MARZANO STRATEGIES & THE PRIVATE EYE®

This document reveals the tight correlation between The Private Eye interdisciplinary process and the "Categories of Instructional Strategies that Affect Student Achievement" cited by Marzano, et al, in ***Classroom Instruction that Works: Research-Based Strategies for Increasing Student Achievement***. As teachers and students move through The Private Eye's inquiry stages for writing, drawing, making inferences, and theorizing, they practice each of the most effective instructional strategies to maximize student achievement.

* * *

The Private Eye — (5X) Looking / Thinking by Analogy: A Guide to Developing the Interdisciplinary Mind by Kerry Ruef (The Private Eye Project, 2003, 1998, 1992)

Classroom Instruction that Works: Research-Based Strategies for Increasing Student Achievement by Robert J. Marzano, Debra J. Pickering, and Jane E. Pollock (ASCD, 2001)

The nine instructional strategies are listed here in order of significance:

1. Identifying similarities and differences.
This is by far the most important skill listed by Marzano for increasing student achievement. Marzano draws on research that shows thinking used to identify similarities and differences is basic to human thought and possibly the core of all learning. Development of this skill yields the greatest improvements, boosting student achievement by a whopping 45%.

In *Focus on Effectiveness: Research Based Strategies*, an online publication produced by Education Northwest (previously called Northwest Regional Educational Laboratory) explains "identifying similarities and differences" this way:

> *"Seeing similarities and differences is a fundamental cognitive process (Gentner & Markman, 1994; Medin, Goldstone, & Markman, 1995). As an instructional strategy, it includes various activities that help learners see patterns and make connections. For example, students compare things that are similar and contrast things that express differences. They classify when they identify features or characteristics of a group of objects or ideas, and then develop a scheme to organize those objects. Metaphors are created when two ideas or experiences are compared based on a common underlying structure. Finally, analogies provide another way to identify similarities and make comparisons. Each approach helps the brain process new information, recall it, and learn by overlaying a known pattern onto an unknown one to find similarities and differences. Looking for similarities and differences prompts the learner to consider, "What do I already know that will help me learn this new idea? This fosters relationships and connections to new understanding.*

The Private Eye Correlation: Education Northwest, one of the foremost educational laboratories in the country, lists The Private Eye as a top resource for teaching students how to look for similarities and differences. http://www.netc.org/focus/strategies/iden.php: "*The Private Eye is a resource for teaching students how to use metaphor, and compare and contrast, through the use of jeweler's loupes and focused questioning."*

The Private Eye process is an "engine" for developing the skill of identifying similarities and differences. With the first stage of The Private Eye process, students discover unexpected likenesses between something new they're looking at and something they are already familiar with. With every subsequent stage, students deepen their awareness and exploration of similarities and differences.

Students begin on a concrete level, exploring natural and manmade objects with the help of a jeweler's loupe (a magnification tool) and a sequence of simple, interlocking questions. The process starts with everyday objects (e.g., a leaf, flower, shell, bug, rock, sponge, penny) to explore and a simple "first" question which has no wrong answer: "What else does it remind me of? What else does it look like? What else? What else? What else?" The 5X loupe reveals hidden patterns and details as it rivets the eye (and thus the mind); it's a rocket booster for close observation, stereotype busting, and the first TPE question. The first Private Eye question keeps the mind looking and making fresh connections.

Using a jeweler's loupe with the first TPE Questions helps students learn what it *means* to look closely, to pay deep attention, to see the world in a new way, and gives an easy but powerful strategy for finding similarities and differences.

Answers to the first Private Eye question automatically take the form of metaphors and similes (compressed analogies). This step is easy enough for kindergarteners and sophisticated enough for adults. Marzano, et al, include the making of metaphors and analogies as important instances of "Identifying similarities and differences." (To read why metaphors and similes are actually compressed analogies, see: *The Private Eye — (5X) Looking / Thinking by Analogy: A Guide to Developing the Interdisciplinary Mind* by Kerry Ruef (The Private Eye Project, 2003, 1998, 1992)

As students create and write analogy lists while loupe-studying an object (using also their unaided eyes and, perhaps later, a microscope) they are "Identifying similarities and differences" between an object and "what else it reminds them of". (Discussion of "differences" becomes embedded, naturally, in the process.)

When students ask the second, corollary question of The Private Eye: "Why did it remind me of that?" — they are *guaranteed* to reflect on the similarities and differences, the characteristics and properties, of a subject. (The process of "comparing and contrasting" is the same as looking for similarities and differences.) How can two or more seemingly different things or events share underlying similarities or characteristics? E.g., how is a pattern on a fingerprint like ripples in a pond struck by a rock? This meta-cognitive approach builds content knowledge and sets the stage for moving into refined inferences, hypotheses, theories.

With repetition, the process generalizes and deepens. Teachers using TPE with regularity report that their students begin discovering underlying connections that go far beyond the objects they practice on; on their own and with a teacher's encouragement, they find likenesses (and differences) between books, characters, historic periods, passages of music, artworks, mathematical strategies, etc. Skill increases with experience and age. The point the teacher stresses is to pay attention "as though your eyes were loupes" and to use The Private Eye Questioning strategy across subjects. Using The Private Eye process and tools for building this core skill can begin even in kindergarten or pre-kindergarten, giving students a jump on higher-order thinking. At the same time, university students and adults boost their learning and analytical capacity as well as memory with this skill-builder.

---

2. **Summarizing and note taking.**

As academic skills, Marzano identifies the ability to take notes and to summarize as likely to enhance student achievement by 34 percentile points. Summarizing is a synthesis of the notes. Skill in synthesizing various forms of information to its essence significantly improves comprehension.

The Private Eye Correlation: Note-taking and summarizing are systemic to The Private Eye. Marzano focuses on "summarizing" and "note taking" in the context of written materials, for example but not limited to, distilling the main characters in a story, or the theme of a written piece. The Private Eye process helps students create a bridge to this skill of summarizing and note taking; students learn how to "get to the heart of a matter" beginning with a concrete situation and advancing to the abstract.

With the Private Eye, the first "main character" to summarize and take notes about is a concrete object of inquiry: anything from a tiny light bulb to a piece of broccoli, a dandelion to a fingerprint. Themes of written pieces revolve around these "main characters" as students learn to look for similarities and differences in a completely natural context. Students combine this focused process of observation, comparison, and analysis with note-taking and summarizing at a more abstract level when they begin research reading *about their objects* and taking notes to include in discussions and longer writing pieces. The bridge is complete when students generalize the method to textual materials on any subject.

Students use The Private Eye process to accelerate reading comprehension, note-taking and summarizing, beginning with an investigation of concrete objects. Students jot down their observations of one thing likened to another and explore the underlying similarities. They expand these notes into full-fledged writing pieces, analysis, and research (depending on the age of the student).

Using The Private Eye approach, students pay deep attention to characteristics and patterns of an object, be it a natural object (a leaf, flower, fingerprint, shell, nut, stone), or a manmade object (sponge, fabric, pennies). While loupe-exploring a concrete object as the "subject" of an investigation—students jot down their own, original observations about the object in the form of comparisons—using TPE first question as springboard. Since there's no wrong answer, students are highly motivated to keep on jotting notes / observations that are highly compressed into similes, metaphors, analogies. To these lists, students add observations not embedded in their comparisons along with questions they'd like to "ask" their objects. These notes become springboards for poems, essays, memoirs, fictions, and research writing.

Students can make their own notes — but they can also work as scribes for each other, or writers can take the notes for non-writers, modeling the note-taking process. All this builds note-taking skill naturally and almost effortlessly, because students are so motivated.

With repetition on concrete objects, students become comfortable using this approach. With teacher guidance, they transfer that comfort and skill to taking notes and summarizing texts, books, characters, historical or current events — abstract arenas of language.

In the hypothesizing/theorizing stage of the Private Eye Process, answering the questions, "Why is it like that? What's going on here?" and finally, "If it reminds me of that, might if function like that…?" students identify the comparisons (similes, metaphor, and analogies) that interest them most. They will distill all into a succinct hypothesis. After testing their hypothesis and/or doing research, students again must employ a deeper analysis to summarize and frame the resulting tentative conclusions.

---

3. **Reinforcing Effort and Providing Recognition.** Teaching students that effort expended directly relates to results achieved, and ever fostering this belief in students through acknowledgement and recognition, ranks high in elevating student achievement, according to Marzano.

The Private Eye Correlation: Students love using The Private Eye inquiry process, which, with repetition, becomes self-reinforcing: there's no wrong answer, it's simple, it's fun, it's inherently interesting, it rouses ever-more curiosity and provides fresh lines of

inquiry for any subject. Because the process evokes thinking and working at a high level, the results (writing, drawing, inferring, theorizing, inventing) are typically at a higher level than students have previously experienced. Both works-in-progress and final products thus make students proud, but they also garner respect and recognition from peers, teachers, parents, and visitors to classrooms.

The Private Eye's "No wrong answer" method frees students, so they bloom linguistically. Students' intense engagement while using The Private Eye, the high-level results from their loupe-writing and extended writing, the high-level results from loupe-drawing (non-linguistic representations) along with the inherently interesting theorizing step... all mean the teacher will applaud student work, and students themselves will find their work rewarding. Thus, students and teachers have a self-reinforcing, simple instructional strategy, with results that build student self-esteem, team esteem, and teacher admiration for students.

During Private Eye workshops and courses, and in The Private Eye teacher guide, teachers and students are encouraged to avoid responding to students' efforts with the word "good". More effective responses are discussed, e.g., "Tell me more." "Why did it remind you of that?" "Interesting!" "Intriguing!" -- *responses that keep the student looking, analogizing, drawing inferences, researching.*

---

4. Homework and Practice.

Homework: According to Marzano's research, gains in academic achievement are enhanced with opportunities outside of school to practice familiar content; elaborate on recently introduced content; and/or prepare for new content.

Practice (at home and at school)**:** Marzano notes that *"It's intuitively obvious that practice is necessary for learning knowledge of any type."*

The Private Eye Correlation: As for homework, it's easy (and enjoyable) for students to use their loupe-generated analogy lists created in class to expand into longer writing or research at home. Though teachers typically save loupe-studies for the classroom, they sometimes create special "take your loupe home" nights and "family explorations".

Practice leads to mastery. Practice is built-in to The Private Eye process, since it is meant to be used year round, year after year, across subjects, in school and out. The steps of The Private Eye process (only five, fun steps) give students daily and *progressive practice* with observing, writing, drawing, analytical thinking, creative thinking, inductive and deductive reasoning. This practice is never tedious because the process generates novel results from day to day, from subject to subject. Incrementally, students (and adults) become more focused, better observers, better at generating comparisons, and employing them in analytic and creative work. The process is generalized through repetition, becoming second nature — a way of thinking.

A goal of using The Private Eye systematically across the curriculum is to develop the habits of mind essential for success in all subjects. Habits are formed through repetition, and reinforced by increasing skill levels resulting from frequent practice. These habits

are: looking closely; thinking (inferring) by analogy; changing scale in one's thinking; and hypothesizing / theorizing.

---

5. **Non-linguistic representations.** Marzano tells us that we can stimulate and increase students' brain activity and aid students in thinking about and recalling knowledge if we couple non-linguistic representation with linguistic representation of information. Pattern organization and drawing are two of the more powerful tools reinforcing tools we can use here.

The Private Eye Correlation: Non-linguistic representation is a core step in The Private Eye process and is paired with linguistic representation. Students loupe-examine an object (or part of an object) and draw it in detail (described in The Private Eye book). Students begin their loupe drawings typically in black-and-white and after sufficient detail, add color. The drawings often become "studies" for larger artworks. Loupe-drawing can follow or precede the loupe-analogy writing step, with one reinforcing the other. As a form of "nonlinguistic representation", loupe-drawing acts as an additional "magnifier". Amazing what you don't "see" until you try to draw it. And with a loupe you see so much more! When students loupe-draw, they are practicing a form of close observation, gathering more information about a subject, creating mental pictures — and elaborating on knowledge gained from creating a loupe-analogy list. The drawing step elaborates, as well, knowledge gained when connecting a loupe-analogy list to longer writing, to discussions, to textbook readings and to other resources about the subject. In short, drawing and writing are constantly paired in The Private Eye: loupe-drawing creates an engaging, graphic representation of a subject linked to a linguistic representation.

In the hypothesizing and testing stage of The Private Eye process, students may choose to use flow diagrams, rather than narratives to describe the steps they will take in testing their "guesses" or pursuing research topics. They may also show results of their investigations in the form of tables, graphs, etc. Inventions and designs beg illustrations and/or models.

---

6. **Cooperative Learning.** Research compiled by Marzano shows that heterogeneous grouping of students in small numbers, used systematically and judiciously, benefits students of all ability levels to different degrees. As well, it provides structured opportunities for developing interpersonal skills in a goal-oriented process.

The Private Eye Correlation: Opportunities for students to work independently or in groups are easy to arrange with The Private Eye process. Students typically share louped discoveries with partners; they share their analogy lists aloud and share their resulting prose or poetry with the class; they share loupe-assisted drawings, and work in teams to develop hypotheses drawn from their lists of comparisons. Sharing is natural, not forced, because students are excited about their discoveries and proud of the level of writing and drawing they've achieved. When students share their Private Eye work, each person becomes a magnifier for the others. In the hypothesizing / theorizing steps, teams share the results of their experimentation and research, and open themselves to cross-examination of their thinking strategies by their teachers and peer groups - valuable feedback for refining their thinking.

7. **Setting Objectives and Providing Feedback.** Providing direction for students while allowing some flexibility by not making goals too specific helps students adapt the course of study. In this Marzano strategy on goals and their attainment, he stresses that specific, individualized, timely feedback has the most powerful affect on student achievement.

The Private Eye Correlation: From the outset, objectives are clear: they are embedded in The Private Eye sequence of questions (which linguistically match the way the mind works). Guided by these questions, students are clear about where they're headed. The Private Eye objectives begin simply and become more complex in stages, allowing ample flexibility at each step for students to answer the core questions drawing on prior knowledge and experience.

For example: The directions on a first loupe-study adventure to the student are to: "Write 3-5 things it reminds you of". Then students move to "5-10 things it reminds you of", eventually moving to "at least ten" each time (to develop close observation, fluency and ample material to work with). "Write your comparisons in words, phrases, sentences, paragraphs." "Pick your 3 favorite comparisons from your list and answer, 'Why did it remind me of that?'" (This prompts the student to look deeply for similarities and differences, characteristics and properties, shared by their object — or part of the object — and what else it reminded them of. Students progress to answering: "Why is this object (or feature of an object) the way it is?" and "If it reminds me of ____ how could it function like that, in some way?" — and so on through all the hypothesizing and insight stages for problem solving, design, invention. Objectives also include: "Loupe-draw your object (or part of the object) to see and learn more; now take a small part of that drawing and enlarge it." The process is detailed in *The Private Eye — (5X) Looking / Thinking by Analogy: A Guide to Developing the Interdisciplinary Mind* by Kerry Ruef (The Private Eye Project, 2003, 1998, 1992) The process is specific but allows ample flexibility for a student's individuality.

With The Private Eye, students become more independent and self-motivated — allowing the teacher time to give higher quality, focused feedback. Because there are "no wrong answers," and because each student's loupe-list of analogies is activated by his/her unique, prior knowledge and experience, student "ownership" is high. The number and quality of observational comparisons grows as students brains become, with repetition, more fluent in the process. Because the foundation "list" of metaphors and similes is inherently surprising and interesting, students find it relatively easy to use their Private Eye "bones" for poems, essays, stories to create longer and more complex pieces of writing/thinking. With 2nd drafts, with peer and teacher feedback, students have opportunities to reflect on where their analogies, evidence, arguments, conclusions, etc. are weak or strong. Students are typically pleased and intrigued by the level of writing and drawing they achieve — keeping them engaged and motivated with less need of teacher "pushing".

8. **Generating and Testing Hypothesis.** Opportunities and practice applying knowledge to make predictions or draw conclusions boosts student achievement tests 23 percentile points, per Marzano's research. The strength of this lies in requiring students to *explain* their thinking for each step of the process orally and/or in writing.

The Private Eye Correlation: The four interlocking questions of The Private Eye process *directly generate hypotheses and inferences* that students then test. There's no easier approach to hypothesizing/theorizing, and it matches the way professionals in any field work. Students move from the first step of discovering unexpected similarites between one thing and another and using those associations as clues to why something is the way it is. In The Private Eye investigation, students explain "Why it reminds them of_____"; here they consider the characteristics and properties of phenomenon compared. Students then use promising analogies as clues to help figure out why the observed phenomenon is the way it is. ("If it reminds me of_____, how might it function or work like that in some way?") Students ponder: "How would I test my guess?" or "How would I solve my problem like that?" or "How could I use this information to invent/design something new?"

Students then design and carry out tests of their hypotheses and record results. Procedures and results are described and interpreted by the experimenters/researchers and scrutinized by their peers. Was the hypothesis correct? Does there need to be more experimentation? More investigation? Does the hypothesis need to be restated? In explaining their thinking, students learn from teacher and peer feedback what makes a quality explanation and how to articulate themselves - cognitive skills that can be applied across the curriculum.

---

9. **Cues, Questions, and Advance Organizers.** This last, yet powerful (22 percentile points improvement) Marzano strategy draws on research showing the importance of linking new information with students' prior knowledge. Cuing or questioning which requires students to analyze or draw inferences on what they already know will increase interest and produce more learning.

The Private Eye Correlation: Cues are self-generated as soon as a student asks himself the first Private Eye questions, "What does this remind me of? What else? What else? What else?" A *guaranteed* connection is made to something the student already knows because The Private Eye relies on the native language of the brain. The brain will scurry to build a link between what it is newly confronted with and what it already knows. Then it can more comfortably go on to learn about the new phenomena. Marzano, et al, say that questions requiring students to analyze information produce more learning. The second Private Eye question, "Why did it remind me of that?" evokes an analysis of the connection the brain made, and a more intimate knowledge of the objects, ideas or phenomenon compared.

The similes, analogies, and metaphors students generate using the first Private Eye question are deeply connected

---