Identifying Similarities and Differences (APK/APP)

Compare: describe how things are the same and different

1. Select items to compare
2. Select characteristics on which you want to base your comparison of the items
3. Explain how the items are similar and different with respect to the characteristics
4. Summarize your findings and draw useful conclusions

Create an Analogy: substitute something familiar for something difficult

1. Identify a situation or basic information
2. State the basic information in general terms
3. Identify new difficult information in terms of the familiar situation
4. Use the similarities and differences as a platform for new understandings
5. Summarize new explanation(s) about the difficult information

Classify: group similar items into categories

1. Identify items to classify
2. Select an item and identify other items like it to combine into a group based on attributes
3. Choose a rule that describes membership in the category
4. Repeat with another item until all items are classified
5. If necessary, combine or split groups into smaller categories and state the rule for membership
6. Reclassify to consider different patterns and summarize patterns.

We are trying to get the brain to categorize; analyze perspectives, construct arguments; extract themes, deduce, analyze for logical errors, systems analysis, investigate; make decisions, solve problems, create a test and invent; follow complex directions

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Summarizing and Note Taking

(New Info)

- **Synthesizing--reading, highlighting, and making connections (post its, highlighter, *Word* highlighting)**
- **Students analyze information at a deep level in order to decide what information to delete, what to substitute, and what to keep when they are asked to give a summary.**
- **Reading comprehension increases when students learn how to incorporate "summary frames" as a tool for summarizing. Summary frames are a series of questions created by the teacher and designed to highlight critical passages of text.**
- **Teacher-prepared notes show students what is important and how ideas relate, and offer a model for how students should take notes themselves.**
- **Notes should be in both linguistic and nonlinguistic forms, including idea webs, sketches, informal outlines, and combinations of words and schematics; and, the more notes, the better.**
- **When students review and revise their own notes using a note taking system such as Cornell notes, the notes become more meaningful and useful.**

Three Modes of Summarizing:
- Summary Frames
  - Rule Based
- Reciprocal Teaching

Suggestions for Note Taking:
Cornell Notes, Informal Outline, Webbing, Teacher Prepared Notes

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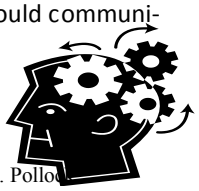
Reinforcing Effort and Providing Recognition (Gs)

These strategies address students' attitudes and beliefs. Most students are not aware of the importance of believing that their level of effort is related to their achievement. When students are rewarded or praised for achieving specific goals, their level of achievement is higher.

1. Teach the relationship between effort and achievement.
2. Reinforce effort. Students who are recognized for effort will make the connection between effort and improvement.
3. Visual representation of effort may increase effort. Students who are helped to design an "effort log" using graphic representation will be more likely to see it in their mind's eye, and refer to it when working.
4. Create a class effort rubric. A class that shares a common definition for effort will also share the understanding of effort and achievement. If students are in learning groups, on the same teams, or in study groups together, they will have a common language and a shared ideal regarding effort and achievement.
5. Be careful about how and when recognition is provided. Verbal praise for small or easy tasks can be construed by students as undeserved, and may actually decrease effort. Doing an activity to a predetermined standard may well be worthy of reward and result in increased effort and motivation.
6. Recognize individual students for personal progress. When students reach pre-determined standards of excellence, recognition is for personal achievement, which is unique to each student.
7. Make clear the real goal of effort. "The harder you try, the more successful you are" is what the act of recognition should communicate to students, not "the harder you try, the more prizes you get." Make this clear to students and apply it in practice.



We are trying to get the brain to reduce impulsivity and stick to a task.

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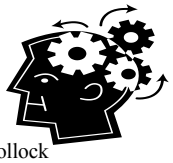

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Homework and Practice
(N, A, G)

What we know:

- Grade level is important when teachers assign homework. Impact of homework on achievement increases as students move through the grades.
- Teachers should assign appropriate homework at instructional levels that match students' skills and provide positive consequences for homework completion.
- Students should receive feedback on their homework.
- Homework assignments provide the time and experience students need to develop study habits that support learning.
- Mastery requires focused practice over days or weeks.
- Students learn more when allowed to practice fewer skills or concepts, but at a deeper level.
- Complex processes should be broken down into smaller bits, or skills, which should be taught with time allotted for student practice and adaptation.

What we need to do:

1. Understand the four types of homework. Know when and why to have students practice:
   - Memorization of basic rules, algorithms, or laws skill becomes rote.
   - Increase skill speed, to improve ability to apply skills in complex problem solving.
   - Deepening understanding of a concept.
   - Preparation for the following day's learning.
2. Match the right type to the goal.
3. Assign the right level of homework.
4. Assign the right amount of homework time. Multiply the grade x 10 to approximate the right amount of minutes per night for students.
5. Apply consistent consequences.
6. Recognize student uniqueness.
7. Provide clear policies.
8. Ask parents to facilitate completion, not teach content.
9. Make the goal of a homework assignment explicit and clear to everyone, including students.
10. Provide appropriate and timely feedback.
11. Create support structures for homework.

We are trying to get the brain to retain the information learned.

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Nonlinguistic Representations (APK)

What we know:

- Knowledge is stored in two forms - a linguistic form and an imagery form.
- The more we use both forms the better we are able to think about and recall knowledge.
- Studies show teachers primarily use linguistic representations to present new information (talking about content and reading content).
- The non-linguistic form is the imagery mode of representation; primarily mental pictures and physical sensations.
- Using non-linguistic representations will help students increase knowledge with mental images.

What we need to do:

Marzano's recommendations for classroom practice include:

- creating graphic representations through organizers
- making physical models
- generating mental pictures
- drawing pictures and pictographs
- engaging in kinesthetic activities

IDEAS:

☺Models, graphs, imagery, and other tools enable students to engage in actively constructing representations of their understanding.

☺Teach students to represent and interpret information in graphs, charts, maps, and other formats that will help them see patterns and make connections.

☺Stimulate body-mind connections. Incorporate dramatizations, dance, music, simulations, and other active learning experiences.

☺ Integrate nonlinguistic forms into note-taking. Model use of sketches, graphs, and symbols.

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Cooperative Learning

(A,N,A)

Students Need:

Interpersonal and small group skills

o communication, trust, leadership, decision making, and conflict resolution

Individual and group accountability

o each of us has to contribute to the group achieving its goals

Group Processing

o reflecting on how well the team is functioning and how to function even better

Positive Interdependence

o mutual goals, joint rewards, resource and role interdependence (each group member is assigned a specific role).

Face-to-face promotive interaction

helping each other learn, applauding success and efforts

Recommendations for Teachers:

1. Create the right type of group for the need.
2. Keep group size small.
3. Use ability grouping sparingly.
4. Don't use cooperative learning for all instructional goals.
5. Use a variety of strategies when choosing students for groups.
6. Facilitate success. Develop organizational tools, forms, learning journals, etc, that foster the smooth processes.
7. Support new groups. Cooperative learning is a practiced skill that requires monitoring and adjustment. Teach specific skills before grouping.

IDEAS:

☺Jigsaw ☺Think-Pair-Share ☺Round Robin Brainstorming

☺Reciprocal Teaching ☺Literature Circles/Book Clubs

☺ Team-Pair-Solo ☺Numbered Heads Together

Organizing students in heterogeneous cooperative learning groups at least once a week has a significant effect on learning.

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Setting Obj. and Providing Feed-back (G, G)

Summary of Research on Setting Objectives

- Instructional goals/objectives narrow what students focus on.
- Instructional goals/objectives should not be too specific.
- Students should be encouraged to personalize the teacher's goals.

Summary of Research on Providing Feedback

- Feedback should be "corrective" in nature by explaining to students what they are doing correctly and incorrectly.
- Feedback should be specific to a criterion.
- Feedback should be timely. Students can effectively provide some of their own feedback.

Classroom Practice in Providing Feedback

- Goals should be general enough to provide students some flexibility.
- Contracts with students provide them with a great deal of control over their learning.

Classroom Practice in Setting Objectives

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Marzano's recommendations for classroom practice include:

- setting objectives that are not too specific
- personalizing objectives
- communicating objectives
- negotiating contracts
- engaging students in peer feedback
- using criterion-referenced feedback and explanations
- using feedback from assessments
- asking students to self-assess

We are trying to get the brain to focus on the goal, make a connection to the goal and retain the information

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Generating and Testing Hypothesis (App)

Make a Decision

1. Identify a situation that requires a choice
2. Identify different choices
3. Hypothesize the best criteria important to the situation
4. Assign each criterion a value score
5. Score the extent to which each alternative possesses each criterion
6. Multiply the criterion scores by alternative
7. Identify the highest score.
8. Summarize the result

Solve a Problem

1. Identify a goal
2. Describe a barrier that prevents you from achieving the goal
3. Hypothesize solutions for overcoming the barrier
4. Test a likely solution (s)
5. If necessary, test another hypothesis then summarize how to resolve the situation.

Invent

Develop original products or processes to meet specific needs.

1. Describe a situation that needs improvement.
2. State the purpose or goal from different perspectives.
3. Hypothesize specific needs and restrictions for the invention
4. Develop a model, sketch or outline
5. Seek feedback, improve, and publish

Investigate

Resolve issues about which there are contradictions.

1. Describe an event or concept to be explained.
2. Explain what is already known
3. Explain the confusion or contradiction
4. Hypothesize a plausible explanation
5. Summarize findings

Experiment or Survey

Test explanations for things we observe.

1. Describe an event or situation
2. Explain what you observed
3. Make a prediction or hypothesis
4. Create an experiment or survey
5. Explain the results
6. Summarize, and if necessary, revise the explanation.

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Questions, Cues, and Advance Organizers (A,G, A)

Cues & Questions

Summary of Research on Cues and Questions

- Cues and questions should focus on what is important as opposed to what is unusual.
- "Higher level" questions produce deeper learning than lower level questions.
- "Waiting" briefly before accepting responses from students increases the depth of student answers.
- Questions are effective learning tools even when asked before a learning experience.

Classroom Practice in Cues and Questions

- **Question-response-evaluation.** The teacher asks a question and then appraises the answer.
- **Question-response-feedback.** The teacher asks a question, the student answers, and then the teacher provides feedback.
- **Student-organized interaction.** Students ask and answer questions in small groups. The teacher becomes a facilitator and discussion participant.
- **Cues and questions should focus on what is important rather than what is unusual.**

Advance Organizers

Summary of Research on Advance Organizers

- Advance Organizers should focus on what is important as opposed to what is unusual.
- "Higher level" advance organizers produce deeper learning than the "lower level" advance organizers.
- Advance Organizers are most useful with information that is not well organized.
- Different types of advanced organizers produce different results.

Classroom Practice in Advance Organizers

- Use **expository advance organizers** because they describe the new content that will be introduced. Expository advance organizers are a clear-cut, uncomplicated means of describing the new content students will be learning.
- Use **narrative advance organizers** to let students know what they are going to be learning in a story format
- Use **skimming before reading** as a form of advance organizer. **SQ4R**

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