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Designing and Delivering a Teacher Center Course: “Creativity and Content: Partners in the Classroom”

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An Abstract of a Project
in
Creative Studies

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

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Buffalo State College
State University of New York
Creative Studies Department

ABSTRACT OF PROJECT

Designing and Delivering a Teacher Center Course:
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This paper outlines the methods used to design and implement a course on creativity as it can be applied in the school classroom. It outlines specific steps taken and topics covered during a nine hour creativity course taught through the Teacher Center of an area school district. In addition to a detailed outline of course content, results and reflections are also included to guide the reader through successful course implementation. Thorough appendices include all course documents and handouts necessary to effectively implement this course.

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Signature

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Date

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Part One: Introduction

Purpose and Description of Project

Since beginning my masters in creative studies three years ago, I have come across many different ways and fields in which creativity can be studied and used. The area that both interests me the most and applies most closely to my career and personal goals is the importance and necessity of teaching creativity to others. The task of nurturing the creativity of others can become daunting when we consider the vast quantity of methods that have been developed to do so. From enhancing creativity through Creative Problem Solving to arriving at creative solutions through Synectics, there are many procedures or frameworks that have been outlined and shown to improve one's level of creative output. The best medium that I have through which to teach creativity to others is in my Spanish classes at Alden Middle School. Thus, the framework that I find to be most effective for me to use in a secondary classroom is that of Torrance's creativity skill set (Torrance & Safter, 1990).

After learning about the use of the Torrance Incubation Model to systematically work to enhance creativity in others, I immediately began to experiment with the different creativity skills within my classroom. Naturally, I found certain skills easier to apply than others and some more fun to work with than others. As I practiced with these skills, I couldn't help but think that some of my colleagues would enjoy doing the same if only they were informed about this model and these skills. As I saw my fellow teachers take an interest in the activities I was designing that take creativity into consideration, I began to see the need to share my knowledge with those around me. This realization came to me over a year ago in a different Creative Studies class. Around that time, I also became aware of the Teacher Center at my school district and the courses it offers to teachers for continuing education and professional development. It made sense to me that my district could benefit from a Teacher Center course on nurturing creativity skills in the classroom. There was both a need and an interest, and thus the preliminary seeds were planted for my masters project.

During that graduate class in the fall of 2009, I designed a six-hour course that could be taught to teachers of any level who wish to enhance the creativity of their students using the Torrance

Incubation Model of Teaching and Learning. I established the goals for the course, I outlined the creativity content I wanted to share, and I prepared materials such as posters and handouts to use during the course. At that time, I felt confident enough to explain the model, but not secure enough to suggest too many ideas for implementing the skills involved in the model. I had some more learning and practice to do before I would feel comfortable teaching this material to others. Two years and four creative studies classes later, I saw this project as an opportunity to do so.

For my project, I chose to design and teach a course on creativity in the classroom to my colleagues at the Teacher Center in my school. I taught the course in three classes of three hours each, in March of 2011. The main focus of the course is the Torrance Incubation Model of Teaching and Learning. Initially, I had planned to use the six-hour course I had outlined two years prior for another graduate class. However, due to a misprint in the Teacher Center course booklet, my six-hour course was forced to become a nine-hour course. This required me to revisit my original course design and do quite a bit of revision and incorporate a lot more material. Therefore, in addition to sharing this model and the creativity skills involved in this model, I added other important principles of creativity that I think my fellow teachers would want to know. Some of these principles that I included in the design for my class are Ekvall's dimensions of the creative environment, the use of Osborn's Brainstorming and divergent rules, definitions of creativity and incubation, the educational benefits of using both creativity and humor in the classroom, the revised Bloom's Taxonomy, the way creativity relates to the 21st Century Skills, the relationship between creativity and intelligence, tests that measure creativity, Big C and little c creativity, personality traits of the creative person, the relationship between creativity and play, and some divergent and convergent tools.

Rationale for Project

As I explained above, both creativity and education are important to me and throughout my graduate studies I have seen the importance of synthesizing the two in my classroom. To me, it is so simple to see the need we have to teach creativity in the classroom. However, to others that have not studied creativity in depth, this might not be so obvious. That was the primary thrust behind my

desire to share this knowledge with those around me - it is easy to see the importance of incorporating creativity in the classroom but only after we are introduced to a systematic way to do so. As society makes more and more technological advances and as the craving for innovation remains insatiable, people begin to insist that we do something to facilitate this creative development. This is a task that has recently been passed down to schools with little instruction on how to actually nurture creativity in others. To address these recent trends of creative development, Torrance and Safter (1990) explain, "Almost every day I see evidence that creativity is emerging as a discipline. Courses are appearing within almost every discipline with such labels as: creativity, creative problem solving, invention, and the like" (p. 14). Creativity is not only becoming more prevalent in the topics we teach but also in the way we teach them. Teaching itself can be considered an act of creativity (Keller-Mathers, 2009). Teachers must work to stay current in their fields, vary their methods of instruction to meet the needs of diverse learners, and often have very few supplies at their disposal with which to do so. These are just some of the ways in which teachers must capitalize on their own creative nature in order to nurture the creativity in others and are further evidence of the need of a class like mine at our Teacher Center.

In addition to my personal opinions, there have been some recent developments in the field of education that have placed an added emphasis on creativity and its role in education. One development is the revision of Bloom's Taxonomy of Learning Domains (Anderson, Krathwohl, & Bloom, 2001). This is a topic that most educators encounter at some point during their studies but might not revisit after entering the classroom as teachers. Therefore, many teachers are unaware of the fact that this important educational pillar was recently revised and now includes explicit references to creativity. This development supports the need for deliberately teaching creativity and adds legitimacy to a course like the one I have designed.

A second wave in education that has affected our school district more directly is Wagner's (2008) list of Survival Skills for the 21st Century. This is a list of thinking skills or general abilities that build upon the more traditional goals emphasized in public education such as reading and writing. In addition to these fundamental skills, Wagner explains that students also need to develop such skills as critical thinking and problem solving, collaboration across networks, agility and adaptability, curiosity and imagination, and initiative and entrepreneurialism. In this sampling of the 21st Century Skills, I

believe creativity is clearly evident in the areas of problem solving, imagination, and entrepreneurialism, and less obviously it is also relevant to curiosity and adaptability. These are all skills that equip our students to face the ambiguity often involved in real-world challenges. The administrators in our school district recognize this and have decided to bring these skills to the forefront in our classrooms. To accomplish this, they have asked us to begin to design our lessons with these skills in mind, creating a need for instruction on how to do so. Because I see a direct connection between this initiative and the concepts I included in my course, this semester provided an opportune time to share my knowledge with my coworkers.

Part Two: Methodology and Supporting Literature

Course Development

I designed this course in two major phases. The first phase took place when I designed the course for another class in 2009. At that time, my main purpose was to share with my participants a basic definition of creativity and how we can use the Torrance Incubation Model to develop the creativity of our students. At that time, I spoke with my professors and gathered information for my course. The original outline I designed included activities that I myself had engaged in when I learned the model. For example, I planned to have my participants create a "skill center" for one of the skills of Torrance's model, just as I had done. Also, I hadn't yet examined the definition of creativity too extensively so I had only included the traditional definition of "novelty that is useful". Though at the time I thought I had developed a thorough and comprehensive course, it pales in comparison to the final product that resulted from the second phase of designing the course.

At the time that I designed the first version of this course, my knowledge of creativity was limited to what I had learned in only three classes. Naturally, as time progressed and I took the rest of my classes (several of which were deeply rooted in theory rather than practice), my opinions of creativity, its definition, and its uses evolved. This change, along with the misprint that required me to add three hours of material to my class, compelled me to reexamine and consequently completely

redesign the course I had developed two years prior. A major issue that was cause for significant revision was the fact that I had designed the course from the perspective of someone who was already quite familiar with creativity principles rather than the perspective of my course participants - someone who is new to the field and has only basic knowledge of the topic. This realization came when I began to do some active visualization of how the course would flow. Through this visualization, I came to see that certain activities would not accomplish what I wanted them to, simply because I thought my participants wouldn't have sufficient background information.

A second big shift from my first version to my second version involved my focus on the creativity skills themselves. I realized that, because of the reasons described above, my participants probably wouldn't be too well-equipped to create skill centers for the skills after hearing only a short description of them. Instead of asking my participants to come up with ways to illustrate the skills, I began to develop and plan activities myself that would accomplish the goal of familiarizing my participants with the skills. The course that resulted from this analysis begins by introducing my participants to creativity and some of its central topics, illustrating each skill in the skill set with interactive activities, explaining the Torrance Incubation Model, and finally drawing some conclusions about creativity and its place in the classroom. I will now go on to describe a more detailed outline of this revised class, when necessary interjecting my reasoning and justification for the activities and theories I chose to include.

Detailed Course Outline

To set the overall tone for this course, I will prepare an environment conducive to creative thought. The room that I chose for this course was the library at my school because it has tables rather than desks. I will put the tables in a "u" shape to facilitate discussion and I will cover the tables with toys, games, coloring supplies, and decorative stationery for notes. I will make use of a projector to display a PowerPoint slideshow that will accompany my instruction (see appendices for handouts and other course materials).

I wanted to begin the material for this course with some information that would grab the attention of my audience. I decided to do this using a short, true/false quiz on creativity. I chose topics that I thought would both interest and surprise my participants, including the Buffalo origins of brainstorming, creativity measures, and the relationship between creativity and intelligence. I imagined that after reviewing these answers, participants would be ready to dive into the course material to make more sense of some of the more surprising answers of that quiz. We will then discuss my goals for this course by way of a quick outline of topics to be covered.

To begin looking at creativity and before giving too much more background information on the topic, I will attempt to understand participants' initial views on creativity by posing the question "Am I creative?". They will answer this question on an index card and we can share answers as people are comfortable sharing. I will then elaborate on my credentials by explaining what is involved in a masters degree in Creative Studies. A logical next step is to define creativity. I will pose that question and before brainstorming or sharing responses, we will engage in an activity to warm us up to idea generating. I will ask participants to name as many birds as they can think of, with a target of fifty. They will do this individually on paper from around the table. After working individually I will prompt them as a group for more responses by presenting them with categories that might help them come up with more responses. I will explain the importance of being able to make a shift in our thinking when we desire creative or varied responses. To illustrate another potential block to creative thinking - bad creativity habits - we will engage in a choral adding activity and some kinesthetic activities. These will show how strange it can feel to break routines and habits and that we may have habits we are unaware of that can inhibit creative thought.

At this point, we are ready to move on to the task of defining creativity. Since we will be using Stick-em Up Brainstorming (Miller, Vehar, & Firestein, 2001) to start thinking about a definition, we first need to define brainstorming as created by Osborn (1963) and review the divergent guidelines. As we examine these rules on the PowerPoint, I will pass out my examples of the rules on laminated cards. I will also explain how to use Stick-em Up Brainstorming and the group will begin brainstorming words, names, or phrases that come to mind when they hear the word "creativity". After three minutes, I will then share with the group the commonly used definition of creativity: "the creation of products that are both novel and useful" (MacKinnon, 1978). To illustrate the importance

of both of these factors in creativity I will show some pictures that show products that are novel but not useful (a wig for cats) and also that are useful but not terribly novel (slippers). To finish defining creativity, I will share the divergent tool Word Dance (Miller, Vehar, & Firestein, 2001) and participants will use it to brainstorm synonyms for the words "novel" and "useful" to use when they decide on their own personal definition of creativity.

Now that we have begun thinking about what it means to be creative, I will share the convergent rules and hand out my version of the rules on laminated cards. Participants will use these rules to come up with their own definition of creativity. One last thing I will do to aid them with their definition will be to share with them Rhodes' (1987) Four P framework for examining creativity. Then on the same index card where they answered the question "Am I creative?" participants will converge to come up with their definition of creativity. We will share these as people are comfortable doing so and then they will seal them in an envelope to open up and reconsider at the end of the course. Now that participants have their own definitions, I will share my personal definition of creativity which is based on Ackoff and Vergara's (1988) idea of self-imposed constraints. Along with the idea of overcoming these self-imposed constraints, I will explain to participants what I consider to be "stretch experiences" and that they may need to step outside of their comfort zones during this course in order to reap the full benefits of the topics and activities I've included. To offer one last perspective on creativity, I will share Noller's formula interpretation of creativity as described by Isaksen, Dorval, and Treffinger (1994).

Though the main focus of this course is the use of the Torrance Incubation Model, I feel that, at this point, there are still some concepts participants should know before we are prepared to interact with the model. The first of these concepts that we will look at is the difference between Big C and little c creativity (Gardner, 1993). We will shed even more light on creativity by discussing some common myths about creativity and reasons why creativity is important to our society and general well-being. Also, while preparing this course, I came across a pleasant surprise in the belief statement on our Alden School District website that I will share with my participants. There are some subtle and some more explicit references to creativity, including the statement of the following goal: "Students will be life-long learners maximizing their potential through problem solving and higher order thinking skills" (Alden Central School District Belief Statement). I think that this particular belief statement

shows my participants that the information they will learn in this course is valued by our district and thus is worth implementing in their classrooms. Next, I will explain the revisions that have been made to Bloom's taxonomy and the fact that creativity has been incorporated and is at the top of the hierarchy (Anderson, Krathwohl, & Bloom, 2001). I will also reference the 21st Century Skills that participants are already familiar with but I will make specific reference to those that I feel are most closely related to creativity (Wagner, 2008). The last topic I will include in this introductory section of the presentation will be the relationship between creativity and IQ and the threshold hypothesis of creativity (MacKinnon, 1961).

At this point, I will introduce E. Paul Torrance and begin to describe some of his accomplishments in the field of creativity. I will also share both of his definitions of creativity; a working definition and a research definition (Torrance and Safter, 1999). To further elaborate on the complexity of creativity, we will discuss ways we might measure creativity and then I will share some of the measures that have been created and the aspects of creativity they attempt to measure. In particular, I will briefly describe the Kirton Adaption-Innovation Inventory (KAI), the Myers-Briggs Type Indicator (MBTI), and FourSight. To wrap up our introductory topics before examining the creativity skill set, I will share Torrance's (1970) list of creative needs. To illustrate the comparison between learning creatively and learning by authority, I will share Torrance's comparisons of the learning styles of cats to dogs and I will show some short clips to show the way those animals learn. Then, to illustrate creative needs, I will hand out a sheet and participants will choose one of the two activities on the sheet to complete. According to Torrance (1970), our creative needs make it so that 80% of people choose the first task to complete; the task which involves an incomplete figure. At this point, we will take a short break.

Upon returning from our break, I will begin to discuss the idea of a skill set and Torrance's (1990) creativity skill set. To illustrate each skill, we will engage in at least one interactive activity, some of which we will do before introducing the skill and some of which we will do afterwards. In order to keep some of these skills a mystery while we do the activity, I will hand out a list of the skills after we examine the last skill. To begin looking at our first skill, "Be Original", I will have participants complete a section of the verbal form of the Torrance Tests of Creative Thinking, explaining a bit more about this measure. They will be instructed to list as many uses as they can think of for junked

automobiles. We will then discuss this skill and its role in creativity, relating it to the idea of novelty we discussed while defining creativity. Next, I will explain the Fourth Grade Slump that some children experience, how it relates to originality, and possible causes for it (Torrance, 1999). Lastly we will revisit our answers to this section of the TTCT, examining it for originality. I will share Torrance's list of responses that are not considered original and we will discuss any responses people have that remain on their lists after crossing out these less-original responses.

The next skill we will examine is "Keep Open". Before explaining this skill, participants will now take a section of the figural form of the TTCT. They will see boxes containing incomplete figures and will be instructed to make pictures from these images. I will then explain this skill and we will examine our sheets to see how many of the figures participants closed.

Our next skill is "Combine and Synthesize". I will explain this skill first and we will continue examining it first by looking at some jokes that result from combining two elements (words, images, etc.). To show how this skill can be measured by the TTCT we will look back at our incomplete figures to see if anybody combined any of the images from two different boxes to become one image. Then I will explain the tool Morphological Matrix and we will use it as a literary tool to design some fun plots for stories (Miller, Vehar, & Firestein, 2001). I will then show some other more realistic applications for this tool such as planning a vacation or redecorating a bedroom. Finally, I will show some real-life products that resulted from combining two seemingly unrelated items such as sneaker skates.

To introduce our next skill, I will have participants find a partner by picking an animal name from a bag and making the sound of that animal. Their partner will be making the same sound (Baum, n.d.). After finding their partners, I will explain the skill "Make it Swing, Make it Ring". To illustrate this skill, we will complete part of Torrance's creativity measure, Thinking Creatively in Action and Movement. In this activity, participants will work with a partner to come up with as many ways to put a paper cup in a recycling bin. Participants will work on this for three minutes and each group will then share their favorite way they came up with. We will end our first three-hour session here.

Day two of class will begin with the somewhat well-known nine dot problem. I will instruct participants to draw nine dots on a piece of paper in a three-by-three square and connect these nine dots with four straight lines without picking up their writing utensils. I will share some possible

answers and I will then explain our next skill, “Breakthrough - Expand the Boundaries”. We will discuss how this skill could be compared to the common phrase “Think outside the box”.

Before explaining our next skill, “Highlight the Essence”, participants will engage in a get-to-know-you activity using a blank coat of arms handout (Baum, n.d.). On this handout is the layout of a coat of arms, divided into four sections. I will prompt participants to fill in the squares with something they are proud of, something they are afraid of, something they like, and something they don’t like. We will share some responses as people are comfortable doing so. Next, I will explain the skill and we will discuss how it related to this activity and assess any difficulties people may have had in selecting which information to share. As a final example for how this skill can be used, I will show an example of a political cartoon and we will explore how these cartoons highlight the essence to include a powerful message in few words.

Our next skill is “Be Aware of Emotions”. Before explaining this skill, participants will participate in an activity that is actually a warmup activity for the problem solving method, Sociodrama (Sternberg & Garcia, 2000). It is entitled “Labels”. In front of each participant I will place a placard with a phrase on it such as “Ignore me”, “Laugh at me”, “Praise me”, etc. People will be unaware of the sign that is in front of them. Then the group will discuss a hypothetical problem. As they brainstorm and share ideas, they will respond to each other according to the signs in front of them. After a few minutes, we will stop and see if we can guess what was on the sign in front of us. We will discuss how this activity made us feel and I will then explain this skill. After we understand this skill, I will show participants a convergent tool that capitalizes on our emotions about a problem or potential solution: Head, Heart, or Gut (Burnett, 2010). We will not use the tool but rather I will explain how it can be used to examine our emotions surrounding a problem.

Next, I will explain the skill “Produce and Consider Many Alternatives”. We will use this skill as an opportunity to revisit the divergent guidelines in greater depth. Participants will complete two sections of the TTCT, one verbal and one figural, focusing on quantity of ideas. After diverging on each task for three minutes, we will discuss our thought process and how it felt to strive for quantity. For fun and to review our first skill, we will use Torrance’s scoring guide to evaluate the originality of our responses to the figural task. Next, we will review the divergent guidelines. I will again hand out

my rules on the laminated cards so participants have a reference in front of them at all times. To show an example of the divergent rules at work, I will show a clip from an episode of the television show, *Friends* (Bonerz, Crane, & Kauffman, 1997). We will then review each rule one by one, brainstorming on a funny warmup task. First, we will take a closer look at "Defer Judgment" by playing a warmup game using a weather measurement device from a science classroom. Someone will begin with this object, stating one good use for it and passing the item to the next person. Regardless of the merit of the idea, this person must support and elaborate on the first person's idea by stating one reason why their idea was valuable. They will do this by using the words "Yes, because...". After supporting their idea, this person states another possible use for the item and passes it to the next person. The game continues like this in a circle until all participants have spoken at least once. We will debrief by discussing the ways in which this game forced us to defer judgment and the possible benefits of doing so. Next, we will practice this particular divergent guideline by brainstorming possible uses for 10,000 ping pong balls.

After brainstorming for three minutes, we will discuss the next two guidelines: "Strive for Quantity" and "Seek Wild and Unusual Ideas". In particular we will discuss the role our inhibitions can play when it comes to generating wild ideas and how perfectionism can hinder this part of the creative process. To illustrate the importance of seeking unusual ideas, I will share the following quote from James Bryant Conant: "Behold the turtle. He makes progress only with his neck out" (Osborn, 1963, p. 46). We will continue to brainstorm more ideas for the same problem statement for three more minutes. After these three minutes, we will pause to discuss our last divergent guideline, "Build on Other Ideas". To elaborate on this rule, I will share the tool Forced Connections. I will also share some other uses for Forced Connections pictures in the classroom. We will then use this tool as we brainstorm for three more minutes on the same topic. We will finish discussing the skill "Produce and Consider Many Alternatives" by discussing the role of the divergent rules in our classrooms.

The next creativity skill we will examine is "Visualize it Rich and Colorfully". Before explaining this skill, however, we will do an activity to illustrate the skill. I will hand each person a lemon. Using a worksheet I've prepared, participants will answer questions to help them describe this lemon with as much detail as possible. They will examine their lemon using all the senses. I will then collect the

lemons and I will explain the skill. Then I will put all the lemons in a pile on a table in the room, call participants up, and see if they can pick out which lemon was theirs, reminding them to rely on the information they just wrote down. After they choose one, we will debrief the activity and discuss how it used this skill.

Before explaining our next skill, "Look at it Another Way", we will engage in another activity. I will hand out a laminated index card to each person with a picture face up on the card. I will instruct them not to flip it over until I instruct them to. We will begin brainstorming ideas to solve a hypothetical problem using Stick-em Up Brainstorming. Then I will instruct participants to flip over the card and reveal a word that is related to the picture that was on the card, such as "a mother", "Oprah", or "a billionaire". I will then tell them to continue brainstorming but now from the perspective of the person on their card. When finished, we will share the words on our cards with those around us and discuss the ways that these words helped us make a shift in our thinking. This will lead into a discussion of the creativity skill at hand. To further illustrate the importance of looking at things from different perspectives, we will consider the question "What is half of 8?" and discuss possible answers. Also, we will look at some crossword puzzle clues that require readers to change their perspective from the most obvious way to consider the clue.

Next, we will look at the skill "Let Humor Flow and Use It". In addition to the information on the skill I will share some other benefits of using humor in the classroom. We will engage in this skill with two exercises that serve as warmups to improvisational comedy. The first one is entitled "Gibberish". Participants will find a partner for this activity. With this partner, they will take turns trying to convey a message to one another using only Gibberish. We will debrief this activity and discuss some possible uses for it in the classroom. The next activity is an interview activity in which one person, to be the interviewee, leaves the room (Baum, n.d.). The remaining people, the interview committee, will decide on the silly job for which they are interviewing and will brainstorm some interview questions. The interviewee will return to the room and the interview begins. After asking and answering a few questions, the interviewee will try to guess the job for which he or she was interviewing. We will debrief by discussing how this activity related to this skill and some potential uses for something like this in the classroom.

We will begin considering our next skill, “Be Flexible”, by thinking about the following riddle: “A boy and his father are in a car accident. They are both injured and are taken to different area hospitals. While the boy is entering surgery, the surgeon says ‘I can’t operate on this boy. He is my son.’ How is this possible?” Since some people may have heard this riddle before I will only ask to hear guesses from those who are new to the question. After revealing that the surgeon is the boy’s mother, we will discuss this skill and relate it to the reasons why it can be very difficult for some people to answer this riddle correctly. I will also reference our warmup from the previous class involving brainstorming different types of birds and how that activity involved a lot of flexibility in our thinking. To further illustrate this skill, I will explain de Bono’s (1999) Six Thinking Hats and how this tool can help us be flexible when examining problems. I will explain the roles involved in this tool and we will use the tool to examine a sample problem statement together. We will follow this with a debrief to discuss the different hats and our abilities to wear them. After discussing this skill, we will take a short break.

The next skill we will examine is “Elaborate, but not Excessively”. Before doing so, I will ask participants to write a cinquain (a five-line poem) about creativity. I will talk them through the steps and the format of each line. We will share some of these poems and then we will examine the skill. At this point, we will pause to look at the Creative Problem Solving process in a little more depth. I will pass out my laminated cards paraphrasing the CPS stages and statement starters. I will draw particular attention to the statement starters involved in clarifying the problem, the importance of phrasing things positively, and the role positive language plays in the classroom. To practice our skill, “Elaborate, but not Excessively”, we will work with the tool, Ladder of Abstraction (Parnes, 1981). Before using this tool, however, we will practice using statement starters with a warmup task. We will brainstorm problem statements for the following goal: “It would be great if we could hold our next class underwater.” Then I will explain the Ladder of Abstraction and model the tool with one of my participants. After showing how this tool can be used to elaborate on a challenge, I will have participants work with a partner to use the tool for a challenge in their lives. After debriefing this process, I will explain to the group the four divergent thinking processes now that we have seen all four of them (fluency, flexibility, originality, and elaboration) somewhere in our skill set.

Our next skill is “Put your Ideas into Context”. Before explaining this skill, I will have participants pause to make a list of the ways they might use what they have learned about creativity in their classrooms. We will share some of these thoughts and I will explain the skill. We will discuss the natural need that students have to fit what they learn into their lives and the role that this skill plays in motivating students to learn.

Next, we will look at the skill “Enjoy and Use Fantasy”. To illustrate this skill, participants will complete another section of the TTCT. This time, they will complete a Just Suppose task. I will give them three minutes to brainstorm all the questions they might ask if they met a Martian. After completing this task, we will debrief it by discussing the type of thinking that is involved in imagination and fantasy.

We will then move on to our next skill, “Visualize the Inside”. After explaining this skill to my participants, I will help them understand the skill by working with the divergent tool SCAMPER (Eberle, 1971). We will use this tool to brainstorm all the ways we might improve the Cadbury Crème Egg. To assist participants in visualizing the inner workings of this item, I will pass out Cadbury Eggs for them to examine as they brainstorm. After brainstorming for three minutes, we will debrief and I will provide participants with a handout detailing the letters in the acronym of this tool.

Before examining our final skill, I will lead participants through an activity I call “The Crystal Ball”. This activity requires a handout containing the image of a crystal ball. Inside the ball, I will instruct participants to write down any of the activities or concepts in this course that they can see themselves using in their classrooms. We will share some responses with the group and I will explain the final skill, “Get Glimpses of the Future”. I will elaborate on how this activity can be used to make predictions and can be adapted for many different classroom topics. To round out our list of skills and finish with a laugh, I will share some quotes with the group that involve some bad predictions of the future, reminding participants of our earlier skill, “Keep Open”. Having examined all seventeen creativity skills, I will now pass out a list of the skills.

Next, I will elaborate on some final creativity-related abilities that we might teach in our classrooms. These include things like opportunity finding and accepting limitations constructively. I will illustrate each of these concepts; the former by examining a thought-provoking image, and the

latter with a video clip of the movie, *Apollo 13* (Grazer & Howard, 1995). On this slide I will also stress the importance of respecting student inquiries and being patient as students engage in these skills. After discussing these last creativity-related topics, we will debrief the skill set and reflect on our strengths and weaknesses related to these skills. Lastly, I will clear up some confusion there might be about some of the many creativity concepts we discussed today by giving more proper definitions of terms such as divergent thinking, convergent thinking, generating ideas, brainstorming, and problem-solving. We will end the second class here and I will suggest that teachers prepare for next class by thinking about the ways they were already using some of these skills in their classrooms before they even learned about them.

To begin our third and final class we will engage in a quick warmup to review some topics from the previous class. I will have participants pick a word from a hat. It will be a word related to the previous class in some way such as “diverge”, “creativity”, “elaborate”, “lemon”, and “humor”. Participants will use this word to find a partner, though there is no intended matching word for the words in the hat - teachers may use any criteria they choose to explain why they belong with their partners. Once they have found a partner and established criteria, they will share their reasoning with the group. Next, they will switch partners and find a new partner based on a new set of criteria. Once again, they will share this reason with the group. After each pair has shared, everyone will return to their seats. We will discuss the creativity skills this warmup accessed and I will share the ways I have used this activity in my classroom with different vocabulary words.

The next topic is a creativity topic that I thought would be of particular interest to teachers: the personality traits of the creative person. We will begin a discussion on this topic by brainstorming verbally some character traits that come to mind when we think of some people that we consider creative. After sharing our opinions, I will share a list of traits developed by Davis (1999). To illustrate some of the negative traits that are often associated with the creative person such as neuroticism and egoism I will show a clip of the movie *The Social Network* (Fincher, 2010). After watching, we will refer back to the list of negative traits and discuss those that were evident in the movie clip.

Another topic I’d like to examine is Ekvall’s (1996) list of dimensions of the creative climate. We will begin this topic with a discussion of the environments in which our own creativity flourishes. I

will ask participants for examples of particular times when they were creative and the characteristics of the environment in which they occurred. I will then explain Ekvall's dimensions and provide a handout of this list. To continue our discussion of the creative environment I will go through Amabile's (1998) list of creativity killers. In particular we will examine the role that competition plays in creativity as there doesn't seem to be consensus on this topic within the field. To finish up this topic, we will discuss the role that play has in the creative process (Mainemelis & Ronson, 2006; Statler, Roos, & Victor, 2009).

We will now continue on to the meat of this course which is a discussion of the Torrance Incubation Model of Teaching and Learning. We will discuss ways in which participants already used the creativity skills in their classrooms even before they were introduced to them in the previous class. I will then show the visual model developed by Murdock and Keller-Mathers (2008) and pass out a copy to everyone. I will explain how this model can be used to design lessons that incorporate creativity skills into regular lesson content. Because this model depends heavily on an understanding of the term "incubation", we will spend time examining this concept in detail. I will begin by offering some of the different definitions of the word and examples of activities that lend themselves to incubation. To show an example of incubation at work, I will show a short clip from an episode of the television show, *Seinfeld* (Cherones, David, & Seinfeld, 1991). To continue our discussion of incubation I will explain the tool Visually Identifying Relationships (VIR) and we will use it as we examine a hypothetical task (Gordon, 1961). I will also explain how the tool Excursions can be used to encourage incubation, though we will not use the tool in class (Miller, Vehar, & Firestein, 2001). Finally, to finish up our discussion of incubation and to make participants more aware of the benefits of incubation and the way it can fit in their lives, I will pass out an index card and ask them to list on it any activities they do that provide them with time to incubate. I will advise them to keep this index card in a place where they often work and let it serve as a reminder to have faith in the power of incubation and to allow time for it in the creative process.

At this time, we are ready to examine the model further. I will show the model again on the screen and we will compare the stages of the model to the stages of a typical classroom lesson plan. I will then go through the stages and explain the meaning of the metaphors in the model. We will then examine a template for lesson plans developed using the Torrance Incubation Model and I will pass

out a blank template. I will also pass out the lesson plan I designed for this class using the model and incorporating the skill "Look at it Another Way". Because teachers are already familiar with designing lesson plans with similar stages, the discussion needed about this topic is minimal compared to the time we spent with the creativity skills themselves. We will wrap up this topic with some discussion about ways to share or present these skills to the students after using the model in our classrooms. Also, before taking a short break, we will have some last discussion about creativity topics such as competition and gender differences in creativity.

After returning from our break, we will investigate some controversial topics in creativity. We will begin by brainstorming the names of people we know who are creative (anyone from famous people to personal friends). After creating this list and looking at some of the names, I will explain the debate about domain general and domain specific creativity. I will direct participants to use this list of names to help them form their opinions on this topic. The next topic we will discuss is the controversial nature of brainstorming. I will bring up the main points on each side of that argument and I will ask for the opinions of my course participants since they have now brainstormed quite a bit. I will wrap up this topic by showing some other hot topics in the field such as intellectual property, creativity and neuroscience, and holistic approaches to creativity.

Next, we will begin a lengthy discussion about using the Torrance Incubation Model in our classrooms. I will facilitate this discussion by showing my class the PPC^{o} as an evaluative tool (Foucar-Szocki, Firestien, & Shepard, 1980). I will explain the tool, and as a group we will begin brainstorming the pluses of using the Torrance Incubation Model in our classrooms, using Stick-em Up Brainstorming. Before moving on to the potentials, I will introduce the divergent tool Brainwriting (Geschka, 1979). We will use this to elaborate on the potentials of using the model. I will then remind participants about the power of using positive language when phrasing problems and we will brainstorm all the concerns they have about using the model. Because there won't be time to brainstorm ideas to overcome all of these concerns, I will introduce the convergent tool Hits and give each person three sticky dots with which to hit their top three concerns (Miller, Vehar, & Firestein, 2001). We will then brainstorm ways to overcome the top concern. We will debrief this tool and discuss its possible uses in our classrooms and our lives.

I will then continue on to show some tips to enhance our own creative abilities, in addition to the activities we have already discussed (Firestien, 2004). Some tips include keeping an "idea system", varying our daily routines, and networking. To help participants reflect on their own learning in this class, I will share with them Gordon's (1976) model for adult learning. We will evaluate our place in this model and establish some realistic learning goals with respect to our future experience with this model. I will then show a video that specifically addressed the effect that schools currently have on creativity and the suggested effect they should have (Robinson, 2006).

At this point, we are ready to close and we will do this with some reflection. I will pass back the envelopes I collected during the first class that contained participants' definitions of creativity and their answers to the question "Am I creative?". I will ask participants to revisit both of these prompts and we will discuss any changes that may have happened over the course of our class. The final point I would like to stress is that now that we are aware of some of the finer points involved in creative thought, we need to be careful when using some common phrases such as "brainstorm", "outside the box", and "creativity" itself. I will urge participants to be more specific about these terms as they use them, perhaps referencing our skill set to target a more precise goal. I will finish the class by asking my participants to fill out an evaluation form, reminding them about the importance of positive language!

Part Three: Project Outcomes

Results and Recommendations for Future Use

The material described above comprises the course I designed and the plan I made for its implementation. I taught the course from 4:00 to 7:00 on the evenings of March 15th, March 17th, and March 22nd. Upon teaching the course, some of the above information changed. This is primarily due to time constraints. Regarding the reasons why timing became an issue, there were two main reasons that accounted for not having as much time as I would have liked. First, both classes started around fifteen minutes late because some participants arrived late. I made the decision that it would

be best to wait for people rather than have to catch people up. Second, there was far more active discussion of course topics than I had accounted for. I didn't realize that people would be as talkative as they were. This was a particularly challenging issue for me because I didn't want to cut anybody off because everything people had to offer was beneficial for the group to hear. The topic that sparked the most discussion was the topic of measuring creativity. Some of the course members were very interested in the topic and some were adamant about the fact that creativity should not be measured at all. This produced a lively debate about the issue of assessment in schools.

To prepare for this issue of timing before presenting, I created an outline of the material I would teach and estimated the amount of time I would need to spend on each part. As is recommended in teaching, it is better to plan too much material rather than not have enough. I took this into account and I counted on having to cut out some items as needed. The difficult part became deciding what to cut out and how to remove topics but still have the class days start and end in appropriate places. For example, in cutting out material and editing for time constraints, I would not want to end up introducing the Torrance Incubation Model at the end of one of the class as this would not allow for retention of the model from one class to the next. What follows now are some of the changes I made to the class as I moved through the above outline.

As I realized that I was running short on time, I skipped the discussion on Ruth Noller's formula for creativity. Also, regarding the skill "Combine and Synthesize", I did not have participants use the morphological matrix but rather only explained how the tool can be used. Day one concluded after explaining the skill "Make it Swing, Make it Ring" and day two picked up with "Breakthrough - Expand the Boundaries". The next thing I removed was the interview activity for "Let Humor Flow and Use It", though I explained how it can be used and gave examples of how I might use it in my classroom. Another tool that I wound up explaining and not actually using as planned was Six Thinking Hats. I shared the background of the tool and some ways it might be used, but we did not have time to use it ourselves. At this point, we were approaching the end of the second day and I felt myself beginning to rush to at least finish the skills so that we would have a logical ending point before the third class. My biggest regret during this class was that I rushed through an explanation of the CPS model and the use of the Ladder of Abstraction. This is my favorite tool and I would have liked to do it more justice than I did being so rushed. We finished day two after discussing "Enjoy and

Use Fantasy" though, again, I ended up only explaining the "Just Suppose" task and not having my participants actually do the task. At this point in the class, I began verbalizing out loud the fact that we had a bit more to do but that it was time to end, and the class members assured me that we would get through it all during the next class. We began day three with our SCAMPER activity and continued on to finish the skills. I ended up cutting out all discussion of the commonly debated topics in creativity such as brainstorming and domain-general or domain-specific creativity. I also skipped the topics of creativity killers and creativity and play. Also, we did not engage in VIR, but rather I simply explained that there are activities that exist to help facilitate incubation. I did the same with Brainwriting; I explained the tool and its applications in the classroom though we did not actually use the tool. The final things I omitted were the final video about creativity in schools, some final discussion points, and my feedback form (as I had learned the Teacher Center had their own feedback form I was required to give to participants). But, overall, I do not feel like anything was lost or left incomplete by what I omitted. Instead, participants still got a lot of information from what I did cover more in depth.

Reflection

About two weeks after finishing my course, I received a letter in the mail regarding the feedback my members provided on their evaluation forms and it was all positive. Some of the comments made me feel better about the material I cut out because when asked what they would have liked more information about, they did not list anything. They mentioned that I had done a thorough job and that I taught them a lot of things that they hadn't thought about before. This feedback provided me with a lot of confidence because I had been very nervous to teach the class. When I expressed my nervousness to one of my peers, she questioned me due to the fact that I teach all day long. I came to realize that I was very confident teaching middle school students but that I was nervous about teaching to my peers. I know that adults can be critical and I feared a harsh evaluation. Instead, my participants enjoyed themselves and I found that by day two, I too was more relaxed and excited to be there sharing things about which I am passionate.

Aside from the positive feedback I received, I am also continually being rewarded every time someone comes up to me and mentions the ways they have used what they learned from my class. Some of the specific activities that people have since used include things such as the "Look at it another Way" cards to examine things from difference perspectives and also the pairing activity in which people find a partner using vocabulary words, establishing their own criteria for pairing. Also, I have heard examples of people using the positive phrasing, both firsthand and through stories they've told me. I have also heard comments about the fact that my course made people think about things they had never considered before. The thing that I am most thrilled about is hearing how people are applying these principles in their lives in general and not just in the classroom. During the class itself, from one day to the next, people shared ways they deferred judgment at home with their family members and the way it benefited them to do so. I hadn't imagined that my course would reach beyond the classroom and into the personal lives of my participants. When I reflect on that fact I realize that I should have known my material would have that effect because my graduate studies have had that effect on me. I suppose that the most rewarding thing that I've experienced is that I have been asked to teach the class again over the summer. I have selected dates and committed to teach the course again and I've made it a twelve hour course this time around. I hope that with this change I am able to share even more material and restore some of the omissions I made during the nine hour class. I hope that through word of mouth, my class fills up with new participants that look forward to learning about the place creativity has in their classroom and in their lives.

Part Four: References

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Part Five: Appendix

Appendix A - Course Handouts

Handout #1: Choose One of These Tasks

Handout #2: A Sample Activity from the TTCT (Verbal)

Handout #3: A Sample Activity from the TTCT (Figural)

Handout #4: Coat of Arms

Handout #5: A Sample Activity from the TTCT (Verbal)

Handout #6: When life hands you lemons...

Handout #7: Six Thinking Hats

Handout #8: A Sample Activity from the TTCT (Verbal)

Handout #9: SCAMPER

Handout #10: Crystal Ball

Handout #11: A Creativity Skill Set

Handout #12: Dimensions of the Creative Environment

Handout #13: The Torrance Incubation Model

Handout #14: Visually Identifying Relationships (VIR)

Handout #15: T.I.M. Lesson Plan Template

Handout #16: Sample T.I.M. Lesson Plan

Handout #17: Brainwriting

Handout #18: PPC^{o}

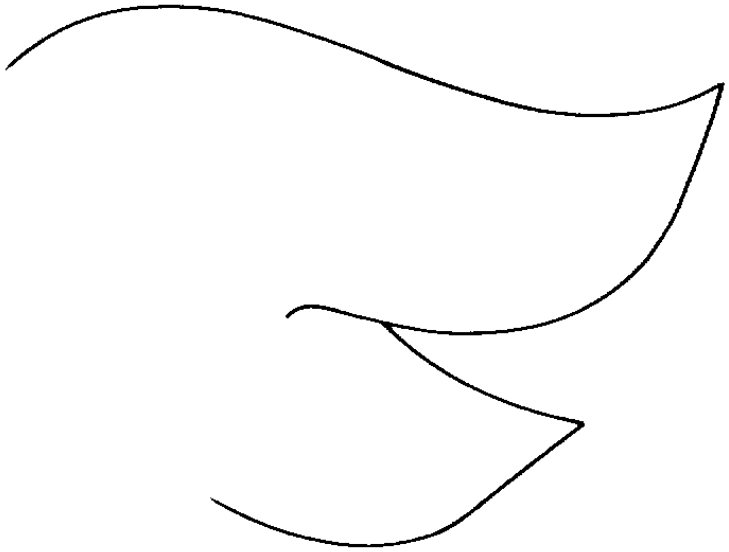
Handout #19: The Manifesto for Children

Handout #20: Further Reading on Creativity and the Torrance Incubation Model

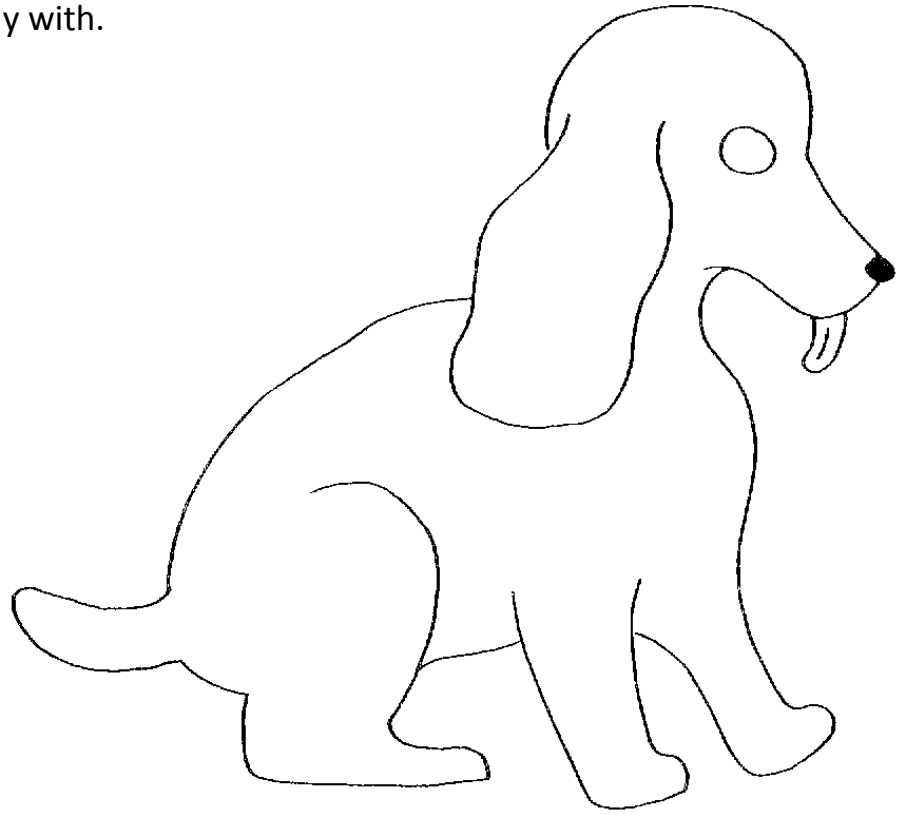
Handout #21: Feedback Form

Choose One of These Tasks

1. Complete this figure in such a way as to make an interesting picture. Add details to make it tell an interesting story.



2. Add to this sketch of a stuffed toy dog some improvement that you think will make it more interesting to play with.



Source: Torrance, E. P. (1970). *Encouraging creativity in the classroom*. Dubuque, IA: William C. Brown.

A Sample Activity from the TTCT (Verbal)

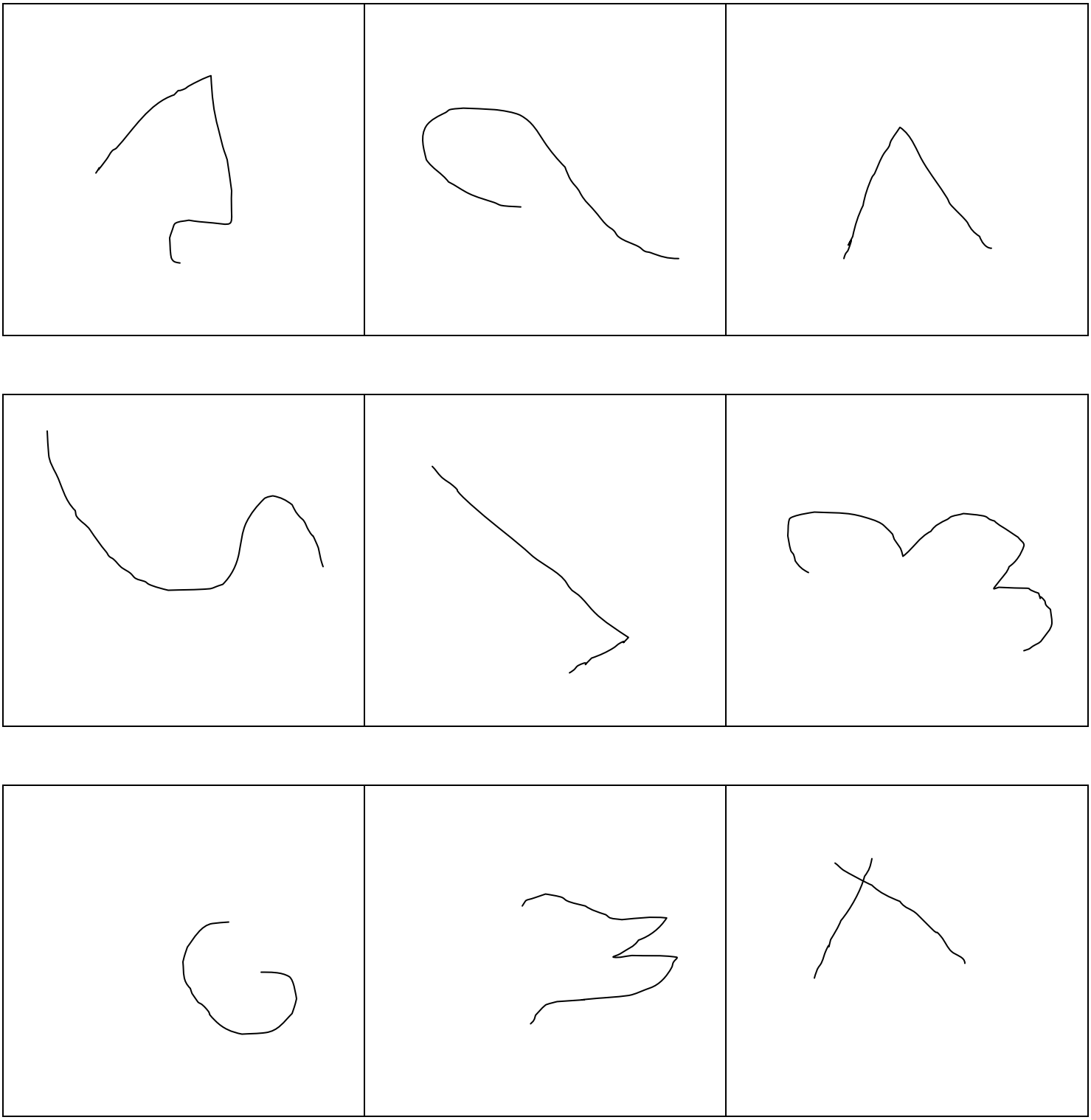
List as many uses as you can think of for junked automobiles. Try to think of ideas that others will not think of.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____

Adapted from: Torrance, E. P. & Safter, H. T. (1999). *Making the creative leap beyond.* Buffalo, NY: Creative Education Foundation.

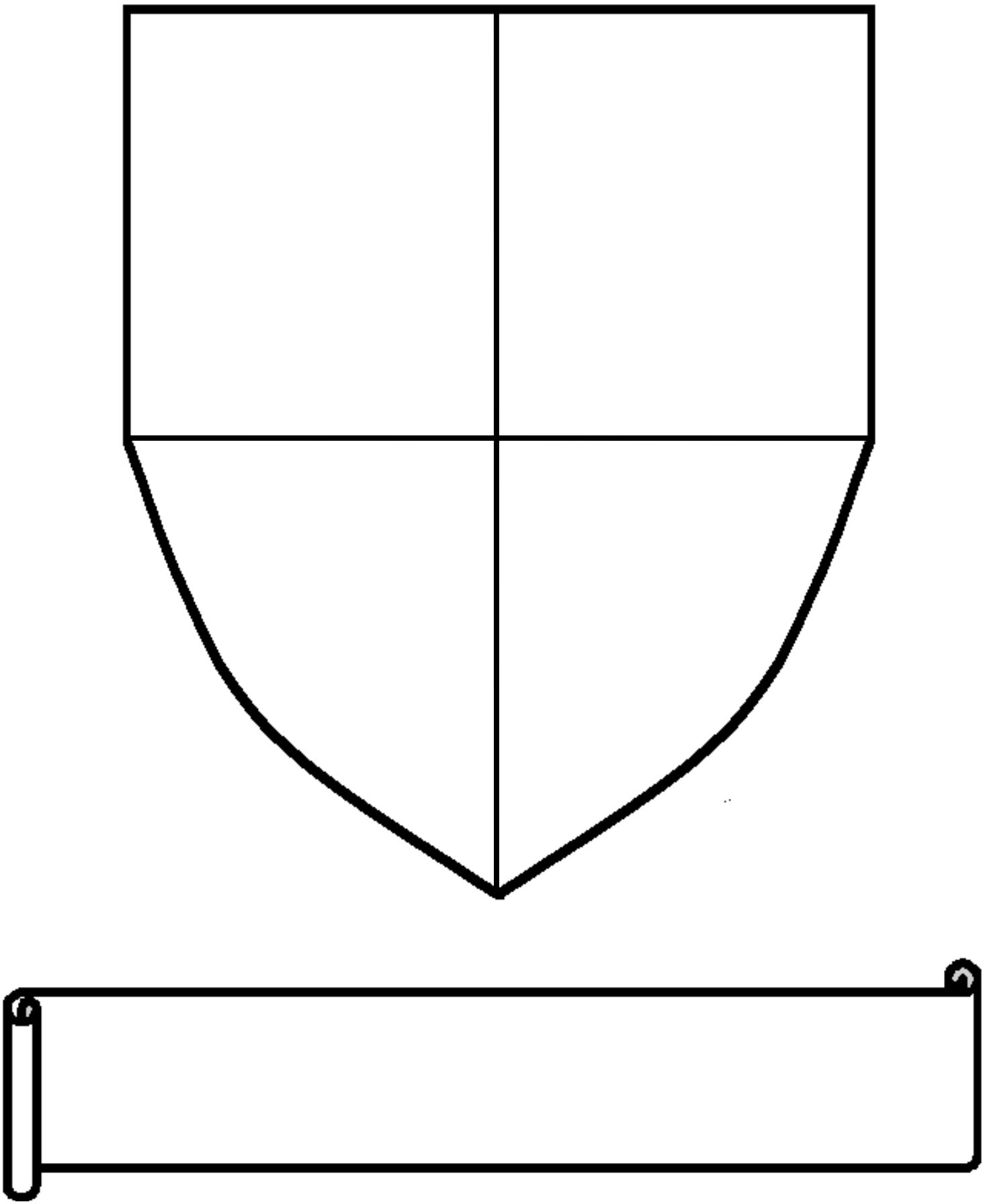
A Sample Activity from the TTCT (Figural)

Make some pictures from the incomplete figures below. Try to think of pictures that others will not think of.



Adapted from: Torrance, E. P. & Safter, H. T. (1999). *Making the creative leap beyond.* Buffalo, NY: Creative Education Foundation.

Coat of Arms



Adapted from: Baum, B. R. (n.d.). *How to motivate audiences: 121 energizers, icebreakers and activities for promoting creative problem solving, teamwork and laughter.* Buffalo: Bates Jackson.

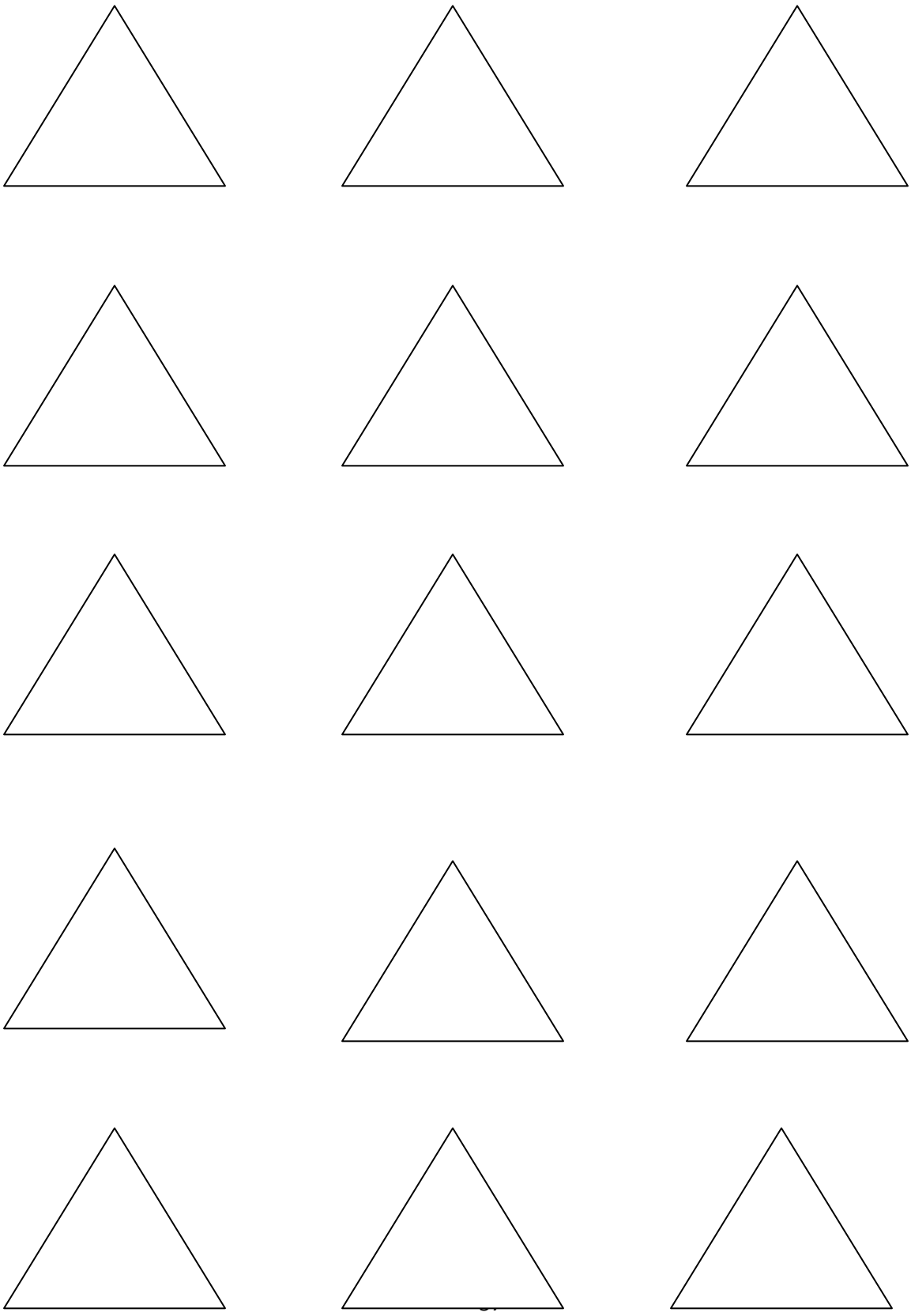
A Sample Activity from the TTCT (Verbal)

Just suppose you could fly without being in an airplane. What might be all the benefits of this? List below as many as you can think of in 3 minutes.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____
26. _____
27. _____
28. _____
29. _____
30. _____
31. _____
32. _____
33. _____

A Sample Activity from the TTCT (Figural)

See how many objects or pictures you can make out of the triangles below just as you did before with the incomplete figures. Work for 3 minutes.



Adapted from: Torrance, E. P. & Safter, H. T. (1999). *Making the creative leap beyond.* Buffalo, NY: Creative Education Foundation.

When life hands you lemons...

Looking at the particular lemon you've selected, answer the following questions with as much detail and description as you can.

1. What shade of yellow is your lemon?

_____

2. Are there any distinguishing marks on your lemon? Are there any discolorations?

_____

_____

3. What does it smell like?

_____

_____

4. What is the texture of your lemon? Is it one texture throughout?

_____

_____

5. What size is your lemon? Are there any abnormalities in its shape?

_____

_____

_____

6. What else can you describe about your lemon?

_____

_____

_____

Adapted from: Torrance, E. P. & Safter, H. T. (1990). *The incubation model of teaching: Getting beyond the aha*. Buffalo, NY: Bearly Limited.

Six Thinking Hats®

White Hat®

Knowledge (Original Bloom)
Remembering (Revised Bloom)

Thinks about:
Facts and Data
Information
Research

Question Starters:
Who, What, When, Where?
What do you know about…?
What are the facts about…?
What do you need to know about…?
What do you want to know about…?
Where might you go to find out about …?

Red Hat®

Evaluation (Original Bloom)
Evaluating (Revised Bloom)

Thinks about:
Feelings
Hunches
Intuition

Question Starters:
What are your feelings now?
Did your feelings change? How?
Which way do you like best based on your feelings?
What prejudices are present?
What is your hunch about...?
What is your gut feeling about…?

Black Hat ®

Analysis (Original Bloom)
Analyzing (Revised Bloom)

Thinks about:
Caution
Dangers and Risks
Weaknesses

Question Starters:
What should you be cautious about?
What words of wisdom come from this?
What are the consequences of…?
What were the difficulties of...?
Why won't / didn't this work?
What do you dislike about...?
What are the risks of…?

Yellow Hat®

Analysis (Original Bloom)
Analyzing (Revised Bloom)

Thinks about:
Benefits
Value
Good
Positives and Strengths

Question Starters:
What are the benefits of…?
What is good about…?
What is a positive outcome of…?
What is the value of...?
Can this be made to work?
What do you like about…?

Green Hat®

Synthesis (Original Bloom)
Creating (Revised Bloom)

Thinks about:
Creativity
Imagination
New Ideas
Possibilities

Question Starters:
What if...?
Can you create other ways to do this?
How would you solve the problem?
What new ideas can you think of?
What other possibilities are there for…?

Blue Hat®

Comprehension (Original Bloom)
Understanding (Revised Bloom)

Thinks about:
Thinking
Process
Big Ideas/Main Idea
Conclusions
Summary
Listing

Question Starters:
What is your conclusion?
Why?
What next?
What is the main idea?
What are the big ideas?
What was the problem?
How was the problem solved?
Track your thinking
Plan for action
List
Journal
Tell how you got your answer
Sequence the events
Explain
Summarize
Look from another perspective
Look (think) as if you were in the sky

Adapted from: De Bono, E. (1999). *Six thinking hats: An essential approach to business management*. Boston: Back Bay Books.

A Sample Activity from the TTCT (Verbal)

Just suppose you were the first person to meet a man from Mars. List below as many questions as you can think of that you would ask that man. Try to think of questions that others will not think of.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

Adapted from: Torrance, E. P. & Safter, H. T. (1999). *Making the creative leap beyond.* Buffalo, NY: Creative Education Foundation.

SCAMPER

Substitute (veggie burgers, artificial sweeteners)

- What could you substitute?
- What might you do instead?

Combine (musical greeting cards)

- What would you combine?
- What might work well together?
- What could be brought together?

Adapt (air fresheners that resemble shells, children's beds that look like race cars)

- What could be adjusted to suit a purpose or condition?
- How could you make it fit?

Modify/Magnify/Minimize (parabolic skis, scented crayons, extra-strength medicines, over-sized sports equipment and televisions, iPads, light-weight bicycles)

- What would happen if you changed the form or quality?
- Could you make it larger, greater, or stronger?
- Could you make it smaller, lighter, or slower?

Put to other uses (old tires used for fences, swings and bird feeders, snowboards)

- How could you use it for a different purpose?
- What are some new ways to apply it?
- What does it suggest?

Eliminate/Elaborate (sodium-free and fat-free foods, cordless telephones, a short story rewritten as a play, a simple tune developed for an orchestra to play)

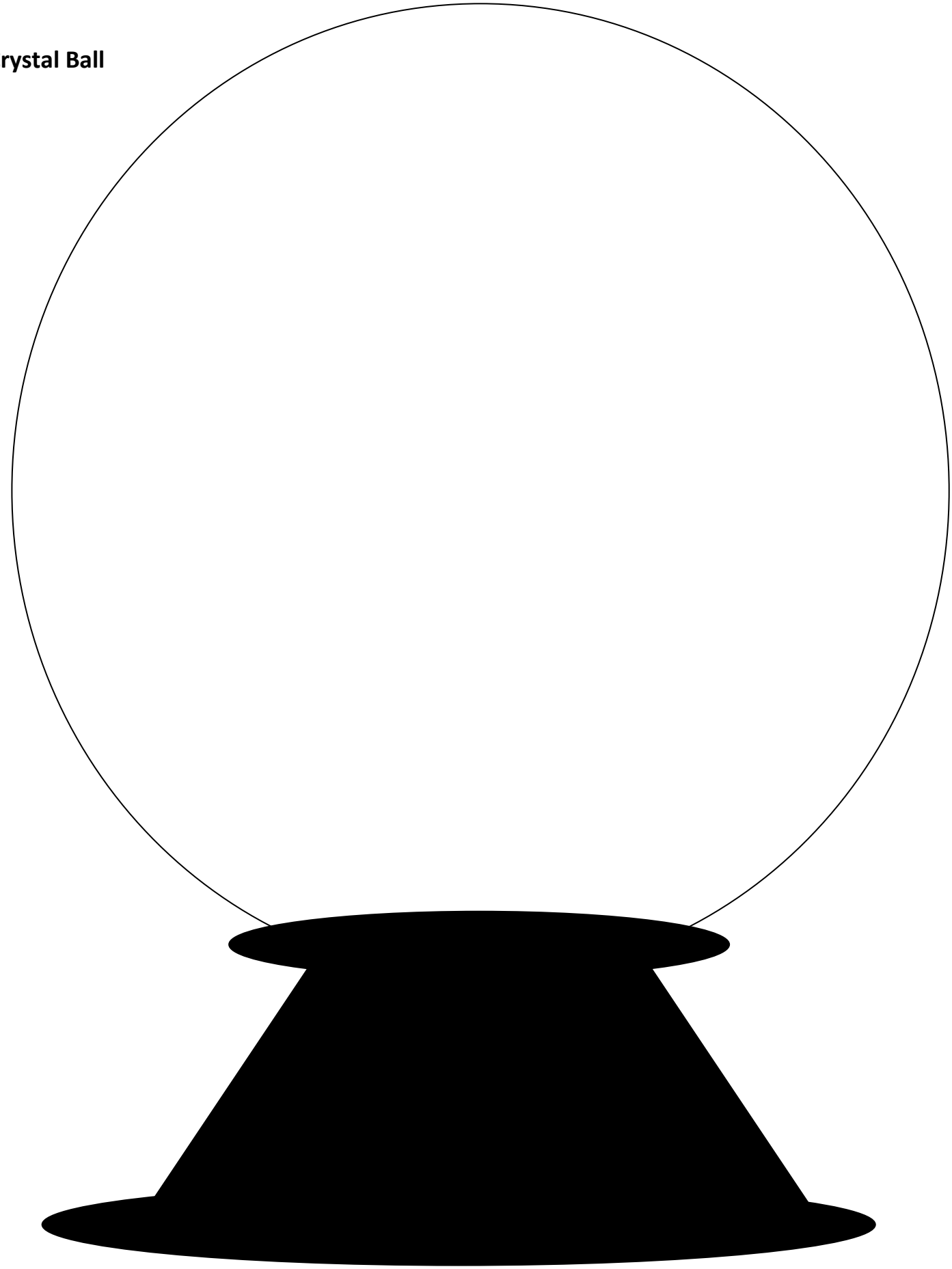
- What could you subtract, take away or do without?
- How could you expand or elaborate on what is there?

Rearrange (reversible clothing)

- What would you have if you reversed it or turned it around?
- Could you change the parts, order, or layout?

Adapted from: Eberle, R. F. (1971). *Scamper: Games for imagination development*. Buffalo, NY: DOK.

Crystal Ball



A Creativity Skill Set

Be original

- ✓ moving away from the obvious
- ✓ breaking away from habit-bound thinking
- ✓ statistically infrequent responses
- ✓ the ability to create novel, different, or unusual perspectives

Keep open

- ✓ resisting premature closure
- ✓ resisting the tension to complete things in the easiest, quickest way

Combine and synthesize

- ✓ making new connections with the elements within our perceptual set
- ✓ combining relatively unrelated elements
- ✓ making the familiar strange and the strange familiar

Make it swing, Make it ring

- ✓ using kinesthetic and auditory senses
- ✓ responding to sound and movement

Breakthrough – Expand the boundaries

- ✓ thinking outside prescribed requirements
- ✓ changing the paradigm or system within which a problem resides

Produce and consider many alternatives

- ✓ fluency and amount
- ✓ generating many and varied ideas

Highlight the essence

- ✓ identifying what is most important and absolutely essential
- ✓ discarding erroneous or irrelevant information
- ✓ abandoning unpromising information
- ✓ allowing a single problem or idea to become dominant and synthesizing all of this at the same time

Be aware of emotions

- ✓ recognizing verbal and nonverbal cues
- ✓ responding, trusting, and using feelings to better understand people and situations

Visualize it richly and colorfully

- ✓ using vivid, exciting imagery
- ✓ creating colorful and exciting images that appeal to all five senses

Look at it another way

- ✓ being able to see things from a different visual perspective
- ✓ being able to see things from a different psychological perspective or mindset

Let humor flow and use it

- ✓ perceiving incongruity
- ✓ responding to a surprise
- ✓ recognizing and responding to perceptual and conceptual discrepancies

Be flexible

- ✓ creating variety in content
- ✓ producing different categories
- ✓ changing one's mental set to do something differently
- ✓ perceiving a problem from different perspectives

Elaborate – but not excessively

- ✓ adding details or ideas - developing them
- ✓ filling in details for possible implementation

Put your ideas in context

- ✓ putting parts of experience into a bigger framework
- ✓ putting experiences together in a meaningful way
- ✓ making connections between things
- ✓ giving situations and ideas a history, a background, and a story

Enjoy and use fantasy

- ✓ imagine, play, and consider things that are not concrete or do not yet exist

Visualize the inside

- ✓ paying attention to the internal dynamic workings of things
- ✓ picturing or describing the inside of things

Get glimpses of the future

- ✓ predict, imagine, and explore things that do not yet exist
- ✓ wonder and dream about possibilities
- ✓ view events as open-ended

Source: Torrance, E.P. & Safter, H. T. (1998). *Making the creative leap beyond*. Buffalo, NY: Creative Education Foundation Press.

Dimensions of the Creative Environment

Dynamism and Liveliness

How much energy is there around the topic at hand?

Trust and Openness

Is it safe for me to speak my mind and share an opposing opinion?

Idea Time

Do I have time to think through things before I have to act?

Playfulness and Humor

Is it ok for me to have fun?

Debate

Are the people around me ok with engaging in lively, productive debates around a topic?

Risk-taking

Is it ok for me to be wrong?

Idea Support

Are there resources available for me to try a new idea?

Challenge

How emotionally involved and committed are the people around me?

Freedom

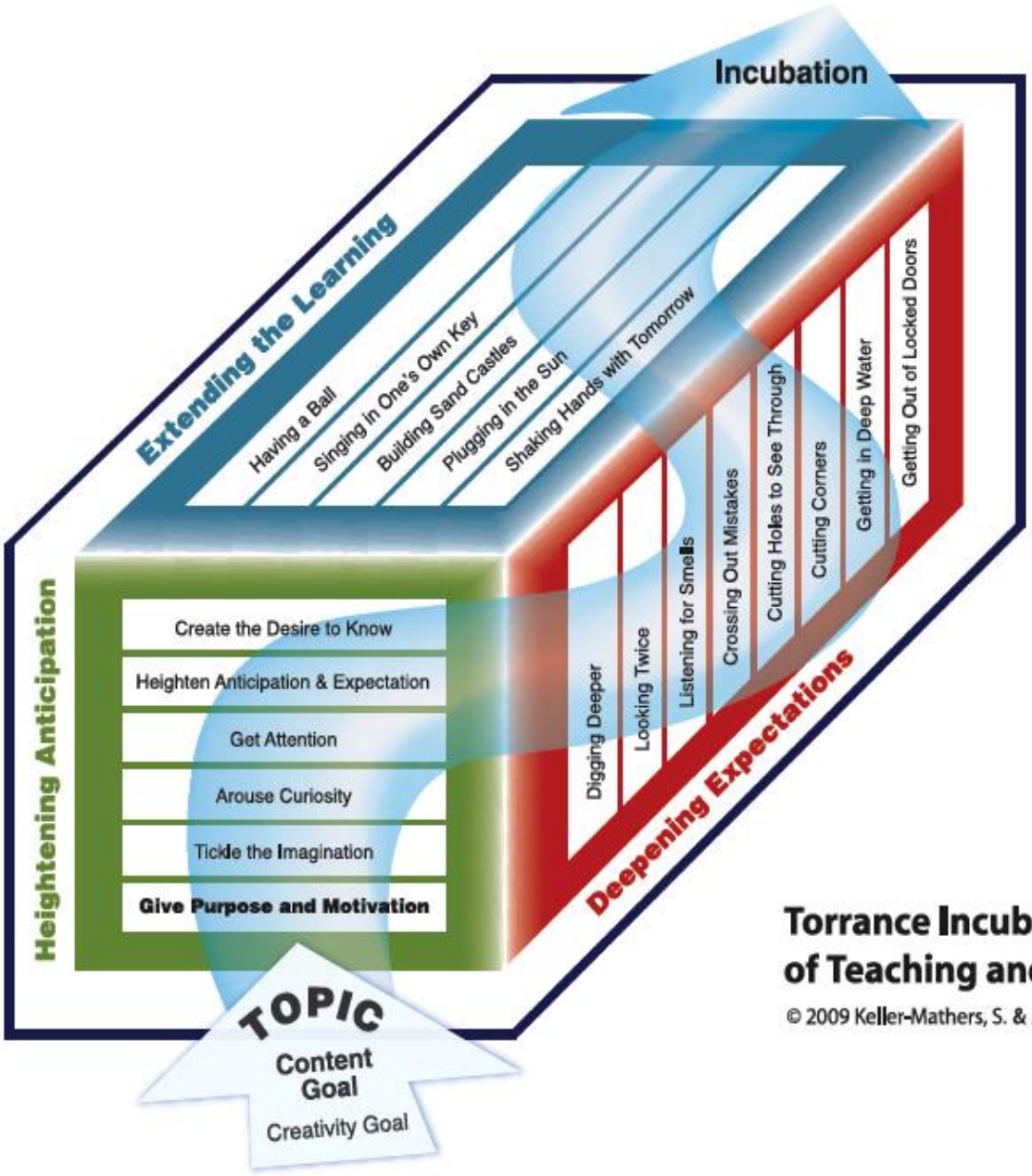
Do I have a choice in the way I get my task done?

Conflict*

Do the people around me engage in arguments and 'warfare'?

*This dimension is negatively related to creative production - high levels of conflict in an environment have a negative impact on creative production.

Source: Ekvall, G. (1996). Organizational climate for creativity and innovation. *European Journal of Work and Clinical Psychology, 5*(1), 105-123.



Torrance Incubation Model of Teaching and Learning

Visually Identifying Relationships (VIR)

Stimulus 1	Connections
_____	_____
_____	_____
_____	_____
_____	_____

Stimulus 2	Connections
_____	_____
_____	_____
_____	_____
_____	_____

Stimulus 3	Connections
_____	_____
_____	_____
_____	_____
_____	_____

Stimulus 4	Connections
_____	_____
_____	_____
_____	_____
_____	_____

Stimulus 5	Connections
_____	_____
_____	_____
_____	_____
_____	_____

Adapted from: Geschka, H. (1979). *Methods and organization of idea generation*. Creativity Week Two, 1979 Proceedings. Greensboro, NC: Center for Creative Leadership.

Gordon, W. (1961). *Synectics*. New York: Free Press.

T.I.M. Lesson Plan Template

Name: _____ **Date of Lesson**: _____

Content Topic: _____

Content Objective: _____

Creativity Skill: _____

Creativity Objective: _____

Materials:

Heightening Anticipation:

Lesson Steps:

Incorporation of Creativity Skill:

Deepening Expectations:

Lesson Steps:

Incorporation of Creativity Skill:

Extending the Learning:

Lesson Steps:

Incorporation of Creativity Skill:

Adapted from the template provided by the International Center for the Studies of Creativity at Buffalo State College, Buffalo, NY

Sample T.I.M. Lesson Plan

Name: Jenna Ziegler **Date of Lesson**: 3/22/11

Content Topic:

The Torrance Incubation Model of Teaching and Learning and using the creativity skills in the classroom

Content Objective:

Show fellow teachers how to use the T.I.M. to incorporate creativity skills into their lessons

Creativity Skill:

Look at it another way

Creativity Objective:

Help course participants view things from a different mental or psychological perspective

Materials:

- ✓ PowerPoint slideshow, projector, and screen
- ✓ Toys and games for the creative environment
- ✓ Words for finding partners
- ✓ Index cards
- ✓ Handouts:
    - Dimensions of the creative environment
    - Torrance Incubation Model diagram
    - Blank T.I.M. lesson plan template
    - My T.I.M. lesson plan for this class

Heightening Anticipation:

Lesson Steps:

- Have teachers randomly select a slip of paper with a word on it from the previous session. Instruct teachers to find their partner (give little additional instruction on the criteria to use to find a partner). Teachers will find a partner and then share their words and the reasons why they belong with their partners.
- Teachers will then be instructed to switch partners by finding another person they could pair up with according to their words. Explain the way they found this new partner.
- Discuss the creativity skills used in this warm-up.

Incorporation of Creativity Skill:

Teachers will "Look at it another way" when they switch partners and consider their words in a new way, departing from the traditional definition or their original view of their words.

Deepening Expectations:

Lesson Steps:

- We will continue to discuss other creativity principles including the creative environment and characteristics of the creative person.
- With their partner, teachers will discuss ways in which they already use the different creativity skills in their classrooms (before they even learned about the creativity skills). Pairs will share these activities with the group.
- Introduce the Torrance Incubation Model and hand out the T.I.M. model diagrams.
- Elaborate on incubation and its role in the creative process. Share some tools that can be used to facilitate incubation and help participants think about their own incubation processes.
- Compare the stages in the T.I.M. to the steps of a traditional lesson plan.
- Go through the PowerPoint slides explaining the metaphors in the T.I.M.

Incorporation of Creativity Skill:

Teachers will "Look at it another way" when they examine activities they already do in their classrooms and see how they were already using the creativity skills in their classrooms. Also, teachers will engage in this skill when they consider a typical lesson plan format and compare that to the stages of the Torrance Incubation Model.

Extending the Learning:

Lesson Steps:

- Hand out the lesson plan template and explain how it is used to design lessons with the T.I.M.
- Explain how I designed this session with "Look at it another way" in mind. See if teachers can notice particular times when they were forced to look at things from a different perspective.
- Pass out this lesson plan for teachers to consider.
- Discuss how teachers might address the creativity skills in their classroom.

Incorporation of Creativity Skill:

Teachers will "Look at it another way" when they reexamine this class and its lesson format as a whole and see how this session utilized the Torrance Incubation Model to weave a creativity skill into the instruction of a content topic.

Brainwriting

Statement of the Problem: _____

Adapted from: Geschka, H. (1979). Methods and organization of idea generation. *Creativity Week Two, 1979 Proceedings*. Greensboro, NC: Center for Creative Leadership.

PPC^{O}

PPC^{O} is an affirmative judgment tool used to investigate, support, or polish an idea.

State the idea, challenge, or option:

_____

Pluses:

What do you like about the idea? (pluses, strong points, positive aspects, advantages)

- _____
- _____
- _____
- _____
- _____

Potentials:

What might be all the potentials or future opportunities if this idea goes into effect?

Start these statements with “It might…”

- _____
- _____
- _____
- _____
- _____

Concerns:

What are your concerns about the idea? (limitations, negative aspects)

Start these statements in a way that they can be overcome: “How to…”, “How might…”

- _____
- _____
- _____
- _____

Overcoming Concerns:

Brainstorm ideas to overcome the key concern(s). Consider some of the top concerns.

Top Concern:

_____

Ideas for overcoming this concern:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Second Concern:

_____

Ideas for overcoming this concern:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Third Concern:

_____

Ideas for overcoming this concern:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Source: Miller, B., Vehar, J., Firestein, R. (2001). *Creativity unbound: An introduction to creative process, 3rd edition*. Williamsville, New York: Innovation Resources, Inc.

The Manifesto for Children

by E. Paul Torrance

Don't be afraid to fall in love with something
and pursue it with intensity.

Know, understand, take pride in, practice, develop, exploit
and enjoy your greatest strengths.

Learn to free yourself from the expectations of others
and to walk away from the games they impose on you.

Free yourself to play your own game.

Find a great teacher or mentor who will help you.

Learn the skills of interdependence.

Don't waste energy trying to be well rounded.

Do what you love and can do well.

Source: Torrance, E. P. (1983). *Manifesto for children*. Athens, GA: Georgia Studies of Creative Behavior and Full Circle Counseling, Inc.

Further Reading on Creativity and the Torrance Incubation Model

Davis, G. A. (1992). *Creativity is forever*. Iowa: Kendall/Hunt Publishing Company.

Firestien, R. (2004). *Leading on the creative edge: Gaining competitive advantage through the power of creative problem solving*. Colorado Springs: Pinon Press.

Manktelow, J. (2009). *Mindtools: Essential skills for an excellent career*. (2009). Web Site: http://www.mindtools.com

Miller, B., Vehar, J., Firestein, R. (2001). *Creativity unbound: An introduction to creative process, 3rd edition*. Williamsville: Innovation Resources, Inc.

Miller, B., Vehar, J., Firestein, R. (2001). *Facilitation: A door to creative leadership, 3rd edition*. Williamsville: Innovation Resources, Inc.

Osborn, A. F. (1963). *Applied imagination*: *Principles and procedures of creative problem solving*. New York: Scribner.

Torrance, E. P. (1970). *Encouraging creativity in the classroom*. Dubuque, IA: William C. Brown.

Torrance, E. P. & Myers, R. E. (1970). *Creative learning and teaching*. NY: Dodd Mead.

Torrance, E. P. & Safter, H. T. (1990). *The incubation model of teaching: Getting beyond the aha*. Buffalo, NY: Bearly Limited.

Torrance, E. P. & Safter, H. T. (1999). *Making the creative leap beyond*. Buffalo, NY: Creative Education Foundation.

Feedback Form

I would appreciate your help in assessing the effectiveness of this course and also editing and revising this course to better fit the needs of teachers in future classes. Please answer the questions below to provide me with some constructive feedback.

1. What was the most important or relevant thing you learned in this course that you will take with you?

_____

_____

2. Which particular hands-on activity or exercise did you enjoy engaging in the most?

_____

_____

3. Which activity did you least enjoy?

_____

_____

4. What topic(s) would you have liked to hear more about?

_____

_____

5. Are there any activities or concepts that you think you will implement in your classroom?

_____

_____

6. Please include here any other suggestions to help improve this course in the future.

_____

_____

¡Gracias!

Appendix B - Other Course Materials

Item #1: Introduction to Creativity Quiz

Item #2: Laminated Cards - CPS Process Model

Item #3: Laminated Cards - Guidelines for Diverging

Item#4: Laminated Cards - Guidelines for Converging

Item #5: PowerPoint Presentation

Introduction to Creativity Quiz

True or false:

____ 1. The major push for the study and research of creativity came during The Enlightenment in the late 18th century. (F)

____ 2. The creativity tool *Brainstorming* was invented by an advertising executive in New York City. (F)

____ 3. Developing creative products often involves a process in which one can *deliberately* choose to engage. (T)

____ 4. Due to the difficulty in defining creativity, no assessments exist to measure the level of creativity of an individual. (F)

____ 5. Creativity is an inborn talent that can't be taught or trained in others. (F)

____ 6. Some creativity scholars believe that children *can't* be considered creative. (T)

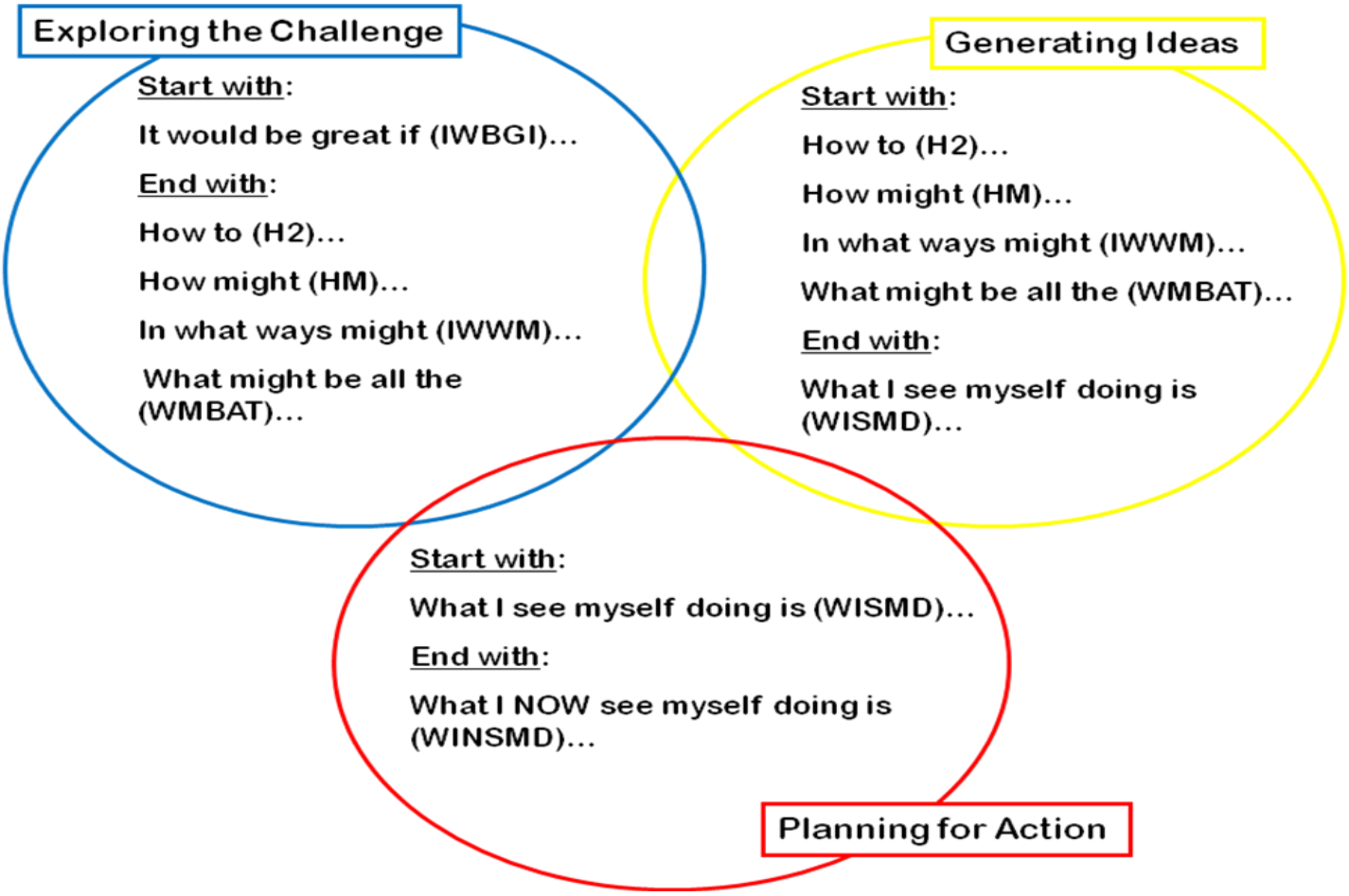
____ 7. Creativity scholars have adopted one unified definition of creativity on which to base all future research. (F)

____ 8. The relationship between creativity and general intelligence has been thoroughly researched and results show that there is *no correlation* between the two. (F)

____ 9. Bloom's Taxonomy has been recently revised and now includes *creating* as one of the higher order thinking skills. (T)

____ 10. The most productive creative thought takes place in an environment with few distractions. (F)

Laminated Cards - CPS Model



Laminated Cards - Guidelines for Diverging

Guidelines for Diverging

Defer judgment

"Creativity requires the courage to let go of certainties."

-Erich Fromm

Strive for quantity

"The best way to have a good idea is to have a lot of ideas."

-Linus Pauling

Seek wild and unusual ideas

"An idea that is not dangerous is unworthy of being called an idea at all."

-Oscar Wilde

Build on other ideas

"There is nothing new except what has been forgotten."

-Marie Antoinette

Laminated Cards - Guidelines for Converging

Guidelines for Converging

- ☑ Be affirmative
- ☑ Be deliberate
- ☑ Check objectives
- ☑ Improve ideas
- ☑ Consider novelty

PowerPoint Presentation

Creativity and Content: Partners in the Classroom

Using the Torrance Incubation Model to teach creativity skills in the classroom

My Goals for This Course

- Main Objectives:
  - Define and understand the notion of "creativity"
  - Explain the purpose and use of Torrance Incubation Model for Teaching and Learning
- Secondary Objectives:
  - Share some tools and activities for enhancing your creativity and the creativity of others
  - Share some main principles of creativity and creativity research

Are you creative?

What is a Masters in Creative Studies?

- Foundations of Creative Learning
- Facilitation of Group Problem Solving
- Current Issues in Creative Problem Solving
- Creativity and Change Leadership
- Creativity Assessment Methods
- Foundations in Teaching and Training Creativity

What is creativity?

Name Fifty Different Birds

sea or water birds
birds you'd find in your backyard
birds that people eat
birds of prey

birds that are sports teams
birds that we often forget are birds
birds that aren't birds at all

Break Inhibiting Habits

1000
40
1000
30
1000
20
1000
10
4100

What is creativity?

What is Brainstorming?

Brainstorming, according to Alex Osborn:

"A creative conference for the sole purpose of producing a checklist of ideas – ideas which can serve as leads to problem solution – ideas which can subsequently be evaluated and further processed."

The Divergent Guidelines

1. Defer Judgment
2. Strive for Quantity
3. Seek Wild and Unusual Ideas
4. Build on Other Ideas

"Stick-em Up Brainstorming" - A divergent tool

1. WRITE IT (on the Post-it)
2. SAY IT (out loud)
3. HOLD IT UP

Creativity: A Working Definition

"Novelty that is useful."

"Word Dance" - A divergent tool

A brainstorming tool to help generate many alternatives:

NOVEL	USEFUL

The Convergent Guidelines

1. Be affirmative
2. Be deliberate
3. Check objectives
4. Improve ideas
5. Consider novelty

What is creativity to You?

On the other side of the same index card you used earlier, define what creativity means to you.

You might want to consider the Four P's to guide your definition:

Person

Process

Product

Press

Person

Product

Process

Press

What is creativity to You?

Share this definition with the person next to you.

Is there anything that both of your definitions have in common?

My definition of Creativity

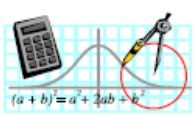
Creativity is that which allows us to remove our self-imposed constraints.

"Stretch Experiences"

experiences that require us to step outside our comfort zone in order to achieve a more important goal

A Formula for Creativity

$$P(C) = \int_a (K,I,E)$$



Big "C" and Little "C" Creativity

- everyday, "small c" creativity
- eminent, "Big C" creative breakthroughs

Creativity is NOT...

- Magic
- Mysterious
- Madness

Creativity IS...

- The generation of ideas, products, or outcomes that are both *novel* and *useful*
- A resource that we all possess to some degree
- A skill that can be nurtured and enhanced through deliberate practice

But why is creativity important?

- It is found in all disciplines, from chemistry to engineering to education to business.
- We all have it, but to varying degrees.
- Learning requires us to use many skills that are associated with creativity.
- It is important for our mental health! Creativity skills are useful for coping with life's challenges.
- Our world is competitive! Creativity skills help businesses and individuals keep up in a world of complexity and change.

Alden School District Belief Statement

"We believe:

- that success requires vision, risk-taking and responsibility.
- that all children can learn.
- that students will be life-long learners maximizing their potential through
  - problem solving and
  - higher order thinking skills"

The New Bloom's Taxonomy

Evaluation	Creating
Synthesis	Evaluating
Analysis	Analyzing
Application	Applying
Comprehension	Understanding
Knowledge	Remembering

Survival Skills of the 21st century

- Critical Thinking and Problem Solving
- Collaboration Across Networks and Leading by Influence
- Agility and Adaptability
- Effective Oral and Written Communication
- Initiative and Entrepreneurialism
- Accessing and Analyzing Information
- Curiosity and Imagination

How is creativity related to IQ?

- analytical
- articulate
- capable
- competent
- common-sensical
- ingenious
- precocious
- well informed
- alert to gaps in knowledge
- clear-thinking
- knowledgeable
- logical
- rational
- well read

The Threshold Hypothesis

- A minimal level of intelligence is necessary for creative achievement:
  - Below the threshold, there is not enough intelligence for creative work
  - Above the threshold, there is potential but no guarantee
- Intelligence is necessary but not sufficient for creative achievement
- Research has shown that students with an IQ above 180 have trouble being original

E. Paul Torrance – "The Creativity Man" and "The Father of Creativity"

- 1915 - 2003
- Over 50 years of creativity research
- Has over 1,100 publications
- Teaching career spanned from 1957-1984

E. Paul Torrance – "The Creativity Man" and "The Father of Creativity"

- Worked at the University of Minnesota as Director of the Bureau of Educational Research
- Served in the U.S. Army
- Founded the Future Problem Solving Program
- Created the "Torrance Tests of Creative Thinking" (1966)

Torrance's (First) Definition of Creativity

"Whenever people confront a problem for which they have no learned and practiced solution, some degree of creativity is required."

Torrance's (Second) Definition of Creativity

"The process of sensing problems or gaps in information, forming ideas or hypotheses, testing and modifying these hypotheses, and communicating the results."

(Torrance, 1989)

How would you measure creativity?

What are some things (actions, products) that you've seen to which you've remarked, "How creative!"?

What are some things you see happen in your classroom that you think are creative?

What criteria do we use to determine if a person is creative?

How do we evaluate based on these criteria?

How do we determine if a product is creative?

Who determines if a product is creative?

What if my definition of creativity is different from yours? How do we measure creativity then?

Measuring Creativity

How creative are you?

(TTCT)

vs.

How are you creative?

(Kirton Adaption-Innovation Inventory)
(FourSight)
(Myers-Briggs Type Indicator)

Creative Needs

- Curiosity
- Meet challenge and attempt difficult tasks
- Give oneself completely to a task
- Be honest and search for the truth
- Be different, be an individual

Why learn creatively?

- Learning by authority – recognition, memory, logical reasoning

- Learning creatively – evaluation, divergent production, problem redefinition

10 Minute Break

A Creativity Skill Set

A set of skills that enhance one's creativity by accessing different aspects of creative thought

Let's Practice...

Using the sheet provided, complete part of the Torrance Tests of Creative Thinking.

1. Be original

- moving away from the obvious
- breaking away from habit-bound thinking
- statistically infrequent responses
- the ability to create novel, different, or unusual perspectives

The "fourth grade slump"

- Not just in academic subjects
- Also apply to originality
- Students are becoming aware of the opinions of those around them

Consider Originality

- Art (abstract, modern, sculpture, pop art, etc.)
- Automobiles – making one out of junked parts
- Automobiles – pretend ones for playgrounds, etc.
- Chairs
- Demolition derby
- Warning demonstrations for drivers
- Educational use to rebuild, learn, etc.
- Flower planter
- Racing
- Repair to sell
- Scrap iron, metal
- Use tires for tire swing
- Tension reducer, smash with hammer
- Recap tires and sell

Let's Practice...

Using the sheet provided, complete part of the Torrance Tests of Creative Thinking.

2. Keep open

- resisting premature closure
- resisting the tension to complete things in the easiest, quickest way

Did you close the figures?

3. Combine and synthesize

- making new connections with the elements within our perceptual set
- combining relatively unrelated elements
- making the familiar strange and the strange familiar

Jokes born from combining and synthesizing

What do you get if you cross a pig with a dinosaur?

Jurassic Pork

What do you call a fake noodle?

An Impasta

What do you call a cow that plays the guitar?

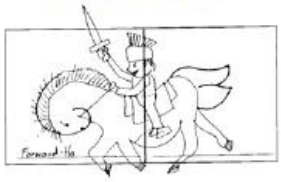
Moosician

What do you get if you cross an alligator with a flower?

I don't know, you smell it first!

How did you do?

Only about 1 in every 1,000 people will combine images in different boxes to become one image.



"Morphological Matrix" - A Divergent Tool

Characters	Setting	Goals	Obstacles
1.			
2.			
3.			
4.			
5.			
6.			
7....			

Other uses – Planning a trip

Destination	Time of Year	Transportation	Lodging
1.			
2.			
3.			
4.			
6.			
6.			
7....			

Other uses – doing a room makeover

Paint Color	Decorations	Furniture	Entertainment
1.			
2.			
3.			
4.			
6.			
6.			
7....			

Combine and Synthesize Made Profitable!

Combine and Synthesize Made Profitable!

Find a Partner

4. Make it swing, make it ring

- using kinesthetic and auditory senses
- responding to sound and movement

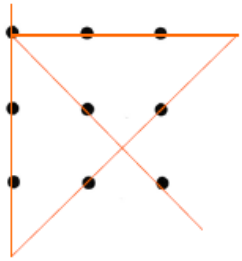
Thinking Creatively in Action and Movement (TCAM)

Come up with as many ways as you can think of to put this paper cup in the recycling bin. Try to think of ways that others will not think of.

END OF DAY 1

Connect all nine dots using only four straight lines, without picking up your pencil.

An answer… (one of them)



5. Breakthrough – Expand the boundaries

- thinking outside prescribed requirements
- changing the paradigm or system within which a problem resides

Let's get to know each other…

Scroll: your name

Top left: something you like

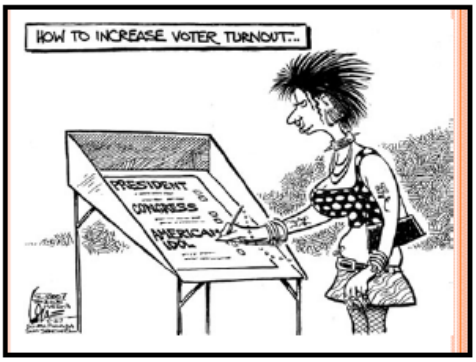
Top right: something you don't like

Bottom left: something you're proud of

Bottom right: something you're afraid of

6. Highlight the essence

- indentifying what is most important and absolutely essential
- discarding erroneous or irrelevant information
- abandoning unpromising information
- allowing a single problem or idea to become dominant and synthesizing all of this at the same time



"Labels"

The Problem: This room has been double-booked! Due to a mix up, another instructor and myself both booked this room on the same day. We both need access to the library resources.

The Task: As a group, generate all the possible ways we could fix this problem.

The Catch: We all have a role we will play, but we will be unaware of that role as we generate ideas.

7. Be aware of emotions

- recognizing verbal and nonverbal cues
- responding, trusting, and using feelings to better understand people and situations

"Head, Heart, or Gut?" - A convergent tool

Red – heart
Yellow – head
Blue – gut

8. Produce and consider many alternatives

- fluency
- amount
- generating many and varied ideas

Produce and Consider Many Alternatives

Using the sheet provided, let's test our ideational fluency in two ways.

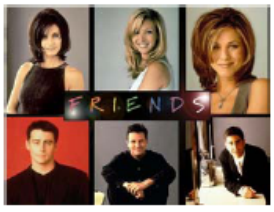
So how did we do?

- How many ideas did you produce?
- Did your ideas flow rapidly?
- Did you have trouble getting started, or did ideas come rapidly?
- Did you look around the room to get ideas?
- Was one of these activities more difficult than the other?
- Were you able to combine ideas to come up with others?
- What slowed you down during this activity?
- Were you critical of yourself or self-conscious while doing this?

Consider Originality

- Birds
- Human face or figure
- Horse head or body
- House
- Kite
- Cottage
- Geometric design/doodling
- Tree
- Tent
- Teepee
- 6 point star

Revisiting the Divergent Guidelines



Revisiting the Divergent Guidelines

1. Defer Judgment

A Warmup for Deferring Judgment

Step 1: "This would make a great..."

Step 2: "Yes, because..."

Problem Statement:

What might we do with 10,000 ping pong balls?

Revisiting the Divergent Guidelines (Cont.)

2. Strive for Quantity

Revisiting the Divergent Guidelines (Cont.)

3. Seek Wild and Unusual Ideas

"Behold the turtle. He makes progress only with his neck out."

Problem Statement:

What might we do with 10,000 ping pong balls?

Revisiting the Divergent Guidelines (Cont.)

4. Build on Other Ideas

"Forced Connections" - A divergent tool

Problem Statement:

What might we do with 10,000 ping pong balls?

When life hands you lemons...

Describe everything you can about this lemon:

- What shade of yellow is it?
- Are there any distinguishing marks?
- What does it smell like?
- What is the texture like?
- What size is it?

9. Visualize it richly and colorfully

- using vivid, exciting imagery
- creating colorful and exciting images that appeal to all five senses

When life hands you lemons - Debrief

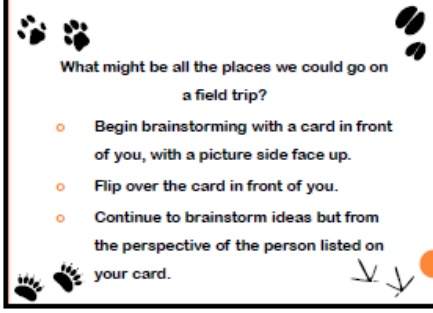
Do you think you picked the correct lemon? Why do you think that?

Was it harder than you thought to pick the right lemon?

Which sense was the easiest to describe?

Which sense was the hardest to describe?

"Someone Else's Shoes" - A divergent tool



What might be all the places we could go on a field trip?

- Begin brainstorming with a card in front of you, with a picture side face up.
- Flip over the card in front of you.
- Continue to brainstorm ideas but from the perspective of the person listed on your card.

10. Look at it another way

- being able to see things from a different visual perspective
- being able to see things from a different psychological perspective or mindset

What is half of 8?

Half of 8 is 0?

Half of 8 is 3?

3

Half of 8 is E?

E

Half of 8 is OC?

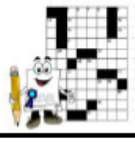
OC | HO

How could half of 8 be…

April
VI
6

Crossword Clues

1. Turkey's neighbor (4)
2. The spoon's running mate (4)
3. Place for pilots (5)
4. First lady's residence (4)



11. Let humor flow and use it

- perceiving incongruity
- responding to a surprise
- recognizing and responding to perceptual and conceptual discrepancies

Other educational benefits of humor

- Reduces stress, tension, and anxiety
- Decreases depression, loneliness, and anger
- Improves mood
- Increases self-esteem
- Promotes a sense of empowerment

A little bit of IMPROV

1. Find someone with whom you are fairly comfortable.
2. Decide on a message you'd like to convey to this person.
3. Without using any comprehensible words (in any language), convey this message to your partner.
4. You may use facial expressions or body language to help you convey this message.
5. Continue conveying your message until I say stop.

A little bit MORE improv

1. One person is identified as the interviewee, while the remaining members of the group will serve as the interview panel.
2. Interviewers are shown the name of the job for which they are hiring, but the interviewee remains clueless.
3. The panel members take a few minutes to jot down some possible questions individually.
4. Interviewee enters the room and the interview begins!
5. After a few questions, the interviewee guesses the job for which they were interviewed.

A Riddle

How is this possible?

12. Be flexible

- creating variety in content
- producing different categories
- changing one's mental set to do something differently
- perceiving a problem from different perspectives

"Six Thinking Hats" – A problem-solving tool

The Hat – provides information base and tells us what we know about the problem (factual thinking)

The Red Hat – offers intuitions and feelings (both positive and negative thinking)

The Black Hat – thinks of difficulties, dangers, problems, and points for caution (negative thinking)

The Yellow Hat – considers feasibilities and benefits (positive thinking)

The Green Hat – tells us about alternatives and offers suggestions and ideas (creative thinking)

The Blue Hat – draws conclusions (organizational thinking)

Our Task:

Alden Central School district is considering moving to a year-long school schedule.

It is being proposed that instead of having the summers off, we will take a one week break every month.

The Hat – Factual Thinking

Who is involved in this?

What do you know about plans like this in other districts?

What more you need to know about this idea?

What more do you want to know about this idea?

Where might you go to find out the details of this proposal?

The Red Hat – Positive and Negative Thinking

What are your initial feelings about this idea?

What does your gut tell you about this plan?

What prejudices might you have?

What is your hunch about this idea?

What does your intuition tell you?

The Black Hat – Negative Thinking

What should you be cautious about?

What words of wisdom come from this?

What are the consequences of implementing this plan?

What might be difficult about this plan?

Why won't this work?

What do you dislike about this proposal?

What are the risks of implementing this schedule?

The Yellow Hat – Positive Thinking

What are the benefits of this idea?

What is good about this idea?

What might be a positive outcome of this proposal?

What do you think will work about this plan?

What do you like about this idea?

The Green Hat – Creative Thinking

Can you think of other ways to address the school schedule?

How would you solve the problem?

What new ideas can you think of?

What other possibilities are there for a new school schedule?

The Blue Hat – Organizational Thinking

What is your conclusion? Why?

What is the next step?

What is the main idea of this proposal?

What are the big ideas?

What was the problem?

How was the problem solved?

Six thinking hats - Debrief

Which was the easiest for you to put on? Why?

Which hat was the toughest to put on?

Do you feel that you gained insight into this problem by using this tool?

What might be the benefits of using this tool (or a modified version) on your personal problems?

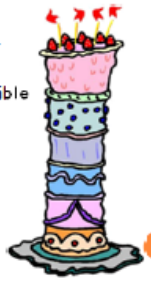
10 Minute Break

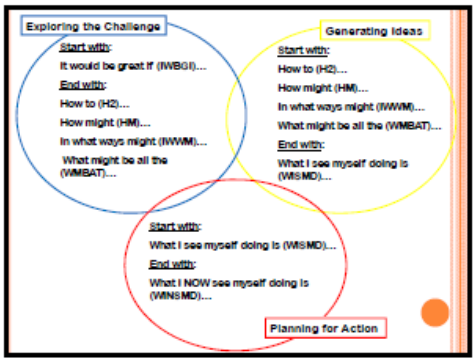
Cinquains

1. One word (title)
2. Two words, describing the title
3. Three words, expressing an action
4. Four words, expressing a feeling
5. Another word for the title

13. Elaborate – but not excessively

- adding details or ideas - developing them
- filling in details for possible implementation





Using Positive Language

- How might … (HM?)
- How to… (H2?)
- In what ways might … (IWWM?)
- What might be all the … (WMBAT?)

Our Task:

Since the lakes are finally thawing, next week we are going to hold class underwater!

It would be great if we could hold class underwater.

"Ladder of Abstraction" – A Divergent Tool

- Used in the problem solving process to explore the challenge
- We start with a goal, wish, or challenge ("It would be great if…")
- Climb the ladder by asking "Why?" (getting more abstract)
- Descend the ladder by asking "What's stopping you?" (getting less abstract)
- Great tool to use by yourself

The Divergent Thinking Processes

- Fluency (Produce and consider many alternatives)
- Flexibility (Be flexible)
- Originality (Be original)
- Elaboration (Elaborate, but not excessively)

Pause here to think about ways that you might be able to adapt any of the skills or activities you've seen today and apply them to your curriculum or classroom.

Jot these down on paper.

14. Put your ideas in context

- putting parts of experience into a bigger framework
- putting experiences together in a meaningful way
- making connections between things
- giving situations and ideas a history, a background, and a story

15. Enjoy and use fantasy

- imagine, play, and consider things that are not concrete or do not yet exist

Just Suppose...

Using the sheet provided, let's test our ability to use fantasy.

16. Visualize the inside

- paying attention to the internal dynamic workings of things
- picturing or describing the inside of things

SCAMPER

- **S**ubstitute (veggie burgers, disposable nappies)
- **C**ombine (musical greeting cards)
- **A**dapt (air fresheners that resemble shells, children's beds that look like race cars)
- **M**odify/**M**agnify/**M**inimize (parabolic skis, scented crayons, extra-strength medicines, over-sized sports equipment and televisions, wrist-band televisions, light-weight bicycles)
- **P**ut to other uses (old tires used for fences, swings and bird feeders; the development of snowboards)
- **E**liminate/**E**laborate (sodium-free, fat-free foods; cordless telephones, a short story rewritten as a play; a simple tune developed for an orchestra to play)
- **R**earrange (reversible clothing)

Our Task:

Come up with at least 20 ideas for ways to improve the Cadbury Creme Egg

SCAMPER

- **Substitute**
  - What could you substitute?
  - What might you do instead?
- **Combine**
  - What would you combine?
  - What might work well together?
  - What could be brought together?
- **Adapt**
  - What could be adjusted to suit a purpose or condition?
  - How could you make it fit?
- **Modify/Magnify/Minimize**
  - What would happen if you changed the form or quality?
  - Could you make it larger, greater, or stronger?
  - Could you make it smaller, lighter, or slower?

SCAMPER

- **Put to other uses**
  - How could you use it for a different purpose?
  - What are some new ways to apply it?
  - What does it suggest?
- **Eliminate/Elaborate**
  - What could you subtract, take away or do without?
  - How could you expand or elaborate on what is there?
- **Rearrange**
  - What would you have if you reversed it, or turned it around?
  - Could you change the parts, order or layout?

The Crystal Ball

Looking into this crystal ball, look to the future and imagine the ways you might use what you've learned so far today in your classroom or in your daily life.

17. Get glimpses of the future

- predict, imagine, and explore things that do not yet exist
- wonder and dream about possibilities
- view events as open-ended

Some (Bad) Glimpses of the Future

"Babe Ruth made a big mistake when he gave up pitching."
(Tris Speaker, Hall of Fame Outfielder, 1921)

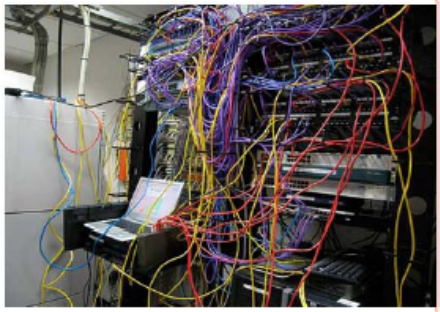
"Everything that can be invented has been invented."
(Charles H. Duell, director of U. S. Patent Office, 1899)

"Sensible and responsible women do not want to vote."
(President Grover Cleveland, 1905)

What else can we do to foster creativity?

- Respect student questions
- Be patient
- Encourage constructive discontent and opportunity-finding
- Accept limitations constructively

Opportunity-Finding



Debrief

- Are there any skills you consider yourself particularly good at?
- Why do you think that?
- Are there any skills you think you need to work on?
- Do any of these skills scare you?
- Are there any skills that you think children are better at than adults? Or vice versa?

Making some connections

- Divergent thinking
- Convergent thinking
- Generate ideas
- Brainstorm
- Problem-solving
- Creativity

For Next Time:

Think about ways that you think you already use these skills in the classroom.

END OF DAY 2

Warmup:

1. Pull a word out of the bag
2. Find a partner using that word (using any criteria you choose)
3. Be ready to explain why you feel you belong with that partner

(There are no right or wrong answers)

What creativity skills did that warmup access? (Recall the following)

- Be original
- Keep open
- Combine and synthesize
- Make it swing! Make it ring
- Breakthrough – Expand the boundaries
- Produce and consider many alternatives
- Highlight the essence
- Be aware of emotions
- Visualize it rich and colorfully
- Look at it another way
- Let humor flow and use it
- Be flexible
- Elaborate (but not excessively)
- Put your ideas in context
- Enjoy and use fantasy
- Visualize the inside
- Get glimpses of the future

What creativity skills did that warmup access?

1. Combine and Synthesize
2. Look at it Another Way
3. Elaborate (But not Excessively)
4. Be Original
5. Let humor flow and use it
6. Be Flexible
7. Keep Open
8. Break Through – Expand the Boundaries

When you think of someone who is "creative", what character traits come to mind?

The creative person…

- is tolerant of or attracted to ambiguity
- takes risks
- has a sense of humor
- is open-minded
- is thorough
- is perceptive
- is emotional
- is ethical

The creative person also…

- needs alone time
- is artistic
- has the capacity for fantasy
- is curious
- has a high energy level
- is aware of his/her creativeness
- is original
- is independent

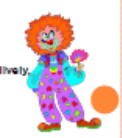
Unfortunately, the creative person can also be…

- egotistical
- impulsive
- argumentative
- childish
- absent-minded
- neurotic
- hyperactive

In what kind of environment does your creativity flourish?

Dimensions of the Creative Environment

- **Dynamism and Liveliness**
  - How much energy is there around the topic at hand?
- **Trust and Openness**
  - Is it safe for me to speak my mind and share an opposing opinion?
- **Idea Time**
  - Do I have time to think through things before I have to act?
- **Playfulness and Humor**
  - Is it ok for me to have fun?
- **Debate**
  - Are the people around me ok with engaging in lively, productive debates around a topic?



Dimensions of the Creative Environment (cont.)

- **Risk-taking**
  - Is it ok for me to be wrong?
- **Idea Support**
  - Are there resources available for me to try a new idea?
- **Challenge**
  - How emotionally involved and committed are the people around me?
- **Freedom**
  - Do I have a choice in the way I get my task done?
- **Conflict***
  - Do the people around me engage in arguments and 'warfare'?

*This dimension is negatively related to creative production - high levels of conflict in an environment have a negative impact on creative production.

Creativity Killers

- Expected Evaluation
- Surveillance
- Reward
- Competition
- Restricted Choice
- Extrinsic Orientation

How are Creating and Recreating Related?

Play can...

- Free people from the requirement of behaving consistently
- Support the novel combination of existing knowledge and ideas
- Often involve suspension of disbelief
- Decrease risks often associated with experimentation
- Cause people to step out of the familiar even into the contradictory because of its location between reality and unreality

- Play facilitates creativity-relevant affective processes:
  - Pleasure in challenge
  - Openness to feeling a wide-range of emotions
  - Openness to expressing a wide-range of emotions
  - Increase in intrinsic motivation
- Play facilitates creativity-relevant cognitive processes:
  - Problem framing
  - Divergent thinking
  - Mental transformation
  - Practice with alternative solutions
  - Evaluative ability

The Creativity Skills in Action

How do you already use these skills in your classroom activities?

(Jot down these ideas to share.)

The Torrance Incubation Model of Teaching and Learning (T.I.M.)

Incubation is...

- The step between mulling over the problem and communicating results
- What precedes the "aha!" moment
- The part of the creative process that calls for little or no conscious effort
- When bright ideas come to us in flashes while a doing something else – falling asleep, walking the dog, driving home from work, shaving
- Not something teachers can demand from students
- Something teachers need to allow time for
- Often considered too time consuming and uneconomical

A Look at Incubation in Action

Can you think of a time in your life when a solution to a problem came after a period of incubation?

Visually Identifying Relationships (VIR)

1. Begin working on a problem
2. Stop working, and begin examining unrelated pictures and recording what you see and feel.
3. Revisit the problem and begin to make connections between your observations of the pictures and the problem.

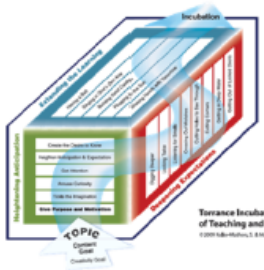
Excursions

1. Begin working on a problem
2. Take a break – walk outside, explore the building, but DON'T think about the problem
3. While on your "excursion" find an object you can bring back and share
4. As a group, share these items
5. Revisit your problem and relate your item to the problem

Where and when do you incubate?

1. Think about the particular activities you do that provide time for incubation.
2. On the index card, list any activities you can think of that allow you to incubate.
3. Keep this index card, and the next time you get frustrated working at a problem, pull this out and remind yourself to allow time for incubation!

The Torrance Incubation Model of Teaching and Learning (T.I.M.)



Components (stages) of the T.I.M.

Heightening Anticipation → Anticipatory Set

Deepening Expectations → Body of Lesson

Extending the Learning → Closure

The Torrance Incubation Model: In Stage 1 we must…

- Create the desire to know
- Heighten anticipation and expectation
- Get attention
- Arouse curiosity
- Tickle the imagination
- Give purpose and motivation

The Torrance Incubation Model: In Stage 2 We Are:

- Digging Deeper
- Looking Twice
- Listening for Smells
- Listening/Talking to a Cat or Crossing Out Mistakes
- Cutting Holes to See Through
- Cutting Corners
- Getting in Deep Water
- Getting out of Locked Doors

Digging Deeper

- Make efforts to get beyond the surface to find out what was glossed over or hidden
- Diagnose difficulties
- Integrate all available information
- Check information against hunches
- Synthesize diverse kinds of information
- Elaborate and diverge

Looking Twice

- Defer judgment
- Keep open to new information and insights
- Search for more information
- Evaluate and re-evaluate information

Listening for Smells

- Having a feeling of congruence between two kinds of experiences
- Use any or all of the senses – moving, visualizing, imagining, making sounds, smelling, and feeling textures

Listening/Talking to a Cat or Crossing Out Mistakes

- Let presented information "talk to you" and then "talk back" to the information
- Read your own feelings in response to information and recognize that mistakes will be made in doing this – be able to cross out mistakes
- Make guesses, check, correct, modify, reexamine
- Discard unpromising facts or solutions, refine, and make the best solutions better

Cutting Holes to See Through

- Summarize - get the essence
- Simplify and discard useless and erroneous information
- Direct attention toward the problem or focus attention on specific information

Cutting Corners

- Avoid useless irrelevant information
- Make mental leaps
- Make the best solutions better
- Decide on the problem statement
- Decide on an implementation plan

Getting in Deep Water

- Search for unanswered questions
- Dealing with taboo topics
- Confront the unimaginable
- Being overwhelmed by complexity
- Becoming deeply absorbed in surrounding events

Getting out of Locked Doors

- Solve the unsolvable
- Go beyond the "more and better" view of the same solutions
- Open up new vistas or worlds

The Torrance Incubation Model: In Stage 3 We Are:

- Having a Ball
- Singing in One's Own Key
- Building Sand Castles
- Plugging in the Sun
- Shaking Hands with Tomorrow

Having a Ball

- Pay attention to fun uses of the mind – humor, laughter, and fantasy

Singing in One's Own Key

- Give personal meaning to information
- Relate personal experience to information
- Make associations to information
- See implications of information for present problems or future career roles
- Use information to solve personal problems

Building Sand Castles

- Use information as the basis for imagining and fantasizing
- Searching for ideal solutions
- Otherwise taking off from what has been read, heard, or encountered

Plugging in the Sun

- Engage in hard work to follow up on information
- Find available resources of energy or inspiration
- Explore library resources, people resources, places resources, or spiritual resources

Shaking Hands with Tomorrow

- Relate information to one's future career
- Use information to enlarge, enrich, and make more accurate one's images of the future
- Search for alternative solutions for possible future uses
- Use information to propose a solution for future problems

So what does a typical T.I.M. lesson plan look like?

Did you notice a particular skill at work during this class so far?

(Recall the Following)

- Be original
- Keep open
- Combine and synthesize
- Make it swing! Make it ring
- Breakthrough – Expand the boundaries
- Produce and consider many alternatives
- Highlight the essence
- Be aware of emotions
- Visualize it rich and colorfully
- Look at it another way
- Let humor flow and use it
- Be flexible
- Elaborate (but not excessively)
- Put your ideas in context
- Enjoy and use fantasy
- Visualize the inside
- Get glimpses of the future

Addressing the Skills in the Classroom

- Explain the skill after doing the lesson
- Discuss the skill and its importance
- Put skills up visually in the room
- Point out when you see a skill in action
- Reward the use of a skill

Discussion Points

- If you were on an interview committee, what questions would you ask of an applicant to evaluate his/her creative abilities?
- Do you think more creatively about your problems or the problems of others?
- Do you think children should be encouraged or discouraged in their "pretending"? Is this age-dependant?
- What types of topics lend themselves to group brainstorming techniques?
- What role do you think intuition has in creative thinking? Do you rely on yours for ideas and solutions?
- Do you think men and women are evenly matched when it comes to creativity?
- Do you think competition helps or hinders creativity?

10 Minute Break

A Warmup

Who might be all the people that you consider creative?

A Creativity Debate

Is creativity a domain-specific or domain-general skill?

Another Creativity Debate

To Brainstorm or not to Brainstorm?

Other Hot topics in creativity

- Holistic approaches to creativity
- Intellectual property
- Altered states of consciousness
- Creativity across cultures
- Creative leadership
- Creativity and neuroscience

How would you use the T.I.M. in your classroom?

- What are the benefits of using the model in your classroom?
- What might be the downfalls?
- Are there any skills you think would be easier to incorporate?
- Which ones might be harder? Why?
- Do you have any ideas for lessons or topics where you could use this model?

"PPCO" - An evaluative tool

- Pluses
  - What do I like about this?
- Potentials
  - What might come about because of this?
- Concerns
  - What are potential problems with this?
- Overcoming Concerns
  - How can I prevent any potential problems before the arise?

Pluses

Potentials

"Brainwriting" - A divergent tool

Statement of Problem: _____

Person 1 Idea #1	Person 1 Idea 2	Person 1 Idea #3
Person 2 Idea #1	Person 2 Idea 2	Person 2 Idea #3
Person 3 Idea #1	Person 3 Idea 2	Person 3 Idea #3

Recall: Using Positive Language

- How might … (HM?)
- How to… (H2?)
- In what ways might … (IWWM?)
- What might be all the … (WMBAT?)

Concerns

"HITS" – A Convergent Tool

- Each person gets a set number of sticky dots (in this case, 3)
- Each person puts one sticky dot next to each of their top choices (in this case, your top 3 concerns)
- Don't stick more than one of your dots on the same concern.
- You may put your dot (or "hit") something that someone has already hit
- You don't have to use all 3 of your dots if there aren't 3 options that appeal to you.

Overcoming Concerns

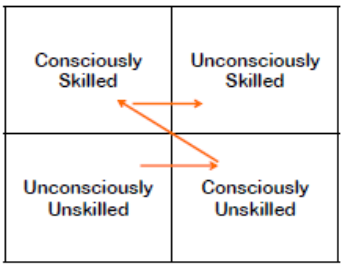
Some Tips to Enhance Your Own Creativity

- Keep an "idea system"
- Vary your routine – make small, "creative choices" on a daily basis
- Expose yourself to a variety of materials
- Network
- Make more "you" time

Some Tips to Enhance Your Own Creativity (Cont.)

- Create an environment that supports creativity
- Live a healthy lifestyle
- Revive your sense of humor
- Develop positive creativity habits
- Be passionate about your vision for the future
- Be curious and ask questions

A Model for Adult Learning



Now what?

Now, are you creative?

Debrief

Did anything change between your first answer to this question and this answer?

If yes, what changed?

What did you learn about the ways in which you are creative?

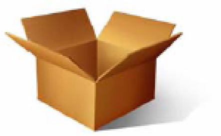
Did your definition of creativity change from the way you defined it last week?

"Buzz Words"

Brainstorming

"Think outside the box"

Creativity / Creative



Feedback

Remember the power of positive language!

How might … (HM?)
How to… (H2?)
In what ways might … (IWWM?)
What might be all the … (WMBAT?)

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END OF DAY 3