Leveling the Playing Field:
Achieving Fairness in Education through Thoughtful, Differentiated Instruction

OAESA
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Presented by
Tyrone Olverson
Our Mission is to build a learning community that fosters the climate necessary for sustaining:

- High levels of learning for all students
- Quality teaching in every classroom
- Skillful leadership throughout the organization
- Professional Learning for one and all
Ron Suskind won the Pulitzer Prize for his book about Cedric Jennings, a bright and determined honor student at Ballou High School in Washington, D.C., a school in one of Washington’s most dangerous neighborhoods. The book tells of Cedric’s odyssey from the inner city to Brown University. “It is an absolutely gripping book,” says Walter Kirn, of National Public Radio.

Here are some of Cedric’s thoughts on fairness:

“The first step is to agree that most people share the goal of true diversity, with many races competing freely and successfully. But everyone wanting the same thing doesn’t tell us ‘how’—how do we get there? How do we lift often poorly educated minorities to an equal footing in the classroom? How do we do this while respecting that being singled out for special attention—and often being ‘tracked’ into a lower educational rung can result in crippling doubts about one’s abilities?”

From Ron Suskind’s
_A Hope in the Unseen: An American Odyssey from the Inner City to the Ivy League_
The Geometry of Fairness
A Study in Equity:
Thoughtful Questions

What does it mean to be treated fairly?

Do we all start the race at the same time? With the same resources?
What role, if any, do our individual differences play in being treated fairly?

How does the playing field in education influence the rules of the game as well as who wins and who loses?

How can we make the game of education equitable?
What words come to mind when you think of the words of fair and unfair?

Is fairness treating everyone the same? Is it treating everyone differently?

“This country will not be a good place for any of us to live in unless we make it a good place for all of us to live in.”

Theodore Roosevelt
Reading for Meaning is a teaching and learning strategy that helps students become proficient at reading claims, finding main ideas, and using reasoning and details to support their ideas. With a Reading for Meaning lesson, students are presented with a series of statements about a text that they are about to read. After carefully reviewing the statements, students read the text and collect evidence both for and against the statements. As students discuss their discoveries in small groups, they improve their abilities to make inferences, identify important information, and develop convincing and well-organized explanations of what they have learned.

1. Students read the Reading for Meaning statements carefully before they read the text.

2. Students then establish a tentative hypothesis (decide if they agree or disagree) for each statement.

3. As students read the text, they collect evidence that supports and/or refutes each statement.

4. Students then decide if the evidence is sufficient to support or refute each statement.

5. As students discuss the statements and the text, they follow these guidelines:
   ♦ Listen carefully to other group members.
   ♦ Try to come to a consensus.
   ♦ If your group cannot agree, revise the statement so that all can agree.

6. Students share their ideas and evidence within groups known as Reader’s Clubs.
The Geometry of Fairness: A Study in Equity

Reading for Meaning

Directions: Examine the following statements before you read the text and then put an A if you agree with the statement or a D if you disagree. Next, read the text and find evidence to support or refute the statements by determining if the author would agree or disagree with each one. Finally, discuss your evidence with a group of other readers to see if they concur with your analysis. Try to arrive at a consensus. If you have to change the wording of the statement to agree, feel free to do so, but be ready to explain why you made the change.

<table>
<thead>
<tr>
<th>Before Reading</th>
<th>Reading for Meaning Statements</th>
<th>After Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical truths cannot be disputed.</td>
<td>Support</td>
<td>Refute</td>
</tr>
<tr>
<td>Life is a stage, we all play a part, but few people are aware of the play they are in, or the part they are playing.</td>
<td>Support</td>
<td>Refute</td>
</tr>
<tr>
<td>The shape of the playing field has a dramatic impact on how the game is played.</td>
<td>Support</td>
<td>Refute</td>
</tr>
<tr>
<td>Science and mathematics are not of much use when it comes to solving social problems.</td>
<td>Support</td>
<td>Refute</td>
</tr>
<tr>
<td>Handicapping in golf, and in life, makes for an even playing field.</td>
<td>Support</td>
<td>Refute</td>
</tr>
</tbody>
</table>
The last place you’d think to find insights from Einstein is the debate over affirmative action. And yet, there’s a sense in which the whole thing is a fairly simple problem in geometry.

The underlying question here is: What’s the shape of the playing field?

If the playing field is tilted in favor of women and minorities, then obviously affirmative action is unneeded and unfair to white guys; if the playing field is tilted against women and minorities, then affirmative action just as obviously is needed.

Alas, few people stop to think about the shape of the stage on which we play out our lives, mainly because it’s normally invisible. But ever since Einstein refashioned the way we think about space and time, it’s become a real factor in every physical equation.

To get a sense of how the geometry of the playing field can change things, consider the following riddle. You are at some unknown location on Earth. You walk one mile south, make a ninety-degree turn, and walk one mile east, then walk one-mile north. You are back at your starting point.

What color are the bears?

The answer is white, because you’re at the North Pole.*

Of course, anyone who took geometry knows you can’t make three right-angle turns on a flat surface and get back to your starting point. But if the surface is curved—like the surface of the Earth—you can do all sorts of things your geometry teacher never taught you.

For example, most people learned in geometry that two parallel lines never meet. Again, this is true enough for space that’s flat and two-dimensional like a piece of paper. But two lines of longitude that are parallel at the equator meet at the poles.

The shape of the background, in other words, makes a huge difference in how things work, whether we’re aware of it or not. And it affects a great deal more than lines and angles; it can also determine how physical forces act.

According to Einstein’s relativity, for example, gravity is really the result of the curvature of four-dimensional space-time (a joining of space and time that creates a backdrop for our universe). So it’s the geometry of the unseen background that determines what rises and what falls on its face.

How can you measure the shape of something you can’t even see? Surprisingly, perhaps, it is doable. Take the curvature of space-time. Even though you can’t see it directly, you can measure its warp by observing the way it bends light from distant galaxies.

You can even determine the shape of the universe at large by measuring the way its contours affect light reaching us from the farthest shores imaginable—the afterglow of the Big Bang. If the light makes a triangle whose three angles add up to more than 180 degrees, you know you’re on a surface that curves in on itself—like the surface of the Earth. And if it makes a triangle whose angles add up to less than 180 degrees, you know you’re on a surface that curves outward—like a saddle.

Scientists use these tools to get a grip on such unwieldy matters as the ultimate fate of the universe. If the universe curls in on itself, then it will eventually collapse into a single point; if the universe curves outward like a saddle, then it could keep expanding indefinitely.

To be sure, debating affirmative action requires measuring devices different from rulers and protractors. Still, if we can measure the shape of the universe at large, it shouldn’t be all that difficult to come up with a set of tools for figuring out the shape of the economic and social playing field here on Earth. One way to start is to look at the patterns of who tends to rise—and who consistently falls. If it’s always the same players, one begins to suspect that the shape of the playing field needs fixing.

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*This is not literally true, of course; there are no bears at the North Pole.
What is the shape of your school’s playing field?

Is it tilted for some students to succeed and others to struggle?

Why might two students who come to your school eager to learn find success and another failure?

What do you think your school needs to do to even the playing field?

What are the hidden dimensions that must be addressed?
How to Play the Game

In his new book, Results Now, Mike Schmoker asks us to imagine a new future. He writes,

Imagine a time...when people speak matter-of-factly about how dropout rates and the achievement gap are inexorably shrinking, when record numbers of students are entering college, and when professors are noticing how much more intellectually fit each year’s freshmen have become. Imagine palpable, irrepressible hope emerging in our poor and urban schools.

All of these improvements result from a new candor that has emerged in education and a willingness to see that historic improvement isn’t about ‘reform’ but something much simpler: a tough, honest self-explanation of the prevailing culture and practices of public schools, and a dramatic turn toward a singular and straightforward focus on instruction.” (Schmoker, 2006, p. 2)

If we are to fulfill the “Hope in the Unseen,” we must focus our attention on those actions and arrangements that ensure effective, ever-improving instruction.

The evidence is indisputable. Mortimer and Sammons (1987) found that teachers had six to ten times as much impact on achievement as all other factors combined. Research from Marzano (2002) demonstrated that two teachers working with the same socioeconomic population can achieve starkly different results on the same test. In one class, 27% of the students will pass. In another, 72% will pass. In another study conducted by William Sandler, it was found that three years of effective instruction produced average improvement gains of 35 to 50 percentile points.

Eric Hanushek found that five years of instruction from an above-average teacher could eliminate the achievement gap (Haycock, 2005). Research shows that the best teachers in a school have six times as much impact as the bottom third of teachers (Haycock & Huang, 2001).
We know that what teachers do makes a difference. Improvement is not a mystery, it is a matter of attention. To address the challenge of a fair and equitable playing field, the Thoughtful Classroom focuses its attention on five questions:

What skills do students need to develop in order to achieve at high levels?

What instructional strategies enable the greatest gains in student performance?

How can we address the diversity of our students in a way that is meaningful and manageable and provides an equal opportunity for all students to achieve?

How can we design units of instruction that motivate learners with different learning styles yet still address the skills and core content knowledge students need to succeed?

How do schools become professional learning communities that support teachers through the improvement process?

In this session, we will focus our attention on the first three questions from our list. This concentration on academic skills, instructional strategies, and student diversity does not mean that unit design and professional learning communities will be forgotten. Instead, both will be modeled throughout our session. For example, the overall design of the session will follow our unit-design model. And when we stop to actively process and consider the classroom applications of what we are learning, we will use the kinds of collaborative tools that help individual educators think and act as part of a professional learning community.
What skills do students need to develop in order to achieve at high levels?

To change the playing field, we must develop students’ intellectual capacities to learn how to learn. In our workshops, we often ask the participants to spell the word “responsible.” We like to spell it differently. We spell it “response – able.” We spell it this way because we believe you cannot hold people responsible for their learning if they do not have the knowledge and skills needed to be able to respond. Therefore, if we are to level the playing field, we must make a deep commitment in developing the skills students need to learn to be successful learners. Listen to Cedric Jennings’ conversation with his psychology professor.

Psychology, he knows, will be a battle, but at least he’s made a passing grade a possibility. After scoring a 70 on his second midterm in early April, he went to Professor Wooten’s office to plead for mercy. The professor, a distant character in the lecture, was warm and engaging up close. He invited Cedric in and gave him some valuable strategic tips, the sort of thing many other kids know walking in the door.

“Don’t be a lecture-hall stenographer,” he started. Instead, listen and take notes in outline form. The notes should be a guide to reading the thick textbook, highlighting only the sections with ideas mentioned in class. Once that’s all done, carefully read each paragraph in those sections, listing the five key words in each paragraph on a separate study sheet. Use that last sheet for final cramming. Cedric nodded, grateful, and waited for something more. Wooten, like a lot of teachers of large, predominantly freshman, survey courses, is witness to heightened dropout rates for African-American students.

Cedric knows such issues of racial attrition are subjects of debate on campus, and he looks intently at the professor, letting the silence hang, hoping for a break. Pass the final, Wooten finally says, and, based on “demonstrated progress,” he’ll pass Cedric in the course. Running all that over in his head as he listens to the rain, Cedric thinks about how many paragraphs of his psych text he’ll have to annotate and block out for cramming in the middle of next week. He marks it on his desktop calendar mat. He simply must pass. (Suskind, 1998, p. 336)

“Even though Cedric was a straight “A” student at Ballou High School in Washington, D.C., he lacks the skills needed to succeed in a rigorous academic environment.

People are often surprised to find out that more than half the students who go on to college or other institutes of advanced academic learning do not graduate. This number is twice that for black and Hispanic students. It has been reported that the number one skill that students need to succeed in any advanced academic learning environment is the ability to collect and organize information from a text: “Note-making!”
Notemaking and summarizing are also among the top two instructional strategies that produced the greatest gain in student learning according to Robert Marzano (2001). Why are notes so important?

What other skills do students need to develop to become response-able learners?

The Know-How of High Achievers

Several years ago, we became interested in the differences in thinking between high performers on state tests and average and low-average performers. At the time, we thought of this as a search for the know-how of high achievers.

As part of this study, we prepared test samplers at the elementary, middle, and high school levels. Each sampler was composed of four to eight items from a variety of content areas. Most of the items required either constructed or extended responses. We did not time the students. Instead, we gave students stop watches and asked them to time themselves on each item. We usually administered our test samplers in groups of twelve or so. One half of the students had been identified by their teachers as high achievers and the other half as either average or low-average achievers. When the students finished, we collected their tests and scrap paper and made an appointment for a personal interview within a day or two.
We conducted these interviews in small groups—usually over pizza. Some of these interviews focused on three or four high achievers. Others were focused on a small number of average or low-average students (as identified by their teachers—not by their performance on the test). During these interviews, we discussed the tests (unscored) by asking students to talk with each other about how they thought.

We thought that by comparing the tests, the scrap paper, and the dialogues, we might gain some insight into the differences between the ways in which students thought about these kinds of test items.

Much of what we discovered would not surprise you. For instance, using the stop watches we were able to obtain reasonable estimates of students’ reading speeds.

So, who read slower...

high achievers
or
low-average achievers?

*Answer:* high achievers

We expected that.

Here is something we didn’t expect: High achievers took almost twice the time in their reading. So, if an average achiever read a certain passage in five minutes; the high achievers took nine or even ten minutes to read the same passage.

What were the high achievers doing with their time? The scrap paper and the discussions held the answer. The tests and scrap papers of high achievers were full of underlining, question marks, short lists, and margin notes. In fact, high achievers took nearly three times more notes than their average and low-average peers. Did you know that a significant number of state tests were tests in notemaking? Don’t be embarrassed—neither did we. But it makes more than a little sense that notemaking would be a critical skill since, according to Benjamin Bloom, two of the principle measures of reading comprehension are students’ abilities to make notes and summarize. Intrigued, we interviewed the teachers who had lent us their students as well as their administrators. We even read through their districts’ curriculum. Here’s what we found: No one could give a coherent account of how notemaking was taught K-12. In over 75% of the district curricula we examined, notemaking was mentioned once, twice, or not at all.
We could find no one in the districts we studied who taught students how to take notes during a lecture. And when we interviewed students about the notetaking strategies they’d been taught, few could identify more than one or two. So here was this skill that appeared to be very important to both reading comprehension and test performance and it appeared to be:

unmentioned in curriculum;
under taught in classrooms;
and rarely, if ever, assessed.

We decided to call it:

*A Hidden Skill of Academic Literacy.*

There were others. And this brings us back to the Key Word strategy. High achieving students were able to think much more productively about words and vocabulary than their average and low-average peers. In particular, they were much more adept at handling abstractions and academic content terms. In particular, they used content area vocabulary four times more often than their peers in both the tests and during our interviews.

So now we had two Hidden Skills of Academic Literacy:

*the ability to collect and organize ideas and information through notemaking;*
*the ability to manage abstract terms and academic content vocabulary.*

The important thing to notice about high-achievers’ possession of these skills is that they did not simply possess these skills as needed to write a research report. No—the high-achievers possessed these skills at a high level of automaticity and could use them naturally and spontaneously under test conditions.

The obvious question was:

*Were there other Hidden Skills of Academic Literacy?*

*Answer:* We found 12.
Here’s one way to think about it: This is an item from a test in Science. Read it over and ask yourself what skills you would need to have in your possession in order to perform well on this task:

From the Connecticut State Science Exam:

Science Standard 5B12:  *Explain how organisms are adapted to environmental conditions in different biomes.*

*(LIB2)*

Study the picture of the imaginary animal below. **Based on its features**, make **scientific** inferences about the animal’s habitat and about its niche. In other words, tell about the kind of area it might live in, what it might eat, and what role it might play in its community. **Be sure to explain your reasoning.**
Here’s the complete list:

**The Hidden Skills of Academic Literacy**

**Reading and Study Skills**
- Collect and organize ideas through notemaking and summarizing
- Make sense of abstract academic vocabulary
- Read and interpret visual displays of information

**Thinking Skills**
- Draw conclusions, make inferences, hypotheses, and conjectures and, test them
- Conduct comparisons independently
- Analyze the demands of a variety of higher-order thinking questions

**Reflective Skills**
- Construct plans to address questions and tasks (11 vs. 43)
- Use criteria and guidelines to evaluate work in progress
- Control or alter mood and impulsivity

**Communication Skills**
- Write clear, well-formed, coherent explanations in all content areas
- Write comfortably in the following nonfiction genres: argument, problem/solution, comparative
- Write about two or more texts: a table and an article, a poem and a story, etc.
The point is not that we, as individual teachers, are not working on these skills and trying to improve them. The point is we are not organized as a system to ensure their improvement. So let’s take just four of these skills and ask questions about them:

1. What do you do to improve your students’ abilities in these areas?
2. What are your colleagues doing?
3. How could you find out what’s happening with these skills in your school or district?
4. How would you organize your school to get improvement in one of these areas?
Summarization is essential to comprehension and developing understanding of information. It is a cognitive process which involves reducing information to essential ideas in as few words as possible. It requires students to combine and reorganize information into a meaningful message. When students learn how to summarize and use summarizing strategies effectively, it has proven to have a profound effect on their learning.

Marzano, Pickering, & Pollock (2001), cite extensive research that demonstrates the powerful effect of summarizing on students’ academic performance.

![Figure 3.1: Research Results for Summarizing Strategies](image)
Students will read, write, listen, and speak for information and understanding.
- distinguish between relevant and irrelevant information and between fact and opinion
- develop information with appropriate supporting material, such as facts, details, illustrative examples or anecdotes, and exclude extraneous material
- make distinctions about the relative value and significance of specific data, facts, and ideas
- use inference and deduction to understand the text
- make precise determinations about the perspective of a particular writer or speaker by recognizing the relative weight he/she places on particular arguments and criteria
- express ideas and concerns clearly and respectfully in conversations and group discussions

THE SCENARIO

At the core of every summary is the main idea. The main idea provides the gist of what the text is all about. If students cannot find or construct a main idea, the chances are that they will not be able to write a good summary.

Unfortunately, most schools stop direct instruction regarding main ideas somewhere between the third and fourth grades. This is exactly at the point where main ideas are inferred, expository texts become more prevalent, and the application of main idea strategies become more essential.

The Main Idea strategy helps overcome these difficulties by modeling the clear differences between finding the topic (the subject of the reading) and finding the main idea (a sentence that summarizes the central thoughts of the reading). The strategy shows students how to check findings by assembling and organizing details that support the main idea. It also provides direct teaching and practice in notemaking using a system that ensures students gradually develop their abilities to record notes that are accurate, well organized, and easy to understand.
How Does an Idea Become a Main Idea?

Imagine you were an idea. Not a great idea, not an important idea. Something smaller, and off to the side. Something other people saw as a detail. You lived in a writer’s head, or in a reader’s mind, or on a page somewhere in a library. But you were ambitious; you wanted to become something more, something bigger, say a main idea. What would you do?

<table>
<thead>
<tr>
<th>MASTERY TASK</th>
<th>INTERPERSONAL TASK</th>
</tr>
</thead>
</table>
| **Activity 2**  
Read and Review  
Read the steps in the Main Idea strategy and review them with a neighbor. Apply the steps to the “origin of scientific names” text. | **Activity 1**  
Do. Look. Learn.  
Read one of the following texts and identify the main idea. Explain the main idea of the text you read to your neighbor, then discuss what steps you would recommend to someone to find the main idea of the text. |

<table>
<thead>
<tr>
<th>UNDERSTANDING TASK</th>
<th>SELF-EXPRESSIVE TASK</th>
</tr>
</thead>
</table>
| **Activity 3**  
Agree or Disagree  
Is a main idea embedded in the text or is it a product of the experience that the reader brings to the text? Where do you stand? Give three reasons to support your position. | **Activity 4**  
Metaphorical Thinking  
Explain how looking for a main idea is like searching for a constellation of stars in the night sky? Give at least three reasons to support your thesis. |
Summarizing Technique 1: Main Idea Strategy

Purpose

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Steps

1. Assign students a passage to read and provide them with an organizer for analyzing the main idea.

2. As they read, have students identify five to fifteen words or phrases they feel are important.

3. Ask students to look over the words and determine the topic of the passage. (What is the subject of the passage?) The topic should be a noun or noun phrase.

4. Next, have students use their key words to establish a main idea and write a sentence which explains what the passage is saying about the topic. The subject of the sentence should be the noun or noun phrase.

5. Students then list the details in the passage that support their main idea. If the students cannot find enough details, they should write another main idea or pick a new topic.

6. Discuss with students what they have written and have students evaluate and refine the process.

7. Students then summarize the text, beginning with the main idea and using supporting details.
Let’s examine the steps in conducting the Main Idea strategy:

Emma Woodhouse, handsome, clever, and rich, with a comfortable home and a happy disposition seemed to unite some of the best blessings of existence; and had lived nearly twenty-one years in the world with very little distress to vex her.

1. Identify key words or phrases.  
   handsome, clever, rich, comfortable, little distress, blessings, happy disposition

2. Determine the topic of the reading.  
   Emma Woodhouse

3. Establish a sentence that explains the main idea.  
   Emma Woodhouse lived a charmed life.

4. Ask yourself if there is sufficient evidence (details) to support your main idea.  
   happy disposition, clever, rich, handsome, little distress

5. Summarize the text using your main idea and details.  
   Emma Woodhouse seems to have everything going for her but I don’t think it will last.

Now, let’s try it with the following paragraph using the organizer on the next page:

Origin of Scientific Names

Imagine the task of giving every living thing a scientific name! Over five million different kinds of living organisms inhabit the earth. They range in size from organisms that are too small to be seen without a microscope to giant redwood trees and blue whales. They range in complexity from simple viruses and bacteria to humans. Naming all of these living things involves three steps. First, they must be found and identified. Then, they must be studied and compared. Finally, they must be sorted into categories, or classified, according to their similarities. The science of naming and classifying living things is called taxonomy (tax-ON-uh-mee).
Name: _______________________________________________________

1. Key Words

2. Topic:

3. Main Idea

4. Support

5. Summary
Read the essay on Leap Years on the next page. Then, examine the main idea statements written by four students. Which one do you think best represents the main idea of the piece? Explain why.

1. Making a calendar is harder than you think.

2. Throughout history, people have had to adjust their calendars to make up for the difference between the solar year and the 365 day year.

3. We all need an accurate way to keep time.

4. Believe it or not, the development of the calendar makes for a fascinating story.
Leap Years

Living on the earth, there are two units of time that come naturally: the day and the year. A day is the time it takes for the earth to completely rotate on its axis one time. A year is the time it takes for the earth to revolve once around the sun. However, the number of days in a solar year is not a round number; it is actually 365.2422 days. That’s a problem for people who make calendars.

To make a calendar that keeps the seasons from slowly drifting forward or backward over time, the astronomer Sosigenes, who worked for the Roman Emperor Julius Caesar, invented the leap year in 46 B.C.E. The Julian calendar, as it came to be called, saved up the extra decimal fraction of a day, \(0.2422,\) for four years then added one extra day (February 29) to every year that is a multiple of four. That helped, but it did not completely solve the problem. An extra day every four years, 0.25 days per year, is too much; \(4 \times 0.2422 = 0.9688\) day, which is 0.0312 days or about 45 minutes less than a whole day.

Three quarters of an hour in four years may not seem like much, but by 1582, the calendar year had slipped backward a full 12 days from the year measured by the sun. Pope Gregory, head of the Roman Catholic Church, which was one of the few functioning international organizations of the time, consulted with his astronomers. He decided that 10 days should be added back to the calendar immediately. He further decreed that years that are multiples of 100—1700, 1800, 1900—would henceforth not be leap years unless they are multiples 400. Following this rule, 1600 and 2000 were leap years.

Does the Gregorian calendar, as it is called, solve the problem of making a whole day calendar out of a fractional day year? Not entirely. There is still an error of 0.12 days every 400 years. It has been suggested that our decedents could reduce the error further by making the year 4000 and all multiples of 4000 not leap years.

Adapted from Menzel, D.H. (1964)

Throughout history, people have had to adjust their calendars because of the difference between the solar year and the calendar year. To make their calendars work, the Romans created a leap year and added one extra day, February 29th, to every fourth year. This still did not solve the problem because by 1582 the calendar year had skipped 12 days. Pope Gregory then made another adjustment to the calendar by adding ten days, but even today there is still a discrepancy between our calendar and the earth’s rotation around the sun.
Robert Marzano writes that “we educators stand at a special point in time” because the “art” of teaching is rapidly becoming the “science” of teaching. What this means is that research has provided us with significant data to identify those instructional strategies that have a high probability of enhancing student achievement for all students in all subject areas at all grade levels.

Marzano has organized this research into nine categories. The list below is put in random order. Which do you think are the top three practices? Put a star next to them.

___ Generating and Testing Hypotheses
___ Summarizing and Notetaking
___ Identifying Similarities and Differences
___ Questions, Cues, and Advance Organizers
___ Reinforcing Effort and Providing Recognition
___ Cooperative Learning
___ Non-Linguistic Representation
___ Setting Objectives and Providing Feedback
___ Homework and Practice
Now compare your selection with the actual research.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentile Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying Similarities and Differences</td>
<td>45</td>
</tr>
<tr>
<td>Summarizing and Notetaking</td>
<td>34</td>
</tr>
<tr>
<td>Reinforcing Effort and Providing Recognition</td>
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<tr>
<td>Homework and Practice</td>
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<tr>
<td>Non-Linguistic Representation</td>
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<tr>
<td>Cooperative Learning</td>
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<td>Setting Objectives and Providing Feedback</td>
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</tr>
<tr>
<td>Generating and Testing Hypotheses</td>
<td>23</td>
</tr>
<tr>
<td>Questions, Cues, and Advance Organizers</td>
<td>22</td>
</tr>
</tbody>
</table>

**Compare and Contrast**

The number one strategy that produced the greatest gain in student achievement was Identifying Similarities and Differences. Compare and Contrast is an example of one of the strategies in this category. The strategy moves through four phases:

I. Description  
II. Comparison  
III. Conclusion  
IV. Application (synthesis)
WHAT IS COMPARE & CONTRAST?

This portfolio focuses on Compare & Contrast, a strategy unique in its capacity to build students’ memories, eliminate confusions, and highlight critical similarities and differences. Compare & Contrast is one of a family of four comparative thinking strategies that together make up our most effective tool for improving student learning. (See Classroom Instruction That Works by Robert J. Marzano, Debra J. Pickering, and Jane E. Pollock, 2001.)

### Compare & Contrast

Is used when you want students to conduct a careful analysis of two concepts or objects in order to discover key attributes, similarities, and differences.

**Example:** Compare and contrast primary and compound numbers.

### Classification

Requires students to examine a set of examples or a bank of data and develop a classification system.

**Example:** How would you classify the different types of friendships we have read about?

### Decision Making

Is the most personal form of comparison, inviting students into the content where they examine alternatives and use their own values to make and justify a decision.

**Example:** What was the most important scientific discovery of the 20th Century?

### Metaphor

Engages students in creative comparison, asking them to make and explain connections between two dissimilar ideas or items.

**Example:** How is democracy like a diamond?

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**What can the Compare & Contrast strategy do for you and your students?**

**Goal #1 Memory**

By focusing student thinking on analyzing pairs of ideas, the Compare & Contrast strategy strengthens students’ ability to remember content area information.

**Goal #2 Higher-Order Thinking**

Compare & Contrast acts as a practical and easy-to-use introduction to higher-order thinking.

**Goal #3 Comprehension**

Compare & Contrast improves comprehension by eliminating confusions, highlighting important details, and making abstract ideas more concrete.

**Goal #4 Writing in the Content Areas**

The Compare & Contrast strategy helps students strengthen their writing skills by providing tools to help them write with better organization and greater clarity.

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**Source:** Thoughtful Classroom Portfolio Series. Compare & Contrast: How Comparative Thinking Strengthens Student Learning. Copyright © 2005 Thoughtful Education Press.
THE 4 PHASES OF A THOUGHTFUL COMPARE & CONTRAST LESSON

Guide your students through the following phases. Regular practice will lead them to independent use of the Compare & Contrast strategy.

Describe
– Identify your purpose
– Describe each item separately using criteria to keep yourself focused

Compare
– Use a diagram to record the similarities and differences you discover

Conclude
– Discuss what you have learned from your comparison

Apply
– Show how you can use what you have learned
The Phases

1. **Description:** Students observe and describe each item separately.

   **Teacher Planning:**
   - What’s the purpose for this comparison?
   - What sources of information will my students use?
   - How will I help students identify the criteria they need to focus their description?

2. **Comparison:** Students use a visual organizer to identify similarities and differences between the items.

   **Teacher Planning:**
   - What sort of visual organizer will students use to record their comparisons?

   ![Visual Organizer Diagram]

   Full-size copies of these organizers are provided.

3. **Conclusion:** Students discuss the relationship between the items.

   **Teacher Planning:**
   - Design a discussion question that will help students draw conclusions:
     - Are the items more alike/different?
     - What causes the differences and similarities between the items?

4. **Application:** Students apply what they have learned through the comparison.

   **Teacher Planning:**
   - Create a task that will help students synthesize their learning.

---

An Example

1. Mrs. Rimbaldi wants her eighth graders to assess Thomas Jefferson’s purchase of the Louisiana Territory. She provides her students with maps, editorials, and appropriate textbook passages. She and her students agree to first describe the United States before and then 10 years after the purchase. They use the following criteria to describe each:

   - Population
   - Economic opportunities
   - Resources
   - Arguments for the purchase
   - Arguments against the purchase

2. Mrs. Rimbaldi uses a tophat organizer so students can record differences next to each other and similarities below.

   ![Tophat Organizer Image]

3. Mrs. Rimbaldi asks her students to think about and discuss this question:

   **Was America before the Louisiana Purchase more similar to or more different from America 10 years after the purchase?**

4. Mrs. Rimbaldi asks her students to write a letter to the editor answering Jefferson’s critics.
Let's find out about how the sphere and the rectangular prism are different and alike! First of all the word vertices means corners. A sphere and a rectangular prism are alike because they are 3-D shapes. The way that they are different are that the prism can roll while the prism doesn't. The prism has vertices and the sphere doesn't. The sphere doesn't have edges and the prism does. The prism has faces and the sphere doesn't. Also the prism has flat bosses while the sphere doesn't. How do you think they are alike and different?

How can we address the diversity of our students in a way that is meaningful and manageable and provides an equal opportunity for all students to achieve?

To change the playing field, we must address the diversity of student learning styles in a way that is both meaningful and manageable. There is no one best way to learn, nor is it best for teachers to teach students in one style regardless of their learning preferences. A Learning Styles approach begins with a conversation about learning, how we learn, and an understanding of how we prefer to learn.

It is a belief that when we get students to reflect upon themselves as learners, they become more responsible for their learning and develop an appreciation for a variety of ways to learn. The research has demonstrated that many schools have a bias toward certain forms of instruction at the expense of other styles (Hanson, Dewing, & Sternberg). The goal is not to match every student in a way that they “learn best,” but to make sure students are exposed to different styles of teaching that support their preferred modes of instruction as well as challenge them to develop their abilities in other styles.

Our model of learning styles is derived from the work of the great Swiss psychologist, Carl Gustav Jung. Jung was the first modern psychologist to address the problem of human differences, and he did this by asking himself two questions:

*How are minds similar?*

*How are minds different?*

He answered the first question by declaring that all minds are similar in that all minds perceive the world and make judgments about it.

He answered the second question by noticing that minds perceived differently and made judgments differently. He saw that there were two unique ways of perceiving (sensing and intuition) and two unique ways of judging (thinking and feeling). Work with a partner and use the Peer Reading strategy on the following pages to get a sense of what Jung meant by these terms.
We would like to ask you one little question about yourself. It may seem strange, but we’d really like to know: *Are you more like...*

- a paper clip?
- a magnifying glass?
- a teddy bear?
- a Slinky?

<table>
<thead>
<tr>
<th>Mastery</th>
<th>Interpersonal</th>
<th>Self-Expressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>Relate</td>
<td>Reorganize</td>
</tr>
<tr>
<td>Step by Step</td>
<td>Friend by Friend</td>
<td>Dream by Dream</td>
</tr>
<tr>
<td>Clarity and Competence</td>
<td>Cooperative and Connected Personally</td>
<td>Choice and Creativity</td>
</tr>
<tr>
<td>Success</td>
<td>Relationships</td>
<td>Originality</td>
</tr>
<tr>
<td>Correct Answers</td>
<td>Relevant Experience</td>
<td>Expressive Product</td>
</tr>
</tbody>
</table>
Jung called these four ideas, Sensing (S), Intuition (N), Thinking (T), and Feeling (F), functions. He saw them as unconscious aspects of our different dispositions to life and learning.

Later, researchers noticed that if you combined each perception function (Sensing or Intuition) with a judgment or decision-making function (Thinking or Feeling), you could see four distinct styles of learning:

- A Mastery Style (S & T)
- An Understanding Style (N & T)
- A Self-Expressive Style (N & F)
- An Interpersonal Style (S & F)

Here’s how the four styles seek to learn in your classroom.

<table>
<thead>
<tr>
<th>MASTERY</th>
<th>UNDERSTANDING</th>
<th>INTERPERSONAL</th>
<th>SELF-EXPRESSIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emphasizes</strong>: Memory (knowing)</td>
<td><strong>Emphasizes</strong>: Discovery (reasoning)</td>
<td><strong>Emphasizes</strong>: Invention (creativity)</td>
<td><strong>Emphasizes</strong>: Invention (creativity)</td>
</tr>
<tr>
<td><strong>Looks for</strong>: Specific knowledge and skills</td>
<td><strong>Looks for</strong>: Ideas, patterns, principles, and rules</td>
<td><strong>Looks for</strong>: Issues, speculations (what if?), ethical and philosophic dilemmas, and creative products</td>
<td><strong>Looks for</strong>: Issues, speculations (what if?), ethical and philosophic dilemmas, and creative products</td>
</tr>
<tr>
<td><strong>Learns by</strong>: Modeling, exercising, practicing, and receiving immediate feedback</td>
<td><strong>Learns by</strong>: Inquiry, explaining, proving and probing</td>
<td><strong>Learns by</strong>: Challenge, choice, creativity, and originality</td>
<td><strong>Learns by</strong>: Challenge, choice, creativity, and originality</td>
</tr>
<tr>
<td><strong>Values</strong>: Correctness and competence</td>
<td><strong>Values</strong>: Critical thinking and problem solving</td>
<td><strong>Values</strong>: Craftsmanship and communication</td>
<td><strong>Values</strong>: Craftsmanship and communication</td>
</tr>
<tr>
<td><strong>Performs as</strong>: Competent worker</td>
<td><strong>Performs as</strong>: Complex thinker</td>
<td><strong>Performs as</strong>: Community contributor</td>
<td><strong>Performs as</strong>: Community contributor</td>
</tr>
</tbody>
</table>
A Quick Review of the Principles of Style

Style is a basic orientation to the world resulting in preferences for the way people perceive and process reality.

There are two modes of perception:

The **sensing** orientation, which focuses on things as they are, and the **intuitive** orientation, which focuses on the inner meaning of, and relationships between, what is occurring.

There are also two modes for judging information: **thinking** judgments, based on facts, logic, analysis, and external evidence, and **feeling** judgments, made on the basis of personal likes, dislikes, values, and beliefs.

Your style is a result of the combination of your preferred mode of perception and your preferred mode of judgment. As a result, there are four basic styles:

- Sensing + Thinking = Mastery Style
- Intuition + Thinking = Understanding Style
- Intuition + Feeling = Self-Expressive Style
- Sensing + Feeling = Interpersonal Style

Your style is neither good nor bad. All four styles are equally valuable and have their own assets and liabilities. Furthermore, each of us has access to all four styles.

Learning requires both support and challenge. We need to work in the style where we are most comfortable, one that validates who we are and how we function. We also need to work in styles that challenge us to grow, develop, and become whole.

Education needs to provide a “home for the mind”—a place where all four functional modalities (sensing, intuition, thinking, and feeling) are nurtured and challenged so that they are developed to their fullest.

Style can be used as a decision-making tool for designing and selecting goals and objectives; questions and activities; strategies for teaching; and techniques for learning, assessment, and evaluation.
Area and perimeter are two geometric properties that are very important in everyday life, but which are often confused. By using exploratory examples and activities, this Task Rotation illustrates the difference between perimeter and area and provides practice for students to explore the concepts on their own.
Think of a time when you didn’t receive enough information. How much information do you need to find the perimeter and area of a square? Only the measurement of a single side: because of the unique properties of a square, the measurement of a single side allows you to compute both perimeter and area.

Today we’re going to look at irregular shapes. How much information do you need to find out their perimeter and area?

**MASTERY TASK**

If a rectangle that is 4” x 10” is placed next to one that is 5” x 12”, what is the perimeter of the combined figure? What is the area of the combined figure?

If you have a figure like the one below, what are the fewest number of sides you must know to accurately calculate the perimeter and area? Explain your answer.

**UNDERSTANDING TASK**

**INTERPERSONAL TASK**

Draw a picture of the floor plan of your home showing the dimensions of each room. Then compute the perimeter and area for each room and order them from largest to smallest according to their perimeter.

Create a problem in which students must find the perimeter and area of two rectangles, a square, and an equilateral triangle. The problem must be solved using four measurements. Can you create another problem using only three measurements? How about two?
Here’s a question to begin with:

*How is a curriculum unit like a house or a home?*

Think...

What do you know about curriculum units?

Think...

What do you know about houses or homes?

How are they similar?
## How to Turn a Blueprint Into A Home for the Mind

<table>
<thead>
<tr>
<th>Know</th>
<th>Foyer</th>
<th>Be Like</th>
</tr>
</thead>
</table>
| What facts and procedures do you want your students to know? | How will you help students know where they are going and why?  
- How will you hook the students through engaging and thought-provoking activities?  
- How will you help students develop insight into the products they will create and the knowledge they will construct? | What do you want your students to be like? |

### Workshop
- How will you build in periodic review and guided practice opportunities to help students master key skills and content?  
- How will you use modeling and coaching to help them refine their skills?  
- How will you help students self-evaluate their knowledge and skills so they can determine their own levels of understanding?  

### Library
- How will the students acquire the knowledge, understanding, and skills they will need for the assessment tasks?  
- How will you engage students, and what tools and strategies will you use to help students address the essential questions?  
- How will you provide for different learning styles, modes of intelligences, and different ability levels so that all students will be engaged and achieve high levels of success?  

### Porch
- How will you encourage students to reflect on and rethink their work?  
- How will students exhibit their new insights about the final performances in their work and set future goals?  

### Understanding
What ideas do you want your students to understand?  

### Kitchen
- How will you equip students with the production skills they will need to develop successful products and performances?  
- How will you provide guidance and feedback to your students so they can rehearse, revise, and rethink their work?  

### Skills
What do you want your students to be able to do?
<table>
<thead>
<tr>
<th><strong>UNIT Blueprint for Evolution Unit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FOYER</strong> <em>(Knowledge Anticipation)</em></td>
</tr>
<tr>
<td>• Darwin quotation</td>
</tr>
<tr>
<td>• Focus on Vocabulary</td>
</tr>
<tr>
<td>- Vocabulary monitor</td>
</tr>
<tr>
<td>- Evolution of meaning</td>
</tr>
<tr>
<td>• What comes to mind when you think of the word “evolution?”</td>
</tr>
<tr>
<td>• Evolutionary misconceptions</td>
</tr>
<tr>
<td><strong>LIBRARY</strong> <em>(Knowledge Acquisition)</em></td>
</tr>
<tr>
<td>• Why did the dinosaurs disappear?</td>
</tr>
<tr>
<td>• History of evolutionary thought</td>
</tr>
<tr>
<td>• Lamarck’s theory of evolution</td>
</tr>
<tr>
<td><strong>WORKSHOP</strong> <em>(Practice)</em></td>
</tr>
<tr>
<td>• The Blind Men and the Elephant</td>
</tr>
<tr>
<td>• Comparing and contrasting Darwin and Lamarck</td>
</tr>
<tr>
<td>• Vocabulary: Connecting the Dots</td>
</tr>
<tr>
<td>• Cinquain guessing game</td>
</tr>
<tr>
<td>• Lab: Bacterial evolution</td>
</tr>
<tr>
<td>• Team-Games-Tournament</td>
</tr>
<tr>
<td><strong>KITCHEN</strong> <em>(Assessment)</em></td>
</tr>
<tr>
<td>• You’re hired! Children’s book on evolution</td>
</tr>
<tr>
<td>• Task Rotation: Antibiotic resistant bacteria</td>
</tr>
<tr>
<td>• Unit Test</td>
</tr>
<tr>
<td><strong>PORCH</strong> <em>(Reflection)</em></td>
</tr>
<tr>
<td>• Evolutionary reflection — Revisit key concepts and essential questions</td>
</tr>
<tr>
<td>• Test reflection</td>
</tr>
<tr>
<td><strong>BE LIKE</strong></td>
</tr>
<tr>
<td>• Ask yes, but why</td>
</tr>
<tr>
<td>• Consider multiple points of view</td>
</tr>
<tr>
<td>• Consider all available evidence before forming an opinion</td>
</tr>
<tr>
<td>• Suspend judgement</td>
</tr>
<tr>
<td><strong>SKILLS</strong></td>
</tr>
<tr>
<td>• Notemaking</td>
</tr>
<tr>
<td>• Compare &amp; Contrast</td>
</tr>
<tr>
<td>• Generate &amp; test hypotheses</td>
</tr>
<tr>
<td>• Write &amp; support an argument</td>
</tr>
<tr>
<td>• Create a product to explain a concept</td>
</tr>
<tr>
<td>• Write an editorial</td>
</tr>
<tr>
<td>• Write an illustrated children’s book</td>
</tr>
<tr>
<td>• Make a presentation</td>
</tr>
</tbody>
</table>

**KNOW**
- The history of evolutionary theory
- The major components of Darwin’s & Lamarck’s theories of evolution
- Important terms & people from the Word Wall

**UNDERSTAND**
- Development of new ideas in science is influenced by the culture, the times, and other scientists’ ideas
- An organism’s ability to survive is influenced by living and non-living components of the environment
- Diversity increases the chance that some living things will survive in the face of large changes in the environment
- Evolution is ongoing and has relevance to our everyday lives

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How do schools become professional learning communities that support teachers through the improvement process?

Why do some organizations achieve at high levels? Why do some schools produce significant gains in student learning while others do not?

In his fifteen years of research into how effective organizations and schools refine practices, unlock collective and personal potential, and sustain change over time, Peter Senge introduced the powerful concept of the “learning organization.” Learning organizations, or professional learning communities as they are often called in school settings, insist that no teacher and no administrator is alone when it comes to raising achievement. At the center of a successful professional learning community is a group of school leaders known as an Instructional Learning Team. Instructional Learning Teams—and the communities they help create—share a commitment to four school-wide or district-wide capacities.

1) The capacity to focus: to establish and maintain attention.

2) The capacity for reflection: to speak out and carefully design and interpret assessments and use their ideas to make decisions to adapt and revise approaches to achieve goals.

3) The capacity for strategy: to select or create appropriate plans of action to achieve goals and purposes.

4) The capacity to collaborate: to create opportunities for members in the organization to work together as a team.
Those of us who are members of the Thoughtful Classroom community believe that our routines for professional development need to become more thoughtful and respectful, too. We believe that any plan for school improvement lives or dies by four values:

**FOCUS** - A school’s capacity to select a common goal and maintain focus on that goal over time.

**COLLABORATION** - A school’s capacity to create forums in which faculty and administration can work together as a team.

**REFLECTION** - A school’s capacity to select or create assessment strategies and use data to develop and revise plans.

**ADAPTABILITY** - A school’s capacity to support teachers in their quest to apply what they learn in their classrooms.

How would you rate your school’s capacities in these four areas? Place the numbers 1 through 4 in the quadrants of the diagram above (a 4 would be your school’s strongest capacity, a 1 would be its weakest capacity). Compare your ideas with other members of your team. Why did you rank your school’s capacities the way you did? What might your school need to do to improve its capacities in other areas?

* * *
Thoughtful Classroom Feedback

Bring this completed form to your presenter.

Name:
Position/Title:
Organization:
Address:
Work Phone:
Preferred e-mail (please print clearly):

<table>
<thead>
<tr>
<th>Three ideas from our work today:</th>
<th>One thing I would tell a friend about this workshop:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Before today I thought:
Now I think:

Circle one and explain your choice. Today was more like *riding a bike, a walk in the park, a sunrise/sunset, mountain climbing.*
Thank you for attending!

Leveling the Playing Field: Achieving Fairness in Education Through Thoughtful, Differentiated Instruction
Presented by: Tyrone Olverson

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