to originality, the most elusive aspect of creativity.



Originality

Originality is the quality that generates unique or unusual products, unexpected ideas, or the first of a kind. Originality requires the greatest risk-taking and is the crux of innovation, yet it is the most fragile dimension of creativity in school settings oriented to correct "answers." Originality is often disruptive in a school setting, but disruptive ideas often generate beneficial changes in the wider world.

Donna Benson, a teacher for gifted high school students, builds

Build flexibility through unexpected juxtapositions, such as combining different senses, time periods, people, or places.

Library Media Specialist Diane Darrow at Bel Aire School in Tiburon, California, often uses technology tools to build creativity skills. One activity promotes problem solving as third, fourth, and fifth graders use fluency and flexibility to list ways to "stop a squirrel from eating my peaches." They brainstorm varied approaches to the problem on Wallwisher and then sort the options. (See the results at www.wallwisher.com/wall/squirrelypeaches.)

Build flexibility through unexpected juxtapositions, such as combining different senses, time periods, people, or places. Try one of these prompts or generate unusual angles to fit your curriculum:

Science. List beneficial things about fossil fuels, how the British view U.S. reactions to the BP oil spill, or alternate hypotheses for lab inquiry.

Social studies. Describe how the Boston Tea Party would sound or how a tea barrel would retell it.

Language arts. Retell tales from a different character's point of view, debate/advocate from a position you firmly disagree with, or guess the key word behind a set of images or terms to "think backward."

Art. Look at objects the way a Cubist would.

Pose a question or situation to prompt a new angle or position, then have students take on that point of view using Blabberize; Bubblr; blogs and microblogs, such as Twitter or Edmodo; or chat tools, such as Today's-meet, comic makers, GlogsterEDU, or VoiceThread. Stretch mental flexibility with challenges such as Guess the Google or fastr by Flickr.

originality into career exploration projects. Students first analyze their strengths and talent areas and then create a technology-based magazine cover from 25–40 years in the future, featuring themselves in the cover photo. Their accompanying original magazine article builds on their goals and career paths and explains the cover photo. "Placing" the students' career thoughts in another time prompts originality amid serious goal-setting.

Keep in mind that originality is one facet of creativity that cannot be forced, only *reinforced* and publicly valued in our classrooms. Take time to say, "Wow! I never thought of that!" out loud, even if the idea is off the wall.

Originality may emerge from unlikely juxtapositions, similar to flexibility prompts. Try shifts in time, place, role, capabilities, and other senses:

Math. Show 24 as a shape.

Science. Create an illustrated lab report from the point of view of one of the chemicals or a Glog of the sights and sounds of a cell's life.

Social studies. Film a video of the Boston Tea Party on British YouTube circa 1773 or a colonist's "American Idol" audition in 1763.

Language arts. Make a visual poem about any topic that angers you, such as racism, pollution, or cruelty to animals, for example.

Creating products from scratch builds originality. Some favorite tools for this include Blabberize, Bubblr, comic makers, Dabbleboard, DoInk, GlogsterEDU, GoAnimate, Queezy, Scrapblog, Scribble, Tagxedo, Voicethread, Vuvox, Wallwisher, and Xtranormal.



Elaboration

Elaboration involves adding details, filling in the gaps, embellishing, and completing a creative idea. It fleshes out the ideas of working collaborators, carries an idea to fruition, or adds contextual detail needed to make something real, understandable, or aesthetically pleasing. Without elaboration, others would not see the full potential of a creative inspiration.

Elaboration is the easiest creative skill for teacher pleasers who are comfortable with school reward systems. Think about it: The poster or story with the most details (even if it's "fluff") often earns the highest grade. In contrast, very bright student "sponges" who learn for private enjoyment often do not elaborate to others unless prompted. In cooperative groups, elaborators play a process role worth underscoring: doing the legwork to be sure projects are complete.

Use interactive or online whiteboards with student-generated "starters" so students can take turns adding the next details. Adding detail to a graphic organizer or variations to a poetry pattern builds elaboration skill, as does turning basic drawings and shapes into detailed works of art.

Other ideas for building elaboration include:

Math. Explain steps on a poster or Glog. Decorate 3D shapes to show their dimensions and characteristics.

Science. Annotate a diagram or image of an insect, plant, cell, etc.

Social studies. Make campaign posters of colonial quotes or Civil War slogans, a poster of community helpers and their roles, or an annotated map of a "green" city.

Language arts/reading. Write a pass-along story or paragraph using a required list of words. Add figures of speech to an existing passage.

Music/art. Complete a drawing or musical phrase. Manipulate "filters" on digital images.

Any technology tool can elaborate with detail, depending on the demands of the project. Some of my favorites are Blabberize, Bubblr, Bubbl.us, Captioner, Comic makers, online whiteboards such as Dabbleboard, Fine Tuna, GlogsterEDU, Mr Picassohead, Pixlr, Prezi, Queekey, Scrapblog, Scribblar, Spell with Flickr, Stained Glass Collage, VoiceThread, Vuvox, or Webspiration.

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CREATIVITY RESOURCES

Creative Leadership: Skills that Drive Change by Gerard J. Puccio, Mary Murdock, Marie Mance: <http://tinyurl.com/478zrcs>

Dimensions of Creativity: A Model to Analyze Student Projects (rubrics, idea sharing for use of FFOE, and more): www.teachersfirst.com/istecre8/index.cfm

"Do You Have These 11 Traits of Highly Creative People?" by Dean Rieck, Copyblogger (creativity as a learned behavior): www.copyblogger.com/highly-creative-people

Thinking, the Expanding Frontier by William Maxwell and John Christopher Bishop (Guilford's model): <http://tinyurl.com/4j947uv>

"Why Creativity Now? A Conversation with Sir Ken Robinson" by Amy Azzam, *Educational Leadership* (September 2009): <http://tinyurl.com/4dh87h6>

CREATIVITY TOOLS

Here are some Web-based tools for developing **fluency (FL)**, **flexibility (FLX)**, **originality (O)**, and **elaboration (E)**:

Blabberize (http://blabberize.com/make)	FLX	O	E
Blog tools	FLX		
Bubblr (www.pimpampum.net/bubblr)		O	E
Bubbl.us (http://bubbl.us)	FL	FLX	E
Captioner (http://bighugelabs.com/captioner.php)			E
Comic makers (www.teachersfirst.com/spectopics/comics.cfm)	FLX	O	
Dabbleboard (www.dabbleboard.com)	FL	O	E
DoInk (www.doink.com)		O	E
Edistorm (www.edistorm.com)	FL		
fastr by Flickr (http://randomchaos.com/games/fastr)	FLX		
Fine Tuna (www.finetuna.com)			E
GlogsterEDU (http://edu.glogster.com)	FLX	O	E
GoAnimate (http://domo.goanimate.com)		O	E
Guess the Google (http://grant.robinson.name/projects/guess-the-google)	FLX		
Montage a Google (http://grant.robinson.name/projects/montage-a-google)	FLX		
Mr Picassohead (www.mrpicassohead.com)			E
Pixlr (www.pixlr.com)			E
Queeky (www.queeky.com)		O	E
Scrapblog (www.scrapblog.com)		O	E
Scribblar (www.scribblar.com)	FL	O	E
Tagul (http://tagul.com/#)	FL	FLX	
Tagxedo (www.tagxedo.com)	FL	FLX	O
Today'smeet (http://today'smeet.com)		FLX	
Twitter (http://twitter.com)		FLX	
Voicethread (http://ed.voicethread.com)		FLX	O
Vuvox (www.vuvox.com)		O	E
Webspiration (www.mywebspiration.com)	FL		E
Wordle (www.wordle.net)	FL	FLX	
Worditout (http://worditout.com)	FL	FLX	

How to Use FFOE

When you first begin using this model, ask yourself which FFOE skills you are promoting in each project assigned. Take the time to reflect on your own FFOE strengths to know why you chose certain activities. You might be surprised what emerges.

Louise Maine, a high school biology teacher in Punxsutawney, Pennsylvania, first reacted to my question about how she develops creativity skills in her biology classes by saying, “I am not sure I use creativity in my classroom. Biology, unfortunately, is so packed

that it is just content.” But a glance at her class wiki shows that FFOE is present in the many projects her students create and share, such as one that demonstrates understanding of classification by designing an organism using Scratch. (See the assignment at <http://tinyurl.com/4z4opn6>.) By completing the required steps, almost as a template, students plan (by brainstorming for fluency) and create (originality), including required details (elaboration).

How would Maine’s students benefit from using the FFOE terms? If certain students repeatedly get “stuck” with

such projects, taking the metacognitive step of realizing that they need to exercise more fluency would help give them somewhere to start. For instance, a small group could brainstorm.

Plans and projects to support classroom creativity will vary from elementary to middle to high school. At all levels, you want to:

- Use the FFOE terms aloud
- Involve the kids
- Differentiate

It’s easy to use the terms, even in content-packed secondary classrooms, such as Maine’s biology class. Use the words out loud as you and students build FFOE skills and go about your usual curriculum. For instance, you could say, “We’ll brainstorm what we know and build fluency at the same time,” “How else could we look at it? Try some flexible thinking,” “Can you elaborate on that?” or “Zack, that was a really original interpretation.”

But you should not be the only one to use the words. Students will pick up the terms with some help from you. Ask them (individually or informally) what is hardest for them when they must write a story or essay and what comes most easily. Try prompting beyond identical, safe responses to open-ended questions such as: “Let’s try to look at this with some flexibility. What would the Confederates say were the reasons?”

Most important, stop to welcome any original idea that pops up by saying something such as: “I never thought of that possibility. Did any of you? That’s an original one. Let’s talk about it.”

Eventually, the students will pick up the terms and the concepts behind them and—at their developmental level—use social interaction and metacognition to help themselves when they get stuck. For instance, Maine’s biology students could say, “I like your story, but you need to elaborate on the details in this part,” or “I can’t think of an idea for my poster. Can we brainstorm to help my fluency?”

FFOE IN PRACTICE

Here are a few more ideas for using the FFOE model to promote creativity in your classroom:

Talk to the students about where your own creative ideas come from.

Provide a real or electronic fluency wall leading up to projects and a “What If” graffiti wall for students to pose curriculum-related questions.

Give “originality points” or salute creative victories on a class wiki page.

Build gradually to open projects for those who need support, using templates, starters, or idea banks, but only for those who need them.

Prompt teacher pleasers and “safe” thinkers with unusual juxtapositions.

Include FFOE terms in rubrics and in parent conferences for the upper elementary level and beyond.

At the middle and high school levels, help kids figure out where and how they get their best creative ideas. Have them design an ideal creative environment, perhaps using a tool such as a Glog.



Once the students understand and use the terms, it is time to include FFOE in project assignments and rubrics, but not necessarily for a grade. As you plan, stop to analyze which FFOE skills upcoming class projects and assignments require. No task uses one FFOE skill in isolation, and the emphasis for each project can differ based on student or class needs.

If students understand the terms, you can involve them in differentiating. Find out which skills students struggle with. Ask them what the

hardest and easiest part of a project was for them. Including FFOE on rubrics will help you notice progress and help students notice their own creativity. Be sure to demystify for parents by explaining FFOE and a rationale for creativity at back-to-school night and on your class webpage so they will not be surprised by the rubrics. Share some creativity resources with more involved parents.

When you include FFOE in rubrics, focus only on certain criteria for that student—such as one strength and one need—and ignore others on the rubric. An elementary project rubric for a plant/animal timeline could include a flexibility criterion for one child (a timeline to tell the story from the point of view of the animal or plant) and elaboration for another (a timeline with extra details in both words and pictures and details to fit in with the rest of the information). At the middle school level, students can negotiate which FFOE areas to include as a creative strength or need and self-evaluate these FFOE focus areas.

Individual students can stop and think about their FFOE skills as part of self-evaluations on project rubrics. Including FFOE elements as optional, ungraded rubric elements is a way for them to “grow” their creativity skills and understand that creativity is valued and explainable.

Together, you and your students can use FFOE to embed creativity in any subject and any grade. Using Guilford’s model gives both teachers and students a focused approach to “being creative” and building skills that last far beyond a 42-minute class period.



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for Learning. She blogs about creativity and teaching at <http://blog.teachersfirst.com/thinkteach> and will offer a new creativity presentation at ISTE 2011.



innovation is

“Discovering and using a new pattern of thought and action to address one or more existing situations.

It’s important to realize that the situations, the questions, the problem areas, are not what is innovative. It’s the use of a new approach and perspective leading to a different action or assessment that is innovative.”

—Linda Ballas
Avant Assessment
Oregon

For more on innovative learning technologies, visit the SIGILT wiki at sigilt.iste.wikispaces.net.

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