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Elevator Pitch

Are you self-conscious about your creativity? I know I was, but you too can get past this and have fun at the same time, while learning and growing. Read *Sparks of Genius: The 13 Thinking Tools of the World's Most Creative People* by Robert and Michele Root-Bernstein and be sure to check out jessica-skinner.blogspot.com for free to get started on the new and improved more creative and confident you.

White Paper

Trans-disciplinary creativity consists of seven cognitive tools: perceiving, patterning, abstracting, embodied thinking, modeling, playing, and synthesizing. In this paper I will give an overview of each of these tools and offer a few ideas on how to increase your creativity and enthusiasm for teaching by using these tools. It worked for me and I am sure that with an open mind and determination you too will also develop a more creative self. I was very self-conscious when it came to my creative ability, but after this class I definitely feel more confidently that I am a creative individual. Using creative ideas and lessons offer many ways to help engage your students in the topics that need to be taught. You may find that you already do many things that are creative and you just do not realize it. Sometimes we become so focused on other things in our life that we forget or just don't notice the amazingly creative things we already do.

As we focus on creativity development we will use as many senses as possible and cover different ways to incorporate them into your daily classroom routines. The topic I have selected to use as an example is addition and subtraction. I chose this topic because it is one of great importance in first-grade curriculum. Addition and subtraction are one of the most important standards that needed to be addressed the second quarter. I decided that I definitely needed to find more creative approaches to introduce this topic to my students in order to make them interested. I also needed to become more enthusiastic when it came to my daily lesson plans that would inevitably include addition and subtraction.

We will begin our journey on a more creative way of seeing things with perceiving. How one perceives an object or topic greatly determines what and how an individual will learn. Some people are able to view things concretely, while others must view them abstractly. Many times incorporating a video or song can help a student to learn and understand a topic better. Often children can remember things more easily when a rhyme or song is involved. If one uses a tool that includes visuals, music, and movement, the topic, in this case, addition and subtraction can be perceived kinesthetically, visually, and auditorily. I would use the videos that follow to help with my children's perception of addition and subtraction.

Patterning is also very prominent and important in the teaching of addition and subtraction. Many patterns exist in addition and subtraction. It is important to notice that students often enjoy recognizing patterns and have much prior knowledge of identifying patterns from their experiences in kindergarten. By incorporating patterns students will begin to recall facts of addition and subtraction with great ease. Students should be allowed to explore using charts, games, and other hands-on activities in order to offer an interactive activity that will allow them to discover the many patterns on their own.

"Abstractions are the many different ways that an object can be represented. These representations can include visual representations, textures, smells, motion and movement, as well as many other interpretations. 'Abstractions are so common in our society that we rarely pay attention to them' (Root-Bernstein, p. 70). Many times one will over look something that is abstract because it had become commonplace. Often as we get older we see less and less abstractions due to training our minds to see only what is needed" (jessica.skinner.blogspot.com). Addition and subtraction have many abstractions. It is important to look for as many ways a possible to represent this topic in order to reach all learners. Students should be able to visualize addition and subtraction in non-traditional forms in order to help foster their learning and creativity. Abstraction representations of addition and subtraction in a non-traditional form would work wonderfully to encourage children to "think outside of the box". Notice the following example of an addition and subtraction abstraction.

"Embodied thinking is made up of kinesthetic thinking and empathizing. Kinesthetic thinking is what the body is able to do with out concentrating. Embodied thinking involves understanding your body while being able to relate to how others feel. It involves the body and instinct. Some examples of kinesthetic thinking include breathing, blinking, and other bodily functions that one does with out thinking. Another example includes skills that have been practiced many times until they have become second nature. Some of these skills would include driving a car, typing using home key, or playing an instrument. The other aspect of embodied thinking is empathy. When you empathize you are able to put yourself in someone else's shoes and are able to understand what they are feeling" (jessica.skinner.blogspot.com). Two activities that can be used to better students' addition and subtraction ability are the use of flashcards that are eventually incorporated into a game and acting out of story problems. These activities allow students to not only visualize the problems but to reiterate what has been practiced and learned through visual and kinesthetic activities.

Addition and subtraction can be modeled in many different ways in your classroom. I have found that without even thinking I use more models than I had initially thought. Students are able to use counting cubes while completing worksheets. This activity increases their fluency and recall of addition and subtraction facts. The models are able to act as a visual aid and a physical representation of addition and subtraction for the children. As an entire class we use coins, base-ten blocks, number cards, and many other tools each morning to represent the many different uses of addition and subtraction in real-life scenarios. "When we use the base ten blocks students practice adding ones to the daily total. As time passes they are able to exchange ones for ten bars, and eventually one hundred squares. The number cards act as the written model for the number of days we have been in school and the coins offer another experience for addition and subtraction. As we add another day of school we add a penny. Pennies get traded in for

nickels, nickels for dimes, dimes and nickels for quarters, etc. We are able to find the sums and differences using the coin models" (jessica.skinner.blogspot.com Modeling section). By using these many different models students are able to practice using the tools they are good at, while implementing those skills into other models they may not be as good at. They are able to see connections and use them to their benefit.

Playing is one of my favorite forms of learning. Many people do not see the benefit of play, however the results can prove to be world and life altering. For example the antibiotic penicillin was discovered through play. Play is not only fun, but also very useful. While playing, students are learning and fully engaged without being forced to "learn". They enjoy the activities and are learning without even realizing it. According to Jean Piaget play strengthens knowledge with practice, analogizing, empathizing, etc. (Root-Bernstein, p. 248-249). Playing is a fun way to learn and discover. "Play transforms knowledge and builds understanding as we create our own worlds, personas, games, rules, toys, and puzzles--- and through them new sciences and new arts" (p. 268). Addition and subtraction can be practiced and played by using a variety of file folder games, online computer games, addition and subtraction flashcards, and many other affordable items.

Synthesizing is the final tool in trans-disciplinary creativity. "We desperately need synthetic minds." For this claim, the Root-Bernstein's make a strong case: No major problem of the world today can be boxed neatly within a single discipline or approached effectively from any particular angle alone. Innovation depends on transdisciplinary thinking and, as we've discussed throughout, our abilities to use our senses and knowledge in an integrated way. The future will depend on our ability to create true, deep understanding" (Root-Bernstein, p. 314). When you synthesize you sit back and try to make sense of everything you have learned. You must think about how it all relates to one another and see the big picture. How can what you have learned be incorporated into teaching and learning other important things in life?

Overall the book *Sparks of Genius: The 13 Thinking Tools of the World's Most Creative People* by Robert and Michele Root-Bernstein offers many great ideas to a new and more creative approach to teaching and viewing life in general. I recommend this book to anyone that feels a little unsure about his or her own creativity. You are probably more creative than you think. And even the most creative person will inevitably find new ideas and approaches that could help others learn and grow. While offering an interdisciplinary approach to teaching and learning the use of this book combined with other forms of creative thinking is bound to entice and stimulate the excitement and desire of learning and growing at any age.