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### Applied Weaving: Mapping Creativity Into Every Strand of a Curriculum

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State University of New York College at Buffalo

International Center for Studies in Creativity

Applied Weaving:

Mapping Creativity Into Every Strand of a Curriculum

By

Jonathan Garra

Submitted in partial fulfillment of the requirements

for the degree of Master of Science

May 8, 2017

## APPLIED WEAVING

## Abstract

The purpose of this paper is to explore the value of adding creativity skills into curriculum mapping documents at the elementary and middle school level, with the goal of gaining some clarity regarding the intrinsic value and ubiquity of teaching for creativity. The language for the maps was taken from *Weaving Creativity Into Every Strand of Your Curriculum* (Burnett & Figliotti, 2015). The maps were developed after observations of and meetings with classroom teachers in order to assure their accuracy and authenticity. Because the intended purpose of a curriculum map is to provide a sweeping view of targeted content and skills, the maps are non-specific by their nature. As a result, a major challenge of this project continues to be how to find ways to make these maps meaningful to the greater community, who is largely unaware of the meaning and value of creativity. For the purposes of this project, creativity skills were added to the curriculum maps of grades five through eight at the Elmwood Franklin School in Buffalo, New York.

Keywords: Curriculum map, creativity skills, teaching for creativity, teaching creatively, teaching creativity

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State University of New York College at Buffalo

International Center for Studies in Creativity

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Thank you to the Elmwood Franklin School community for challenging me, encouraging me, advocating for me, and supporting me through this degree. I would not be an educator who whole-heartedly embraces creativity without the safety, guidance, and acceptance of my school community. Thank you, especially, to Tony Featherston, Rosemarie Beres, and Margot Vincent for encouraging me to teach for creativity before I even knew creativity was a thing.

Thank you to Cyndi Burnett, who introduced me to the world of creativity, and who has patiently and deftly guided me through this experience. Thank you for your advice, support, guidance, provocations, and frank criticisms.

Finally, thank you to my mother, Maureen Garra, who somehow tolerated and encouraged my creativity, and who fully accepted my uniqueness, even though it led to more headaches than academic successes.

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### **Section One: Background to the Project**

#### **Purpose and Background**

The purpose of this master's project is to incorporate creativity skills into the curriculum maps of Elmwood Franklin School in Buffalo, New York. Creativity is an important and valuable tool, yet it is widely misunderstood. My hope for building creativity into curriculum maps is that this will bring broader understanding and acceptance to the value of teaching and using creativity in schools, as well as unify the language and practices used by the staff to help cultivate our students into independent and confident learners.

A curriculum map is a tool used by schools in which curriculum-related data is collected and organized in order to clearly identify and highlight values, main ideas, and methods of teaching. Over the past two years, Elmwood Franklin School has made a great effort to develop and refine its curriculum maps for its pre-K 3 through eighth grade classes. Curriculum maps are used for a variety of reasons, including sharing curriculum information with the community, as well as helping teachers build on content and collaborate more effectively with each other.

In addition to developing curriculum maps, Elmwood Franklin has done significant work around identifying, defining, and promoting its core values. These core values include community, character, creative inquiry, and individual excellence. There is a strong emphasis on creativity within the Elmwood Franklin community, and this is highlighted by its adoption of the Reggio Emilia-inspired educational philosophy in its pre-school division, as well as its eighth grade IDEA Project— an interdisciplinary capstone project in which eighth grade students tackle a long-term creative inquiry project.

Personally, I am excited about the opportunity to bring more clarity to what creativity is and what it might look like in the classroom. Throughout my studies in creativity, I have



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continually found myself frustrated by the misunderstandings and dismissal of creativity that I encounter outside the walls of the International Center for Studies in Creativity. Even those in the greater community who embrace creativity are generally misinformed about what it really is. Mapping creativity will help inform students, teachers, administrators, parents, board members, and other community members of the value and ubiquity of creativity.

### **Creativity Concepts and Skills**

The content of a curriculum map typically includes content, skills, assessment, essential questions, and resources. While schools often align their curriculum with the core values of the school, those values conventionally are not explicitly addressed in the curriculum maps. For example, if “cultivating leadership” is a core value of a school, teachers would not include ways in which they provide opportunities for leadership into their curriculum maps, even if they deliberately provide opportunities for leadership in their classes. Although mapping values is not a norm that exists within typical curriculum maps, it is not improper or inappropriate to do this. While creativity is a core value of Elmwood Franklin, and while the teachers and curriculum are generally progressive, there is still a significant amount of ignorance toward, and skepticism of, creativity among the community. I hope that mapping creativity in the curriculum will challenge people’s conceptions of creativity, and bring more acceptance and excitement toward the work being done at Elmwood Franklin.

I have been unable to find another school that has mapped creativity into a curriculum. As a result, I created my own way to map creativity. Any motivated individual could accomplish this while knowingly or unknowingly applying creativity skills and processes. However, having a deliberate process and deep knowledge of creative tools and habits challenged me to not only

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successfully complete several grades of curriculum maps, but also to grow and understand my creative strengths and challenges even more deeply.

## Section Two: Literature Review

### Introduction

My pertinent literature includes texts on curriculum mapping, as well as texts on teaching creatively versus teaching for creativity. In addition to the following texts, I used my colleagues, administration, and my advisor, Cyndi Burnett, as critical resources.

### Curriculum Mapping

Berezki, E. O. (2016). Mapping creativity in the Hungarian National Core Curriculum: A content analysis of the overall statements of intent, curricular areas and education levels. *The Curriculum Journal*, 27, 330-367.

I expected that this article was going to tell me how the Hungarian National Core Curriculum mapped creativity into its curriculum maps, as well as how it found acceptance. However, this article was nothing like what I expected based on the title, but it did provide several useful ideas for creating a framework from which I worked to clarify my objectives and gain acceptance from the community. These questions include:

1. In what ways is creativity domain specific? In what ways is creativity domain general? How might this impact curriculum maps at the elementary level? In what ways might this enhance or impact the translational nature of creativity skills?
2. What are the barriers and enablers of creativity within the curriculum? Within the organization? The community?
3. How might I unify the organization's messages and language around creativity?
4. What is the value of creativity?

Moseley, D. (2005). *Frameworks for thinking: A handbook for teaching and learning*. Cambridge, England: Cambridge University Press.

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Moseley reviewed several frameworks for thinking, teaching, and learning in *Frameworks for Thinking*. Two of these frameworks are the Williams' model for developing thinking and feeling processes, and Gouge and Yates' ARTS Project taxonomies of arts reasoning and thinking skills. These frameworks, particularly the Gouge and Yates' framework, provide an important perspective that will help me to make my curriculum maps more meaningful to the broader school community as I take this project forward. According to Gouge and Yates (2002), creativity "requires mental discipline, previous experience and a firm grounding in knowledge" (p. 137). This stance, that creativity is about discipline, organization, and knowledge, is critical to gaining acceptance from a fairly traditional parent body. Most interestingly, and perhaps most importantly, they stated that the "initiative is intended to be a challenge to teachers 'to restructure their attitudes and behaviour as mediators of cognitive development'" (2002, p. 137). This idea that educators can accelerate the cognitive development of middle school students is an incredibly motivating proposition that supports my desire to map and disseminate creativity.

Rubiconatlas. (2016, May 18). Curriculum spark: Articulating the "why" behind curriculum mapping with Maureen Cohen [Video file]. Retrieved from

<https://www.rubicon.com/articulating-the-why-behind-curriculum-mapping/>

The what, why, and how of curriculum mapping was a crucial piece of this project, and so it was important to keep in mind the basics of this. The purposes of the curriculum map are to align to school standards, improve student learning, foster professional collaboration, communicate expectations, provide accountability, support school initiatives, and explore horizontal and vertical alignment of curriculum. These same purposes will apply in some degree to creativity. For example, the maps will provide an opportunity to look at creativity skills across

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divisions, grade levels, semesters, and more.

### **Creativity**

Burnett, C., & Figliotti, J. (2015). *Weaving creativity into every strand of your curriculum*.

Buffalo, NY: Knowinnovation.

This book is an invaluable resource for teaching for creativity at all levels. I find that this book is an important tool for convincing teachers that they do explicitly teach for creativity, even if they do not do so intentionally. The skills targeted in this book, which are largely based on the research of E. Paul Torrance (1999), have become the language of creativity in my curriculum maps. Those skills are as follows: produce and consider many alternatives; enjoy and use fantasy; highlight the essence; look at it another way; playfulness and humor; be original; be aware of emotions; put ideas into context; make it swing, make it ring; keep open; get glimpses of the future; break through and extend the boundaries; curiosity; embrace the challenge; mindfulness; and tolerate the ambiguity.

Kleiman, P. (2008). Towards transformation: Conceptions of creativity in higher education.

*Innovations in Education and Teaching International*, 45, 209-217.

This article inspired me to think about what creativity means in elementary education, and what the school's creativity-related goals should be. For example, creativity might be a means to personal development; a means to innovation and/or original thinking; or a process approach to finding success in education.

McWilliam, E., & Dawson, S. (2008). Teaching for creativity: Towards sustainable and

replicable pedagogical practice. *Higher Education*, 56, 633-643.

Reading this article felt like I was reading my unwritten thoughts on what I hope to accomplish and why. The authors begin by stating the importance of creativity in education:

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“The complex questions of the future will not be solved ‘by the book’, but by creative, forward-looking individuals and groups who are not afraid to question established ideas and are able to cope with the insecurity and uncertainty that this entails” (p. 634). They concluded the article by stating:

This article is an attempt to begin a ‘second generation’ conversation about how to foster creative capacity through making explicit a number of principles that are not yet widely understood or enacted in the academy, particularly in our own Australian higher education context. The intent is not to call for more ‘progressive’ or ‘student-centred’ education, but for a radical re-engagement in pedagogical work, by challenging the taken-for granted ‘traditional’ and ‘progressive’ understandings that are in evidence in the daily work of academic teachers. (p. 641)

Robinson, K. (1999). *All our futures: Creativity, culture and education*. Report to the National Advisory Committee on Creative and Cultural Education. London: National Advisory Committee on Creative & Cultural Education.

In the words of the report, “A national strategy for creative and cultural education is essential to that process. We put the case for developing creative and cultural education; we consider what is involved; we look at current provision and assess the opportunities and obstacles” (p. 5). This report’s thorough investigation of creativity and its role in education was extremely helpful in differentiating *teaching creativity*, *teaching creatively*, and *teaching for creativity*.

Sternberg, R. J. (2015). Teaching for creativity: The sounds of silence. *Psychology of Aesthetics, Creativity, and the Arts*, 9, 115.

This article is exactly why I want to successfully accomplish this master's project. In it,

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Sternberg claimed, “A more pertinent article might be on why, after countless pleas to teachers to teach for creativity, so little teaching for creativity seems to be happening” (p. 115). Counter to this claim, I assert that good teachers teach for creativity in almost all lessons, whether deliberately or not. The misunderstanding comes in part from information that was gathered either by self-reporting (from those who do not understand creativity) or from a data analysis that scans school documents for creativity language. Even someone who deliberately teaches for creativity may not use creativity language in a curriculum document. I believe that Sternberg was misguided in his claim, and I think that *accurately* mapping creativity skills into curriculum maps can help bring awareness to the reality that creativity skills and processes are ubiquitous—especially in education. As Jackson (2006) stated, it is “not that creativity is absent but that it is omnipresent.”

In addition to these texts, I learned a great deal from observing the everyday classroom interactions of my colleagues, and especially from engaging with them in reflective practices about their content. I believe my colleagues were my greatest resource in completing this project. Other resources that either focused or expanded my views on this project include:

Jacobs, H. H. (1997). *Mapping the big picture: Integrating curriculum & assessment K-12*.

Alexandria, VA: Association for Supervision and Curriculum Development.

Jacobs, H. H. (2004). *Getting results with curriculum mapping*. Alexandria, VA: Association for Supervision and Curriculum Development.

Kalin, N. M. (2016). We’re all creatives now: Democratized creativity and education. *Journal of the Canadian Association for Curriculum Studies*, 13, 32-44.

### Section Three: Process Plan

#### Introduction

In order to execute my plan, I began by generating the specific language to be used in the curriculum map, along with concise definitions of these terms. The published curriculum map will include a page for definitions and elaborations. I predominantly used Burnett & Figliotti's *Weaving Creativity Into Every Strand of Your Curriculum* (2015) as a guide in this process. Once I settled on the language, I began meeting with and observing teachers in order to collect data and accurately map creativity skills into the curriculum maps. Concurrently, I did great deal of exploring how I might make these curriculum maps meaningful to those in the school community without knowledge of creativity.

Before I began work on developing the curriculum maps, I first needed to (a) identify the skills I wanted to target, (b) develop the language around those skills, and (c) concisely describe each skill. *Weaving Creativity* (2015) was an invaluable resource for accomplishing this task. The book, inspired by the research of E. Paul Torrance (1999), identified and described the sixteen most significant creativity skills that are employed by highly creative students. Using the book, I created the following “one-sheeter” that identifies and describes the creativity skills that my curriculum maps highlight:



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**Embrace curiosity** - Encourage and celebrate students' natural curiosity by exploring their questions.

**Produce and consider many alternatives** - Deliberately engage in divergent thinking (brainstorming) to generate a variety of possible solutions rather than choosing the first or most obvious solution.

**Enjoy and use fantasy** - Encourage students to use fantasy and imagination to explore unknown possibilities.

**Highlight the essence** - Identify that which is most important or essential.

**Look at it another way** - Look at things from multiple perspectives, views, or mindsets.

**Practice mindfulness** - Allow students to be fully immersed in the present moment and aware of their senses.

**Be playful and use humor** - Bring fun, playfulness, and humor into the classroom.

**Be original** - Encourage students to let go of the obvious and search for more novel options. How might  $2+2=7$ ?

**Be aware of emotions** - Teach students to be conscious of their feelings, as well as the feelings of those around them.

**Make it swing, make it ring** - Use kinesthetic and auditory senses to explore content.

**Keep open** - Keep open to new/other ideas. Do not choose the first, easiest, or quickest solution and move on.

**Embrace the challenge** - Help students develop openness for seeing challenges as opportunities for growth. Encouraging students to think beyond basic requirements.

**Get glimpses of the future** - Predict, explore, and imagine opportunities and situations that do not exist yet.

**Break through and extend the boundaries** - Think outside of the prescribed requirements. Seek truly creative options that are both novel and pragmatic.

**Tolerate the ambiguity** - Provide opportunities for students to embrace (or manage) uncertainty.

**Put ideas into context** - Put stories, information, data, ideas, people, etc. into a larger framework, and understand the symbiosis of the relationship.

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The next step in the process was to begin listing and organizing these creativity skills into the school's curriculum maps in a way that was as authentic and accurate as possible. Mapping the classes I teach was a straightforward, reflective process. I found that the units I most enjoy teaching are the ones that include more emphasis on creativity skills and student-centered learning. I discovered that units that include open-ended, skills-based projects are units that focus heavily on creativity skills. Perhaps less obviously, I found that units consisting of research-based writing assignments also inherently emphasize creativity skills.

Date	Task	Hours
January 9-20	-Meet with administration about plan and begin reading about curriculum writing as well as creativity in education -Write up sections 1-3	20
January 23-31	-Begin observing teachers and documenting targeted creativity skills -Begin developing the language used for the curriculum documents	15
February 13-24	-Read to differentiate teaching creatively, teaching for creativity, and teaching creativity -Meet with administration about formatting of curriculum documents -Observe teaching	10
February 27-March 17	-Reach out to creativity and education leaders to explore how to make my project meaningful to those without creativity experience -Develop template and finalize language of curriculum maps -Observe teaching	10
March 18-April 2	-Collect curriculum documents and begin adding creativity skills in each document	30
April 3-April 21	-Meet with teachers to share and refine curriculum maps with creativity skills -Write sections 4-6	15
April 24-May 1	-Final write up with revisions	5
June 12-16	-Present project to faculty	5
All	Total hours	110

## **Section Four: Outcomes**

### **Introduction**

One of the things that drew me to this project was the potential to create a concrete, visible, unambiguous product that could be used as a vehicle for educating my peers and school community about creativity. While I had little passion for curriculum mapping, I have a strong passion for demystifying creativity, and I saw the creation of these maps as an avenue to my ultimate goal, which was educating my school community about the ubiquity and value of creativity. As a result, I expected that creating the curriculum maps would be a largely dispassionate undertaking that would lead to deep, meaningful conversations down the road. However, over the course of this semester I gained an appreciation for the value of curriculum maps, as well as an appreciation for the process by which they were created.

### **Product outcomes**

The following is a sample from one unit of the seventh grade social studies curriculum maps that includes student-centered work, as well as a research paper.

### **Sample unit from seventh grade social studies curriculum map**

Grade: 7

Course/Subject: Social Studies

Unit Title: Civil War and Reconstruction

Timeframe: weeks 19-25

Teacher: Garra

#### **Essential Questions:**

- What political, social, and economic factors caused the Civil War?
- What were the conflicting perspectives on slavery?
- What were the political, social, and economic effects of the Civil War?
- What happened to the South after the War?
- What were the long term economic, political, and social implications of Reconstruction?

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### Content:

As a result of this study, students will know and understand:

- The political, social, and economic factors that caused the Civil War
- Ways in which America did not uphold its promises of liberty for all
- The political, social, and economic effects of the Civil War
- The long-term economic, political, and social ramifications of Reconstruction

### Skills:

As a result of this study, students will be able to:

- Analyze and understand symbolism, specifically referring to political cartoons
- Create cause and effect timelines
- Develop and support an argument through facts and evidence
- Work in groups and share responsibility
- Conduct civil discussions
- Take notes that reflect understanding
- Research, note take, and organize
- Write in an organized, coherent manner (research paper)
- Properly use parenthetical citations and a works cited page
- Read a map

### Assessment:

- Class discussion
- Ungraded pop-quizzes
- Exit tickets
- Homework
- Unit test
- Article response
- Creative project
- Research paper

### Materials, Resources, & Technology Integration:

- *Manhunt: The 12 Day Chase for Lincoln's Killer*
- Period-specific documents and political cartoons
- iPads
- Class notes

### Differentiation:

- Provide materials that reflect a variety of cultures and home settings
- Offer work places to work quietly and without distraction, as well as places that invite student collaboration
- Allow students to work alone or in small groups on their products
- Give students options of how to express required learning
- Present ideas through both auditory and visual means
- Provide individual feedback on writing
- Teach with diverse materials—not just text

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### Creativity:

- Embrace curiosity
- Embrace the challenge
- Produce and consider many alternatives
- Highlight the essence
- Look at it another way
- Be original
- Keep open
- Break through and extend the boundaries
- Tolerate the ambiguity
- Put ideas into context
- Enjoy and use fantasy
- Be playful and use humor
- Be aware of emotions
- Get glimpses of the future

Of the sixteen creativity skills identified by Torrance (1999) and Burnett & Figliotti (2015), this unit focuses on developing fourteen skills. As a student of creativity and as the creator of this tool, I find a great deal of value in these maps. However, even though the skills are clearly listed for each and every unit, there remains a limited amount of value in these maps because of their nature. For example, it is unclear how often and to what degree these skills are emphasized. To improve the map in a way that would help to achieve my goals, the maps would provide examples and some context to bring more clarity, and consequently add value. The following is an example of an ideal curriculum map (“creativity” section only) that includes some specific examples to clarify the meaning of the terms and illustrate the skills that are included.

### Creativity:

#### Embrace curiosity

- In all class discussions students are encouraged to share thoughts, ideas, comments, and questions that are related (directly or tangentially) to the content. In most cases, we will immediately discuss or address student comments and questions.

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- If a student asks a question to which I do not know the answer, there is a wall in my classroom dedicated to posting these questions for future exploration, which usually occurs during the last ten minutes of class each Friday.
- I routinely ask open-ended questions that do not have a single, correct answer.
- I require students to use the “five whys” technique when researching.

### Embrace the challenge

- I frequently share with students my experiences with writing research papers, and this almost always includes examples of strategies I employ to overcome challenges in the writing process.
- I strongly encourage students to take risks (and potentially fail) to develop their writing skills.
- I frequently ask students for a good wrong answer. I ask them to explain (a) why their answer is wrong, and (b) why their answer has value.

### Produce and consider many alternatives

- After reading the Emancipation Proclamation, students are asked why Lincoln might have issued the proclamation. Rules for divergent thinking are reviewed and students are facilitated through “stick-em-up brainstorming” in an effort to produce hundreds of answers to this question.
- Before beginning the research process, students are facilitated through divergent thinking processes in order to generate hundreds of potential research topics.

### Highlight the essence

- When note-taking for research, students are required to find the main ideas and use information pertinent to their topic.
- When studying Abraham Lincoln and his presidential decisions and policies, students compose 140 character Tweets to capture the essence of Lincoln’s plans.
- When reading difficult primary sources, students are required to interpret and simplify complex passages.

### Look at it another way

- Students read primary source documents from enslaved Africans, slave owners,

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abolitionists, and politicians.

- Students develop social and economic policy based on various assigned social and political roles.
- Students are encouraged to think about how different geographic regions teach and learn about the Civil War and Reconstruction.

### Be original

- While engaging in divergent thinking, students are encouraged to seek wild and unusual ideas.
- When writing research papers, I emphasize the creative nature of composing a sentence that never before existed.
- During class discussions, students are encouraged to share “good wrong answers.”
- For homework, students are asked to make up original definitions for content-related terms.

### Keep open

- During class discussions I almost never ask questions that result in a single correct answer. I want students to keep open to the idea that there is rarely one answer to any question.
- When exploring research topics, I encourage students to never just settle on the topic they think they love, and I require them to continue exploring other options.
- When group problem-solving, students are guided through appropriate ways to work together productively. This includes keeping open to others’ ideas, and keeping open to possibilities.

### Break through and extend the boundaries

- Topic selection for research paper includes any topic during the Civil War era.
- Students are asked to explain how various Civil War policies are related to an appliance they would find in a kitchen.
- When trying to solve a problem, we discuss the paradigm within which we are working and how we might change it.

### Tolerate the ambiguity

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- Students are given the answers to questions, but no explanation. Their task is to create the explanation.
- I assign deliberately ambiguous homework, and when it is due we discuss the obstacles students found, as well as their resolutions to overcome the obstacles.
- Project directions are open-ended to encourage originality.

### Put ideas into context

- As a class, we are regularly comparing Civil War era policies (social, economic, and political) to previously learned eras.
- As a class, we are regularly comparing Civil War era policies (social, economic, and political) to modern day.

### Enjoy and use fantasy

- Students are asked to make up terms and definitions for the Civil War era.

### Be playful and use humor

- I occasionally teach class wearing a fake mustache.
- I often start class with a funny story.

### Be aware of emotions

- When exploring sensitive historical topics, particularly regarding oppression and discrimination, students are asked to put themselves in the shoes of those who lived through these events, and/or to put themselves in the shoes of their classmates who have some connection to marginalized groups.
- When reading the Gettysburg Address, I always get goosebumps and watery eyes. I share this with my students and discuss why—even if they judge me for it.

### Get glimpses of the future

- Students are asked to predict the social conflicts of the future.
- When discussing the impacts of the telegraph on the Civil War, students are asked to make analogies to texting, emailing, and faxing, and are asked to imagine what future communications technology might be developed.



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While this highly detailed version of the curriculum maps is helpful for accomplishing my goals, it is not an acceptable addendum to a curriculum map because curriculum maps are not designed to provide this degree of specific information. Curriculum maps are intended to give an over-arching, big-picture view of the school's content. This fact, coupled with my belief that creativity is largely misunderstood and under-appreciated, means that I will need to spend a great deal of energy developing ways to make these maps meaningful to those without knowledge of creativity. However, these sparsely detailed maps do still produce valuable information. For example, we will be able to easily discover skills that we strongly emphasize, as well as skills that we neglect. We will also be able to track skill development across grade levels.

### **Content mapping the curriculum of others**

In contrast to mapping my own curriculum, mapping creativity into the curriculum of others was a much more time-consuming task. I began by assessing the personality characteristics of the teacher as well as the nature of the content to compose a generic list of creativity skills that were likely addressed in every unit. Next, I observed several lessons to confirm or revise this list. After further developing this list, I read through the content maps to determine what other skills were targeted based on the content, lessons, projects, and practices of each particular unit. After completing this step in the mapping process, I met with the classroom teacher to review the skills that were likely present in all units, and we worked to sort through the individual units to identify creativity skills as accurately as possible. The following is an example of a curriculum map that was produced as a result of the aforementioned process.

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### Sample unit from fifth grade math curriculum map

Grade: 5

Course/Subject: Math

Unit Title: Percent and Probability

Timeframe: week 22-24

Teacher: Mrs. Smith

Essential Questions:

- How do you solve problems involving percent and probability?
- How do you solve problems involving ratios?

Content:

As a result of this study, students will know and understand:

- Percents and Fractions
- Circle Graphs
- Percents and Decimals
- Probability
- Sample Spaces
- Making Predictions
- Solving a Simpler Problem
- Estimating with Percents

Skills:

As a result of this unit, students will be able to:

- Read, write and identify percents of a whole.
- Estimate a percent of quantity.
- Sketch and analyze circle graphs.
- Express percents as decimals and fractions.
- Construct sample spaces using tree diagrams and lists.
- Predict the actions of a larger group using a sample.
- Solve problems by solving a simpler problem.
- Estimate the percent of a number.

Assessment:

- Ongoing informal assessment on whiteboard
- Homework completion
- Quizzes and tests
- Exit question responses

Materials, Resources, & Technology Integration:

- Mid-chapter quiz
- Chapter quiz
- Math Connects- Course One textbook
- iPad
- Dice

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- Resource Masters handouts

### Differentiation:

- Untimed tests and quizzes
- There are six forms of chapter tests and an extended response test
- Superstar enrichment questions
- Math Olympiad contest

### Creativity

- Embrace curiosity
- Embrace the challenge
- Look at it another way
- Keep open
- Be playful and use humor
- Put ideas into context
- Be aware of emotions
- Get glimpses of the future
- Tolerate the ambiguity

### **Process outcomes**

As a result of the mapping process, I have already begun work on my overarching goal of demystifying and disseminating creativity in my school community. In order to ensure the accuracy of these maps, this project was a collaborative one that required the input of my peers. I found that the act of creating these maps led to interesting, refreshing, and valuable conversations with my peers about what creativity is, and how to teach for it. I continue to be inspired by the openness of my peers regarding their teaching. I hope that the thoughtfulness and positivity with which these maps were received proves to be prophetic as I continue to develop this project.

### Section 5: Key Learnings

I have always believed that my most important job as an educator is to prepare my students for life beyond the walls of my classroom. As evidence of this, on the first day of seventh grade history, when I first meet my incoming seventh graders, we discuss content versus skills, and I explain that the skills that we work to develop in my class are far more important to me than the content we will explore. I want my students to think for themselves, support their ideas with facts and evidence, solve problems independently, write well, and advocate for themselves— and I accomplish this by teaching for creativity and explicitly teaching creativity. Before embarking on this project, I hoped to gain some clarity on the benefits and challenges of teaching creatively, teaching for creativity, and teaching creativity.

#### Teaching creatively

Teaching creatively, or creative teaching, was defined by the National Advisory Committee on Creative and Cultural Education report (1999) as “using imaginative approaches to make learning more interesting and effective” (p. 89). There is no doubt that teaching creatively is beneficial for effectively teaching content. There are also correlations to support the belief that “teaching for creativity involves teaching creatively... Young people’s creative abilities are most likely to be developed in an atmosphere in which the teacher’s creative abilities are properly engaged” (p. 90).

#### Teaching for creativity

The NACCCE report (1999) explicitly differentiates creative teaching from teaching for creativity by identifying three main principles of teaching for creativity: *encouraging*, *identifying*, and *recognizing*. According to the report, “the first task in teaching for creativity in any field is to *encourage* young people to believe in their creative potential, to engage their sense

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of possibility and to give them the confidence to try” (p. 104). *Encouraging* is primarily accomplished through the establishment of a creative classroom climate. In order for students to feel comfortable and confident, they must trust the classroom culture established by their teacher and peers. The second task in teaching for creativity is “*identifying* young people’s creative abilities [which] includes helping them to find their creative strengths — to be in their element” (p. 104). This principle requires the teacher to have some knowledge of creativity skills and processes in order to identify these traits within and among the students. Burnett & Figliotti’s *Weaving Creativity* (2015) is a simple yet thorough resource that would enable teachers to have confidence in identifying creative teaching as well as the creative habits of their students. The last principle in teaching for creativity is *recognizing*. “Recognising and becoming more knowledgeable about the creative process can also help foster creative development; teaching for creativity can assist young people in understanding what is involved in being creative and help them become more sensitive to their own creative processes” (p.104). Essentially, *recognizing* means working with students to develop metacognition, particularly relating to creativity skills, so that the students are reflecting on their strengths and challenges as learners, and highlighting their strengths while working to develop their challenges.

### **Teaching creativity**

Teaching creativity is a straightforward undertaking in which students are explicitly taught about creative processes, habits, and strategies. I think a description of teaching creativity should also include helping students identify their creative styles and preferences in order to maximize their learning and growth. I believe that teaching creativity is the most beneficial option, but I think it is also the least likely outcome because other, more widely-accepted content and skills are meant to be taught, or are mandated by state standards.

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### **Key learnings regarding teaching creatively v. teaching for creativity v. teaching creativity**

As previously stated, I expected to conclude that teaching creativity was far superior to teaching creatively and teaching for creativity. After months of observing, reflecting on, and mapping curriculum, I have come to greatly appreciate the strengths and benefits of blending all three options. I still believe that teaching creativity would be immensely beneficial, but I am unsure about how middle school students would translate this learning into other content areas. Also, teaching creativity is a specialty that would require time in the schedule, support from administration, and a trained teacher. With these potential barriers in mind, I am unconvinced of the viability of teaching creativity. Teaching *creatively* is an important ingredient in this mixture, but it can be a largely passive strategy that does not necessarily engage with the students' process development. The teacher might work hard to develop creative lesson plans and deliver content creatively, but students do not necessarily engage with a creative process. Teaching for creativity can be a way to teach creatively and teach creativity. Additionally, effective teachers already teach for creativity on a daily basis, not only when delivering content, but, more importantly, by explicitly requiring students to practice skills and processes. If students are sitting in rows, reading from a textbook, listening to stories, and watching videos, they can learn a tremendous amount of content. But if they know all the necessary names and dates of the history of the American Revolution, but they struggle to think for themselves and put their information into context, I find little value in that kind of education. I believe the most effective teachers are those who are deliberately (or accidentally) teaching for creativity on a regular basis.

### **Identifying passion through teaching for creativity**

Over the course of this semester, I discovered that teaching for creativity allows individuals to take ownership over the learning process. For example, I found that the lessons

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and units that I most enjoy teaching are also the lessons and units that include the most targeted creativity skills. Because I am able to confidently administer the curriculum as I designed it, I am able to embrace creativity in ways that most other teachers in state-funded schools are not able. Additionally, teaching for creativity allows students some autonomy regarding what they learn and how they represent their learning. Because teaching for creativity allows for these opportunities to feel empowered about one's education, I believe that both students and teachers make tremendous strides toward self-discovery, rather than simply acquiring knowledge.

### **The value of data**

As a result of mapping creativity into our curriculum maps, I discovered a new appreciation for the value of data. Because of the “stripped down,” straightforward nature of these curriculum maps, I realized that there are certain creativity skills that are emphasized in almost every class, and that there are some creativity skills that are barely included at all. The skill that stands out as the most neglected in my school's maps is “mindfulness.” Interestingly, the head of my school has brought up that he would like to begin our school day with meditation. I liked this idea when he first shared it, but now I am champion of this idea because it is the skill that is most neglected in our curriculum. In addition to being able to more clearly see this kind of school-wide data that helps inform decisions, these maps also allow for comparisons among subject areas, grade levels, and our Upper and Lower School divisions.

### **Educational revolution?**

The more I engage in thinking about the debate between teaching content versus teaching skills, the more firmly I believe in the value and importance of focusing on skills. This strong focus on skills has pushed me into a position of believing that a drastic change is in order regarding what and how we teach. With a focus on skills, I have been led to deeply question why

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students are taught by age, rather than skill level. In our current educational system, a twelve-year-old child is in seventh grade, almost without exception, regardless of how well he or she reads, writes, solves problems independently, or communicates. Those children who struggle or fail to meet the expectations of their grade level are seen as lazy, incompetent, or both. Why do we judge the academic abilities of children in a way that creates winners and losers? The focus of education should be on meeting children where they are, and encouraging growth and development—not on meeting children where we believe they are supposed to be based on how long they have been alive. Teaching for creativity is an authentic way to foster independence, grit, resilience, and self-confidence in kids, even in the face of challenges and obstacles they may face by being placed in a setting that is academically inappropriate for their skill set.

Another issue I have with the current educational system that I think needs significant reform is the fact that our system typically assesses children based on their ability to generate the “right answer.” As adults, we understand that complex problems rarely have a single “right answer.” Why are we educating children to look past complexity and nuance in order to find a single solution? This is not real life. Again, teaching for creativity is a framework that can be used within the current educational system to ensure that our students recognize and appreciate complexity and nuance.

Finally, typical schools squash creativity, as Sir Ken Robinson famously told the world in his 2006 TED talk. In many classrooms, students are dissuaded from asking questions because tangents and deeper learning negatively impact the classroom teacher’s ability to properly cover the content that will be tested on a district or state-wide standardized measure. Once again, teaching for creativity can alleviate this burden by teaching content and creativity skills simultaneously.



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### **How to make these content maps meaningful**

The most significant “key learning” I am taking away from this project is that I will need to continue to work to put these maps into an understandable and accessible context for the broader school community. When I committed to this project, I did not know the exact language or skills I would use to construct the maps. As a result, I did not fully grasp how these maps would be received by those without knowledge of creativity. Now that the project is completed, I understand that a great deal of work will be required in order to truly achieve my original goal of demystifying and disseminating creativity.

### **Section Six: Conclusion**

This term, I completed mapping creativity skills into content maps for our Upper School division (grades 5-8). Moving forward, I will continue to map creativity skills into all curriculum maps (grades pre-K 3 through grade 4, and specials such as art, foreign language, and music). I am particularly excited about this because the project was so warmly received by those with whom I have already worked. I am excited to have more meaningful and informative discussions about the value of creativity in our curriculum.

#### **Bonus project**

For the purposes of fully completing this project, I am fortunate to have a ten-year bonus project upcoming. My employer offers five, ten, and fifteen year bonuses that will enable me to further develop this project. I have already met with my administration and committed to doing this in the years to come for my ten-year bonus. As a result, I will be held accountable to continue mapping, and to find ways to share these maps and explain their meaning to the community. I will begin by completing the content maps for all subjects and grade levels. Next, I will plan and execute a professional development day or days for our staff in order to further raise creativity knowledge and awareness. The goal of the professional development day(s) will be to ensure that all members of our faculty can confidently and competently engage in discussions about the value of, and approaches to, creativity in our school. Finally, I will be tasked with planning and delivering communications with our parent community in order to explicitly and deliberately promote conversations about the value of creativity. I am excited to continue to develop this project in order to achieve a much greater level of understanding of creativity among my school community.

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## APPLIED WEAVING

## Appendix

**Grade seven mathematics curriculum map, including creativity**

Grade: 7<sup>th</sup>

Course/Subject: Mathematics 7 (Honors 1)

Unit Title: Algebra and Integers

Time Frame: Week 1- Week 2

Teacher:

Essential Questions:

- o How can the “four step problem-solving plan” be used to solve difficult problems?
- o How can algebraic terminology, expressions, equations, inequalities and graphs be used to express quantitative relationships?

Content: As a result of this study, students will know and understand:

- o Problem solving techniques
- o The number line
- o Absolute Value
- o Adding and subtracting integers
- o Multiplying and dividing integers
- o Writing equations

Skills: As a result of the this study, students will be able to:

- o Evaluate expressions and identify algebraic properties
- o Compare and order integers using absolute value
- o Add, subtract, multiply and divide integers
- o Write and solve equations using the addition/subtraction and multiplication/division properties of equality

Assessment:

- o Board work throughout the lesson
- o Homework assignments
- o Quiz/Test

Materials, Resources, and Technology Integration:

- o New York Math Connects Course 3 Glencoe McGraw-Hill
- o Scientific calculator
- o I-pads

Differentiation:

- o Student built glossary
- o Untimed tests and quizzes
- o Allow for the use of resources such as: glossary, algebra-tiles, and calculator on quizzes and tests
- o Enrichment worksheets

## APPLIED WEAVING

### Creativity

- o Embrace curiosity
- o Embrace the challenge
- o Look at it another way
- o Be original
- o Keep open
- o Break through and extend the boundaries
- o Tolerate the ambiguity
- o Put ideas into context
- o Produce and consider many alternatives
- o Highlight the essence

Grade: 7<sup>th</sup>

Course/Subject: Mathematics 7 (Honors 1)

Unit Title: Algebra and Rational Numbers

Time Frame: Week 3-Week 6

Teacher:

### Essential Questions:

- o What are the different sets and subsets of numbers?
- o How can inverse relations be used to solve equations involving rational and real numbers?
- o How can numbers be expressed using scientific notation?

Content: As a result of this study, students will know and understand:

- o Decimals and fractions
- o Comparing and ordering rational numbers
- o Multiplying and dividing fractions
- o Adding and subtracting fractions
- o Solving equations involving rational numbers

Skills: As a result of this study, students will be able to:

- o Express fractions as decimals and decimals as fractions.
- o Compare and order rational numbers using absolute value.
- o Add, subtract, multiply and divide positive and negative rational numbers.
- o Solve algebraic equations using multiplicative inverses.
- o Express numbers in scientific and standard notation.

### Assessment:

- o Kahoot/Socrative contests
- o Board work
- o Homework assignments
- o Quiz/test

### Materials, Resources, and Technology Integration:

- o New York Math Connects Course 3 Glencoe McGraw-Hill

## APPLIED WEAVING

- o Scientific calculator
- o I-pads

### Differentiation:

- o Use music notes to demonstrate fractions
- o Allow for the use of number lines, fraction pies, and fraction blocks to enable students to order rational numbers.
- o Enrichment worksheets and problems
- o Untimed quizzes and tests
- o Pre-AP activity regarding positive and negative exponents

### Creativity

- o Embrace curiosity
- o Embrace the challenge
- o Look at it another way
- o Be original
- o Keep open
- o Break through and extend the boundaries
- o Tolerate the ambiguity
- o Put ideas into context
- o Produce and consider many alternatives
- o Highlight the essence
- o Make it swing, make it ring

## **Grade eight science curriculum map, including creativity**

Grade: 8

Course/Subject: Earth Science

Unit Title: Intro to Science

Timeframe: weeks 1-5

Teacher:

### Essential Questions:

- o What is Science? What is the difference between the branches of science?
- o What are the safety rules for the science lab?
- o What is the metric system?
- o How do we measure length, volume, mass, temperature, and density in the science lab?
- o What is the meaning of scientific prefixes and suffixes?
- o What is the Greek/Latin origin of scientific vocabulary?

Content: As a result of this study, students will know and understand...

- o What science is and how it relates to the world around them.
- o The 4 main branches of science (Biology, Geology, Physics, & Chemistry)
- o Rules of their Safety Contract.
- o How to measure using the Metric System
- o Scientific prefixes, suffixes, and origins of vocabulary

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- o The Steps of the Scientific Method vs. Modern Day Science Experiments

Skills: As a result of this unit of study students will be able to...

- o Perform labs in a safe manner.
- o Distinguish between the Branches of Science and Scientific Vocabulary.
- o Utilize problem solving and critical thinking skills while conducting experiments following the Scientific Method.
- o Measure and convert measurements for length, volume, mass, and density.
- o Identify and read proper line segments.
- o Analyze and graph data.

Assessment:

- o Creature Quiz
- o Measurement Labs
- o Lab Practicals
- o Scientist Projects
- o Halloween Station Lab for Reinforcement

Materials, Resources, & Technology Integration:

- o Textbooks
- o iPads
- o Interactive Science Notebooks
- o Worksheets
- o Calculators
- o Rulers
- o Meter Sticks
- o Graduated Cylinders
- o Triple Beam Balances
- o Glassware
- o Ohaus Online Balance Simulation

Differentiation:

- o Students work in cooperative groups to complete labs
- o choice of various materials to use for measurement
- o menu of choices for homework and projects

Creativity

- o Embrace curiosity
- o Embrace the challenge
- o Enjoy and use fantasy
- o Highlight the essence
- o Look at it another way
- o Be original
- o Keep open
- o Put ideas into context



## APPLIED WEAVING

- o Be playfulness and use humor
- o Make it swing, make it ring
- o Produce and consider many alternatives
- o Be aware of emotions
- o Get glimpses of the future
- o Break through and extend the boundaries
- o Tolerate the ambiguity

Grade: 8

Course/Subject: Earth Science

Unit Title: Exploring Planet Earth

Timeframe: weeks 6-11

Teacher:

### Essential Questions:

- o What is the difference between Earth's 5 systems?
- o Which elements are most abundant in the Earth's atmosphere, land, water, and living things?
- o What is the structure of the Earth?
- o How can a location be identified using latitude and longitude coordinates?
- o How is a Topographic Map made and interpreted?
- o What are the characteristics of minerals and how are they identified?
- o What is the difference between the three types of rocks?
- o What is the rock cycle?

### Content:

As a result of this unit, students will know and understand:

- o Atmosphere, Lithosphere, Cryosphere, Biosphere, and Hydrosphere
- o Elements found in the air, land, water, and living things
- o The layers of the Earth: Crust, Mantle, Outer Core, and Inner Core
- o Latitude vs. Longitude and Topographic Maps
- o Minerals, Igneous, Sedimentary, and Metamorphic Rock

### Skills:

As a result of this unit of study students will be able to

- o Distinguish between Earth's 5 Systems...Atmosphere, Lithosphere, Hydrosphere, Biosphere, and Cryosphere
- o Identify the abundance, uses, and locations of Earth's most important elements
- o Determine the location of a place on Earth using Latitude and Longitude
- o Read, interpret, and create a profile of a topographic map
- o Classify minerals and rocks according to their properties

### Assessment:

- o Quizzes and Tests
- o Projects

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- o Latitude & Longitude Balloon Activities
- o Topographic Map Reading
- o Crystalline Structure Labs
- o Mineral & Rock Identification Labs, etc.

### Materials, Resources, & Technology Integration:

- o Textbooks
- o iPads
- o Interactive Science Notebooks, Worksheets
- o Earth Science Reference Tables
- o Fold-ables
- o Balloons
- o Maps
- o Globes
- o Play-Doh
- o Crystal Templates
- o Mineral & Rock Samples
- o Online Simulations
- o Interactive Periodic Table

### Differentiation:

- o Use of Fold-a-bles for notes
- o Thinking Maps
- o Concept Maps
- o Dichotomous Keys
- o Graphic Organizers.

### Creativity

- o Embrace curiosity
- o Embrace the challenge
- o Enjoy and use fantasy
- o Highlight the essence
- o Look at it another way
- o Be original
- o Keep open
- o Put ideas into context
- o Be playful and use humor
- o Make it swing, make it ring
- o Get glimpses of the future
- o Break through and extend the boundaries

Grade: 8

Course/Subject: Earth Science

Unit Title: Earth's Changing Surface

Timeframe: weeks 12-16

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Teacher:

Essential Questions:

- o What evidence is there to support Pangaea and the Theory of Continental Drift?
- o What is the difference between types of plate boundaries, faults, and stress within the Earth's crust?
- o What are the three types of waves associated with earthquakes and how are they measured?
- o How can you locate the epicenter of an earthquake?
- o How does the Ring of Fire relate to earthquakes and volcanoes?
- o How do the three types of volcanoes compare to each other?

Content:

As a result of this unit, students will know and understand:

- o Plate Tectonics and the Theory of Continental Drift
- o Plate Boundaries: Convergent, Divergent, and Transform
- o Stress: Tension, Compression, and Shearing
- o Faults: Normal, Reverse, and Strike-Slip
- o Earthquake waves: P, S, and Surface
- o Earthquake measurement, location of epicenter, & precautions
- o Anatomy and locations of Volcanoes
- o Types of Volcanoes: Shield, Cinder-Cone, & Composite
- o Ring of Fire

Skills:

As a result of this unit of study students will be able to

- o Describe the Theory of Plate Tectonics and its effects on the formation of landforms
- o Demonstrate the difference between convergent, divergent and transform plate boundaries
- o Investigate research, data, and information regarding earthquakes and volcanoes

Assessment:

- o Pangaea Puzzle
- o Sea-Floor Spreading Lab
- o Tectonic Snack Lab
- o Earthquake Epicenter Lab
- o Ring of Fire Lab
- o Earthquake and Volcano Projects

Materials, Resources, & Technology Integration:

- o Textbooks
- o iPads
- o Interactive Science Notebooks
- o Worksheets
- o Earth Science Reference Tables
- o Fold-ables

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- o Volcano and Earthquake online simulations

### Differentiation:

- o Volcano Foldable
- o Project Menus
- o Graphic Organizers

### Creativity

- o Embrace curiosity
- o Embrace the challenge
- o Enjoy and use fantasy
- o Highlight the essence
- o Look at it another way
- o Be original
- o Keep open
- o Put ideas into context
- o Be playful and use humor
- o Make it swing, make it ring
- o Produce and consider many alternatives
- o Get glimpses of the future
- o Break through and extend the boundaries
- o Tolerate the ambiguity
- o Be aware of emotions