

## Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

Coronado Unified School District Administrators meet in a Professional Learning Community (PLC) to deepen and explore best practices. A district wide book study of The Art and Science of Teaching was commenced in February of 2012. The Principals' PLC divided the ten chapters of this book amongst its members and each administrator presented his/her summary at designated PLC meetings. The discussions resulting from this study affirmed that some of the teaching strategies and practices described in this book are used by some teachers within this district.

Discussions centered on expanding the repertoire and deepening the Professional Development of teachers to support intensified effectiveness and efficiency in all classrooms.

As the study of Marzano's work continues into the 2012-2013 school year, this resource is used to support reflection, development of a common language and increase dialogue amongst staff members about effective teaching practices.

The summaries produced by CUSD Administrators are listed below:

### **Introduction**

- The introduction reviews research that has led to the writing of this book: to identify specific characteristics of effective teaching
- Research states that the following constitutes effective schools and student achievement:
  - A safe environment
  - A well-articulated curriculum
  - The most influential component within a school are the teachers
- Various studies using statistical controls stated that teachers make a difference in student achievement
- Research should be used to provide a general direction for districts, schools and teachers must interpret in their terms
- Research may be able to provide us with information on what strategies may work well with students, but teachers must determine which strategies work best with their students, hence a good part of teaching is an ART!

Marzano's previous work which influences this book:

The following three components are believed to bring forth effective classroom pedagogy, and Marzano recommends that schools and districts generate their own models

1. Use of effective instructional strategies
2. Use of effective classroom management techniques
3. Effective classroom curriculum design

The comprehensive model of the book is articulated in 10 questions that represent a logical planning sequence for effective instructional design.

Each chapter covers a question:

## Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

1. What will I do to establish and communicate learning goals, track student progress, and celebrate success?
2. What will I do to effectively help students interact with new knowledge?
3. What will I do to help students practice and deepen their understanding of new knowledge?
4. What will I do to help students generate and test hypotheses about new knowledge?
5. What will I do to engage students?
6. What will I do to establish or maintain classroom rules and procedures?
7. What will I do to recognize and acknowledge adherence and lack of adherence to classroom rules and procedures?
8. What will I do to establish and maintain effective relationships with students!
9. What will I do to communicate high expectations for all students?
10. What will I do to develop effective lessons organized into a cohesive unit?

### Chapter 2

**1. The author discusses six major actions for creating effective critical-input experiences. Which, if any, of these actions is most significant to how you design learning experiences? Why?**

Marzano focuses on the following six major actions steps for creating effective critical input: previewing; division of students into groups; chunking information in ways that require students to describe, discuss, and make predictions; asking inferential questions; recording information in various forms of notes; and reflecting on the learning.

It's difficult to target just one as the most significant in how I design learning experiences, but I do resonate with reflecting on the learning as a very powerful method of creating effective critical input experiences. For the simple reason, the reflective practitioner is one that constantly reviews his/her best practices in order to hone their craft and continually push to be the best teacher they can be. Without reflection, you will not reach full potential and it will become obvious in your instruction and everything you do to support children.

**2. Describe the teacher's role throughout a critical-input experience.**

To continuously, appropriately challenge self and the students. Using the methods described in question one, those are great practices that allow a teacher to be successful as the professional, but also that success will translate into student success. To me the most critical component is to provide the students with the opportunity to be a part of their learning and allowing them to draw upon themselves to go deeper into their thinking in order to discover the answer.

**3. Learning activities can be designed for multiple purposes. Give an example of a learning activity designed to introduce students to new content.**

I have always enjoyed the concept of what Marzano refers to as Academic Notebooks. Whether it's journaling for a warm-up question of previously learned material, or an anticipatory set for a new concept, journaling or academic notebooks are a valuable tool for student learning. This is much like question one, which provides both student and teacher, to reflect on their responses at a specific moment in time and then apply these answers to real world application.

**4. Critical-input experiences designed to convey procedural knowledge involve breaking down the procedure into chunks, and giving students the opportunity to try out each part of a procedure. Think of a simple procedure. How would you break it into chunks? How might students interact with every “chunk” of the procedure?**

Introduction of new material, new concepts: IE: Understanding the Constitution

- 1) Briefly explain purpose / objective for the day – Beginning to understand Constitution – Rules in society, why we have them – allow students to share examples
- 2) Start with demonstration of real life example – Student agenda which contains rules/policies of school (dress code)
- 3) Utilize video clip of Constitution – IE: School House Rocks
- 4) Have guided note sheet to respond to video, questions about Constitution – can use small, cooperative groups
- 5) Check for understanding during this time, visit groups, ask probing questions, etc.
- 6) Conclude and recap objective and purpose for the day – Move into textbook, chapter discussion the next day (day two)

**5. This chapter discusses different strategies for actively processing information during comprehensive critical-input experiences. Out of the instructional strategies discussed in this chapter, which do you feel most comfortable using, and which would you like more practice and instruction implementing?**

Academic Journaling – most comfortable

Mnemonic Devices Employing Imagery – learn more about

**6. What's the teacher's intent in elaborative interrogations?**

Starting with basic, inferential questions, more informal and then moving to deeper, critical thinking questions.

IE: Gandhi – Inferential: typical characteristics or behaviors you would expect of \_\_\_\_\_?

Elaborative: What would expect to happen if \_\_\_\_\_?

### **Chapter 3**

Chapter 2 focused on actively processing information during well-structured critical-input experiences. Chapter 3 emphasizes the need for opportunities to practice new skills and deepen understanding of new information.

### **Research and Theory**

...validate the need for repeated exposure involving knowledge deepening activities. The four areas discussed are: *schema development*, *development of procedural knowledge*, *development of declarative knowledge*, and *homework*.

## Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

There are three types of *schema development*: (1) accretion – the gradual accumulation or addition of knowledge over time. (2) tuning – the expression of that knowledge in more parsimonious packages. (3) restructuring – reorganizing knowledge so that it might produce new insights.

When fully developed, *procedural knowledge* can be performed at a level of automatically or controlled processing. During guided practice students should engage in high-level cognitive processes such as organizing, reviewing, rehearsing, summarizing, comparing, and contrasting.

*Declarative knowledge* is developed through reviewing and revision, including error analysis and identifying similarities and differences.

*Homework* should be structured to ensure high completion rates. The amount of time and the grade levels at which it is assigned should be carefully considered. It should have a well articulated purpose and relate directly to identified learning goals. It should be designed so that students can perform it independently. It should involve parents in appropriate ways.

### Action Steps

- 1) Provide students with tasks that require them to examine similarities and differences:** comparing, classifying, creating metaphors, and creating analogies.
- 2) Help students identify errors in thinking:** faulty logic, attacks, weak references, and misinformation
- 3) Provide opportunities for students to practice skills, strategies, and processes:** Provide structured practice sessions spaced close together; Provide sessions that are gradually less structured and more varied; Provide sessions that help develop fluency.
- 4) Determine the extent to which cooperative groups will be used.**
- 5) Assign purposeful homework that involves appropriate participation from the home:** Helps students deepen their knowledge; Enhances students' fluency with procedural knowledge; Introduces new content.
- 6) Have students systematically revise and make corrections in their academic notebooks.**

**Summary:** When considering third design question -- What will I do to help students practice and deepen their understanding of new knowledge? – teachers should distinguish between declarative and procedural knowledge.

## Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

### Chapter 4: “What will I do to help students generate and test hypotheses about new knowledge?”

- Chapter addresses the type of knowledge change associated w/*accommodation* (Piaget) and *restructuring* (schema theorists)
  - Focuses on problem-based learning (PBL) – problem or query that the learner wants to solve (i.e. – alternatives the committee probably considered to the bombing of Hiroshima and Nagasaki)
  - Making and confirming/disconfirming predictions
  - Often involves cognitive dissonance
- Action Steps:
  - Teach students about effective support (i.e. – valid claims, errors in thinking, faulty logic, etc.)
  - Engage students in tasks requiring them to generate and test hypotheses
    1. Inquiry tasks (i.e. – scientific method)
    2. Problem-solving tasks (i.e. – using knowledge in a highly unusual contest or situation w/constraints)
    3. Decision-making tasks (i.e. – students select among equally appealing alternatives)
    4. Investigation tasks (i.e. – hypotheses about past, present, future events; types: historical, definitional, projective)
      - ✓ Students can also design their own tasks (i.e. – pose question: “is there a particular type of experiment you would like to conduct...”)
      - ✓ Cooperative learning tasks are also often appropriate (i.e. – determine extent to which group interactions further learning)

### Chapter 6: What Will I Do to Establish or Maintain Classroom Rules and Procedures?

1. Importance of establishing rules/norms/guidelines at outset
  - ✓ Opportunities for students to define specific protocols, procedures
2. Importance of altering/adjusting norms throughout the year.
3. Difference between rules and procedures: rules identify general expectations; procedures communicate expectations for behaviors
4. Effective teachers introduce rules and procedures AT THE BEGINNING OF THE YEAR, practice them, and consistently reinforce them.
5. Some evidence shows that utility of rules and procedures is enhanced if students have input into design.

#### Action Steps

1. Organize classroom for effective teaching/learning
  - ✓ Access to Centers, Equipment, Technology
  - ✓ Decorate the room\*

## Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

- ✓ Organize materials/arrange access
- ✓ Arrange students' desks and teacher workspace optimally
- 2. Establish Small Set of Rules and Procedures
  - ✓ General Behavior
  - ✓ Beginning and Ending of Day or period
  - ✓ Transitions and Interruptions
  - ✓ Use of Materials
  - ✓ Group Work
  - ✓ Seatwork/teacher-led activities
- 3. Interact with Students about Classroom Rules and Procedures: Practice
- 4. Periodically Review and Revise Rules and Procedures
- 5. Use classroom meetings: Advisory Period?

### **Chapter 8: What will I do to establish and maintain effective relationships with students?**

- It matters what a teacher *does* each day. Students cannot know his/her thoughts and feelings. A teacher's actions are interpreted by students. Behaviors of the teacher communicate the message regarding learning goals, rules and procedures.
- Student behavioral problems in the classroom ultimately relate to a breakdown in the student-teacher relationship. This commonly occurs when teachers put themselves in a "we-they" stance with their students.
- Teachers should exhibit a balance of dominance and cooperation. Dominance is a clarity of purpose and guidance. Involve students in the classroom whenever possible. Teachers should develop emotional objectivity.

Action steps that communicate an appropriate level of concern and cooperation

1. Know something about each student. (survey them, talk to them to learn about their lives)
2. Engage in behaviors that indicate affection for each student. (go to their afterschool activities; greet them at the door each day)
3. Bring student interests into the content and personalize learning activities
4. Engage in physical behaviors that communicate interest in students.
5. Use humor when appropriate.

Action steps that communicate an appropriate level of guidance and control

6. Consistently enforce positive and negative consequences.
7. Project a sense of emotional objectivity. (recognize emotions are going to enter your classroom; recognize you bring emotions to the classroom)
8. Maintain a cool exterior.

# Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

## **Chapter 9 - What will I do to communicate high expectations for all students?**

### **Focus Points**

1. The unconscious actions of a teacher either negatively or positively impact students.
2. A teacher's behavior matters a great deal.

### **Background – Research/Resources**

Reaching Higher: The Power of Expectations in Schooling, Weinstein (2002) (summary of research - impact of teacher expectations on student learning)

Looking in Classrooms, Good and Brophy (2003) (sample observation strategies)

“changing the teacher behavior that comes with low expectations will most probably produce the desired effect on student achievement (Marzano p. 165)

Ambady and Rosenthal (1992) state, “thin slices of teacher behavior – a physical gesture, the turn of a phrase” reveal a difference in treatment of students.

- Students interpret these messages coded in thin slices of behaviors as signals regarding how they are expected to behave in class.

The affective tone and the quality of interaction of a teacher communicate expectations.

### **What does this inequity reveal itself in teacher behavior? What will an evaluator see?**

Affective Tone (p. 166)

- Teachers praise lows less frequently than highs for success
- Teachers seat lows farther away
- Teachers are less friendly with low-achieving students, including smiling less and using friendly nonverbal behaviors less
- Teachers give lows less eye contact and nonverbal communication of attention and responsiveness, such as leaning forward and using positive head nodding.

Quality of Interactions with Students (p. 166-167)

- Teachers wait less time for lows to answer questions and to answer questions
- Teachers give lows answers or call on someone else to answer a question as opposed to trying to delve into the logic underlying the answer or improve on the answers of lows
- Teachers give lows briefer and less informative feedback on their responses
- Teachers fail to give lows feedback for public responses
- Teachers generally pay less attention to lows and interact with them less frequently
- Teachers generally demand less from lows
- Teachers make less use of effective but time-consuming instructional methods with lows when instructional time is running out.

### **Action Steps – Recommendations for goal setting (p. 167-173)**

## Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

- Identify expectation levels for students
- Identify differential treatment of low-expectancy students
- Make sure low-expectancy students receive verbal and nonverbal indications that they are valued and respected
- Ask questions of low-expectancy students (Chapter 5)
- When low-expectancy students do not answer a question correctly or completely, stay with them (Chapter 2 – elaborative interrogations)

### **Fundamental Point**

The teacher must be aware of the equity and consistency of interactions with low and high-expectancy students, focusing on methods of addressing student's questions.

### **Chapter 10 - What will I do to develop effective lessons organized into a cohesive unit?**

Even with instruction focused on specific standards, teachers still have a great deal of freedom and flexibility in terms of how content is organized, designed and taught. There is no "one best way" to design a unit of instruction.

### **In the Classroom**

- Well structured units are planned and thought through from beginning to end.
- Clearly identify the focus of the unit.
- Create a learning goal that is specific for the task.
- Design activities that will deepen students understanding
- Create a framework or outline for your unit
- Don't be afraid to change it as you go if needed
- Guide students along their learning

### **Research and Theory**

Students encounter about 150 separate units of learning in one year. Doyle states that one must "view the curriculum as a collection of academic tasks." 60 - 70 percent of class time is taken up by teacher designed tasks. Academic tasks are divided into 4 categories (1) incremental, (2) practice, (3) restructuring and (4) enrichment. Textbooks have less influence on how teachers organize their lessons than one might think. Teachers use time for concepts, skills, and application. Teachers make "real time" decisions about instruction about every 2 minutes. Effective planning is critical.

### **Action Step 1 - Identify the focus of a unit of instruction**

- A focus on knowledge
- A focus on issues
- A focus on student exploration

### **Action Step 2 - Plan for lesson segments that will be routine components of every lesson (Madeline Hunter's lesson design)**

## Coronado Site Administrators' Summary of Marzano's The Art and Science of Teaching, 2011-2012

---

- Anticipatory Set
- Objective and purpose
- Input
- Modeling
- Checking for Understanding
- Guided Practice
- Independent Practice

Consider the following issues when planning a lesson

- rules and procedures
- communicating learning goals
- tracking student progress on learning goals
- celebrating success on learning goals

### **Action Step 3 - Plan for Content specific lesson segments**

- critical input experiences
- practice and deepening students understanding of content
- hypothesis-generation and testing tasks

### **Action Step 4 - Plan for Actions That Must Be taken on the Spot**

- Engagement
- Consequences for rules and procedures
- Relationships
- Expectations

### **Action Step 5 - Develop a Flexible draft of daily activities for a unit**

- There is no one right way to design a unit
- Opportunities for hypothesis generation and testing
- Group work and presentation
- Input activities - readings lectures films
- Academic notebook work and reflection
- Formal assessment

### **Action Step 6 - Review the critical aspects of effective teaching daily**

- Effective teaching is a complex endeavor involving many interacting components
- Use out lines and checklists
- See chart on page 190 - it is a good summary of reflective questions