Twenty Instructional Strategies
For Success With Standards

Oswego's Instructional Design for Attainment of Standards identifies instructional strategies that relate to the various types of learning contained in the standards. The guide includes research-based information and best practices designed to enhance student achievement and an annotated bibliography of key resources. These strategies should be an integral piece in the development of standards-based lessons and units of study.

In this guide you will

- learn to create a positive learning environment that will be most effective in helping students acquire, integrate, extend, refine, and apply knowledge.

- learn to select instructional strategies based on their effectiveness in supporting student learning related to identified standards.

This resource addresses the following Oswego Goals for Professional Learning:
- *Using strategies for brain-based learning*
- *Providing access for all students to the knowledge and skills described in the standards*
- *Providing instruction that uses time effectively and flexibly to achieve learning goals related to the standards*
- *Engaging students in active learning, building on prior knowledge and experiences, and developing conceptual and procedural understanding, along with student independence*
- *Using projects and assignments that require students to integrate and apply their learning in meaningful contexts and to reflect on what they have learned*
- *Adapting the learning environment so that all students may attain the standards*

Instructional Strategies

Each teacher needs a repertoire of effective instructional strategies to use in the classroom. Nine researched based strategies, which strongly affect student achievement, are outlined below. These strategies are taken from *A Handbook for Classroom Instruction that Works* by Robert Marzano et al. Additional instructional strategies taken from other respected sources (see annotated resource list) follow those nine.

When an instructional strategy is known to be particularly effective for teaching declarative knowledge (content/concepts) it is coded with a "D" below. When an instructional strategy is particularly effective for teaching procedural knowledge (skills/processes) it is coded with a "P" below.

Performance by Design is a system of instructional strategies for literacy. Training is available in OCSD. For more information, contact Irene Dewey at idewey@oswego.org.

1. Identifying similarities and differences

Analyze two or more elements in terms of similarities and differences on one or more characteristics.

- ***Compare & Contrast*** **(D)**
  - ✓ Select the items you want to compare
  - ✓ Select the characteristics of the items on which you want to base your comparison
  - ✓ Explain how the items are similar and different with respect to the characteristics
    [Adapted from *Dimensions of Learning*, Marzano et al (1997)]

- ***Classifying*** **(D)**
  - ✓ Identify the items you want to classify
  - ✓ Select what seems to be an important item, describe its key attributes, and identify other items that have the same attributes
  - ✓ Create the category by specifying the attributes that the items must have for membership in the category
  - ✓ Select another item, describe its key attributes, and identify other items that have the same attributes
  - ✓ Create the second category by specifying the attributes that the items must have for membership in the category
  - ✓ Repeat the previous two steps until all items are classified and the specific attributes have been identified for membership in each category
  - ✓ If necessary, combine categories or split them into smaller categories and specify the attributes that determine membership in the category.
    [Adapted from *Dimensions of Learning*, Marzano et al (1997)]

- ***Metaphor*** **(D)**

- ✓ Identify the important or basic elements of the information or situation with which you are working
- ✓ Write that basic information as a general pattern by replacing words for specific things with words for more general things and summarizing information whenever possible
- ✓ Find new information or a situation to which the general pattern applies

- *Analogies* **(D)**
  - ✓ Identify how the two elements in the first pair are related
  - ✓ State their relationship in a general way
  - ✓ Identify another pair of elements that share a similar relationship

2. Summarizing and Note Taking

Summarizing **(D)**

- Students need to know how to delete, substitute, and keep information.
- Students need to analyze information at a higher level
- Students need to understand the structure of the presentation of the information.
- *Reciprocal Teaching*– **After** students have read a small section, a single student acting as teacher summarizes what has been read. Other students, with guidance from the teacher, can add to the summary.
  - ✓ **Question** – The student leader next asks some questions to which the class responds.
  - ✓ **Clarify** – The student leader tries to clarify confusing points in the passage, or he/she might ask other students to ask clarifying questions.
  - ✓ The group attempts to clear up confusing parts. This may involve rereading the passage.
  - ✓ **Predict** – Student leader asks for predictions about what will happen in the next segment of the text. The class then reads another passage silently or aloud and a new student is selected as student leader. The student leader now summarizes the reading using the prediction questions as an aid.

- *The "Rule Based" Strategy*
  - ✓ Delete trivial material that is unnecessary to understanding
  - ✓ Delete redundant material
  - ✓ Substitute super ordinate terms for more specific terms
    (e.g., use fish for rainbow trout, salmon, and halibut)

✓ Select a topic sentence, or invent one if it is missing

Note Taking **(D)**

- Note taking verbatim is ineffective. Students need to analyze the incoming information and put it down in their own words.
- Notes are always a work in progress and should be reviewed and revised.
- Notes should be used as a test prep tool.
- There is a strong relationship between the amount of information in the notes and student achievement on tests (more is better).
- Students identify what is most important about the knowledge they are learning, and then state that knowledge in their own words.
- Teach students various formats for note taking (outline, web).
- Teach students to use combination note (interactive notebooks).
- Provide students with teacher prepared notes.
- Remind students to review notes.

3. **Reinforcing Effort and Providing Recognition**

- *Reinforcing Effort*
  ✓ Not all students believe that effort pays off.
  ✓ Students can learn to operate from the belief that effort can pay off.
  ✓ Teach students that effort can improve achievement.
  ✓ Ask students to chart effort and achievement.

- *Providing Recognition*
  ✓ Intrinsic motivation is not necessary negatively affected by rewards
  ✓ Rewards work well when they are connected to performance standards.
  ✓ Tangible rewards such as money and candy have been shown to be ineffective whereas symbolic and abstract forms of reward are powerful.
  ✓ Use recognition tokens.
  ✓ Use the pause, prompt and praise techniques

4. **Homework and Practice**

- The amount of homework should vary by grade level.
- Homework extends learning opportunities beyond the confines of the school day.

- Establish and communicate a homework policy.
- Clarify the purpose of homework.
- Ask students to use homework assignment sheet.
- Comment on homework.
- Students need to practice skills and processes before they can use them effectively.
- Determine which skills are worth practicing.
- Schedule masses and distributed practice.
- Ask students to chart speed and accuracy.
- Help students shape a skill or process.

5. Nonlinguistic Representations

- *Graphic organizers* (D)
  - ✓ Used to organize declarative knowledge or information
  - ✓ Helps show patterns and relationships
- *Pictographic representations* (D)
  - ✓ Drawing pictures or pictographs
  - ✓ May use key words with symbols
- *Mental images* (D)
  - ✓ Construct or imagine a mental picture of knowledge you are learning
- *Physical models* (D)
  - ✓ Models, concrete representations, or manipulatives
- *Kinesthetic representations*
  - ✓ Physical movement associated with specific knowledge
- *Flow Charts* (P)
  - ✓ Teach students to create flow charts. This is best done after the students have seen the skills or processes. As soon as possible after these experiences, they should start creating a visual representation of how the steps interact.

(*Kidspiration* and *Inspiration* are excellent software programs for children to create nonlinguistic representations on the computer.)

6. Cooperative Learning: (D)

- Cooperative groups should be small
  - ✓ Groups of three to five students are recommended
- Positive interdependence
- Face-to-face interaction
- Individual and group accountability
- Interpersonal and small group skills

- Group processing
- Jigsaw is one type of cooperative learning strategy
  - ✓ Meet in study teams to examine task
  - ✓ Work in expert groups to conduct research, discuss information,
  - ✓ Answer questions
  - ✓ Experts teach study teams what they have learned
  - ✓ Evaluate individually and provide team recognition

7. Setting Objectives and Providing Feedback

- *Setting objectives*
  - ✓ Set objectives that are not too specific
  - ✓ Personalize objectives
  - ✓ Communicate objectives
  - ✓ Negotiate contracts

- *Providing Feedback*
  - ✓ Attribute students' successes to their efforts
  - ✓ Use feedback from assessments
  - ✓ Specify what students did that produced success
  - ✓ Engage students in peer feedback
  - ✓ Ask students to self-assess

8. Generating and Testing Hypotheses

- *Systems Analysis*
  - ✓ Explain the purpose of the system, the parts of the system, and the function of each part.
  - ✓ Describe how the parts affect one another.
  - ✓ Identify a part of the system, describe a change in that part, and then hypothesize what might happen as a result of this change.
  - ✓ When possible, test your hypothesis by actually changing the part or by using a simulation to change the part. Or, "test" your hypothesis by considering and describing the effects of the change on the system

- *Problem Solving*
  - ✓ Identify the goal you are trying to accomplish.
  - ✓ Describe the barriers or constraints that are preventing you from achieving your goal or that are creating the problem.
  - ✓ Identify different solutions for overcoming the barriers or constraints, and hypothesize which solution is likely to be the most effective.
  - ✓ Try your solution – either in reality or through a simulation.

- ✓ Explain whether your hypothesis was correct. Determine if you want to test another hypothesis using a different solution.

- *Decision Making*
  - ✓ Describe the decision you are making and the alternatives you are considering.
  - ✓ Identify the criteria that will influence the selection, and indicate the relative importance of the criteria by assigning an importance score from a designated scale
  - ✓ Rate each alternative on a designated scale (e.g., 1-4) to indicate the extent to which each alternative meets each criterion.
  - ✓ For each alternative, multiply the importance score and the rating and then add the products to assign a score for the alternative.
  - ✓ Examine the scores to determine the alternative with the highest score.
  - ✓ Based on your reaction to the selected alternative, determine if you need to change any important scores or add or drop criteria.

- *Historical Investigation*
  - ✓ Clearly describe the historical event to be examined.
  - ✓ Identify what is known or agreed upon and what is confusing or contradictory.
  - ✓ Based on what you understand about the situation, offer a hypothesis.
  - ✓ Seek out and analyze evidence to determine if your hypothetical scenario is plausible.

- *Experimental Inquiry*
  - ✓ Observe something that interests you, and describe what has occurred.
  - ✓ Explain what you have observed. What theories or rules could explain what you have observed?
  - ✓ Based on your explanation, make a prediction.
  - ✓ Set up an experiment or activity to test your prediction.
  - ✓ Explain the results of your experiment in light of your explanation. If necessary, revise your explanation or prediction or conduct another experiment

- *Invention*
  - ✓ Describe a situation you want to improve or a need to which you want to respond.
  - ✓ Identify specific standards for the invention that would improve the situation or meet the need.

- ✓ Brainstorm ideas and hypothesize the likelihood that each will work.
- ✓ If your hypothesis suggests that a specific idea might work, begin to draft, sketch, and then create the invention.
- ✓ Develop your invention to the point that you can test your hypothesis.
- ✓ Tell students you want them to revise the invention until it meets the standards that have been identified.

9. Cues, Questions, and Advanced Organizers

- • *Questions & Cues* (D)
  - ✓ Focus on important information.
  - ✓ Use explicit cues.
  - ✓ Ask inferential questions.
  - ✓ Ask analytic questions.

- • *Advance Organizers* (D)
  - ✓ Use expository advance organizers.
  - ✓ Use narrative advance organizers.
  - ✓ Teach students skimming as a form of advance organizers.
  - ✓ Teach students how to use graphic advance organizers

Additional Strategies

10. Bloom's Questioning Techniques

- • **Use a variety of types of questions**
  - ✓ Knowledge questions require students to recall or recognize information (e.g., recall, recognize, define, identify, who? what? where? etc.).
  - ✓ Comprehension questions require a student to organize previously learned material so that he/she can rephrase it, describe it in his/her own words, and use it for making comparisons (e.g., describe, compare, illustrate, explain, rephrase, contrast, etc.).
  - ✓ Application questions ask students to use previously learned information to solve a problem (e.g., apply, classify, choose, use, employ, solve, select, etc.).
  - ✓ Analysis questions ask students to identify reasons, causes, and motives; to consider available evidence in order to reach a conclusion, inference, or generalization; to analyze a conclusion, inference, or generalization to find supporting

evidence (e.g., analyze, conclude, infer, distinguish, deduce, detect, etc.).
- ✓ Synthesis questions require students to produce original communications, make predictions, and solve problems, (e.g., solve, predict, write, draw, construct, originate, propose, design, etc.).
- ✓ Evaluation questions ask students to judge the merits of an idea, a solution to a problem, or an aesthetic work (e.g., judge, argue, decide, appraise, evaluate, state an opinion, etc.).

11. Assessing and Addressing Gardner's Multiple Intelligences

Each person possesses all eight intelligences, and most people can develop each intelligence to an adequate level of competency. Students need opportunities to learn and to demonstrate their learning in areas of intelligence that are strengths for them.

- **Linguistic** intelligence – refers to an individual's capacity to use language effectively as a vehicle of expression and communication. (Examples: storytelling, brainstorming, tape recording, journal writing)

- **Logical-Mathematical** intelligence – refers to an individual's capacity to think logically, use numbers effectively, solve problems scientifically, and discern relationships and patterns between concepts and things. (Examples: calculations and qualifications, classification and categorization, Socratic questioning, heuristics, and scientific thinking)

- **Spatial** intelligence – refers to the capacity to think visually and orient oneself spatially. In addition, spatially intelligent people are able to graphically represent their visual and spatial ideas. (Examples: visualization, color cues, picture metaphors, idea sketching, graphic symbols)

- **Musical** intelligence – refers to the capacity to appreciate a variety of musical forms in addition to using music as a vehicle of expression. Musically intelligent people are sensitive to rhythm, melody, and pitch. (Examples: rhythms, raps, songs, chants, musical concepts, mood music)

- **Bodily-Kinesthetic** intelligence – refers to the capacity to use one's own body skillfully as a means of expression or to work skillfully to create or manipulate objects.

(Examples: classroom theater, hands-on thinking, body maps)

- **Interpersonal intelligence** – refers to the capacity to appropriately and effectively respond to other people and understand their feelings. (Examples: peer sharing, cooperative groups, board games, simulations)

- **Intrapersonal intelligence** – refers to the capacity to accurately know one's self, including knowledge of one's own strengths, motivations, goals, and feelings.
(Examples: one-minute reflection periods, choice time, goal-setting sessions)

- **Naturalist intelligence** – refers to the fascination with the immense variety of the world's animal and plant species and the talent to assign them to new or established taxa.(Examples: classification of plants and animals in a specific ecosystems such as wetland or salt marsh)

12. Three-Minute Pause (D)

Every 10-15 minutes in class, ask students to do the following in three minutes:
- Summarize what they have experienced.
- Identify interesting aspects of what they have experienced.
- Identify confusion and try to clear up.

13. KWL (D)

- Before reading, listening, observing, or acting, identify what you know about the topic.
- Before reading, listening, observing, or acting, identify what you want to know about the topic.
- After reading, listening, observing, or acting, identify what you learned about the topic.

14. Before, During and After (D)
Tell your students:

Before - Identify what you know about the topic.
- List specific ideas.
- Write specific questions that you would like answered.
- Make specific predictions about what you think you will learn.

During
- Try to generate mental pictures about what you are experiencing.
- Occasionally summarize what you have just experienced.
- Try to answer the questions you asked.
- Determine if your predictions were correct.

- Identify things you are confused about.
- Occasionally go back and try to clear up the confusing parts.

After

- Create a summary of what you have learned.
- State how you can use the information you have learned. (Model each phase; explain to students they do not have to use every step in each phase.)

15. Concept Attainment Process (D)

This strategy involves presenting students with clear examples and non-examples of a new concept to be learned. Through this process, the concept is developed and understood.

- **Present examples and non-examples.**
  This is an example of a compound word: *boyfriend*

  This is not an example: *boy*

  This is an example: *railroad*

  This is not an example: *car*

Through this process, students figure out and list defining characteristics of the concepts.

- More pairs of examples and non-examples are presented so students can test their initial hypotheses about defining characteristics of the concepts.
- More pairs are presented until students are able to state the defining characteristics of the concept.
- Students identify examples and non-examples of their own.
- Students develop a written or oral description of the concept that includes key or defining characteristics.

16. Think Alouds (P)

Use **"think alouds"** to demonstrate a new skill or process. For example, a teacher might **think aloud** the organization of a science article saying such things as, "I notice that each section is highlighted by bold text in a question. The first sentence of the section gives the answer with details that follow."

17. Written Steps (P)

Present students with a written set of steps.
For example: **To read a bar graph:**

- Read the title of the graph. Get a sense of the information that will be in it.
- Look at the horizontal line at the bottom of the graph. Identify what is being measured on it.
- Look at the vertical line on the left side. What is being measured on it?
- Look at the scale that is used.
- For each of the items measured on the horizontal line, identify its "height" on the vertical line and interpret that height.
- Make a statement that summarizes the important information in the bar graph.

18. Mental Rehearsal

Teach students to mentally rehearse the steps involved in a skill or process.

- **Variations (P)**
  - ✓ Demonstrate how students can alter skills/processes/procedures.
  - ✓ Demonstrate and provide practice in the important variations of the skill or process.
  - ✓ Point out common errors and pitfalls.
  - ✓ Provide a variety of situations in which students can use a specific skill or process.

- **Internalization**
  - ✓ Help students internalize skills/processes and procedures.
  - ✓ Help students set up a practice schedule
  - ✓ Massed practice-immediately and frequently.
  - ✓ Distributed practice-lengthening the intervals of time between practice sessions.
  - ✓ Have students chart their accuracy when practicing new skills or processes.

19. Simulation/Role Playing
- Provide overview of simulation/role play.
- Set up a scenario.
- Assign roles.
- Conduct simulation/role play.
- Summarize events/insights.
- Relate to real world/course content.

20. Writing-to-Learn
Writing is a means of reflecting on learning, of working through learning problems, and of clarifying and solidifying newly learned concepts and skills. A variety of writing-to-learn strategies exist, a few of which are described briefly below.

- **Admit Slips** – As students enter class, distribute index cards, one to each student. Ask each student to write a response to an open-ended statement, such as……."
"A key point from last night's reading is……"
"A question I have is………."
"I don't understand…………"
Collect cards and use as a basis for discussion/clarification/response. Admit slips are usually anonymous.

- **Exit Slips** – To learn what students know and need to know, hand out index cards before students leave class. Ask each student to respond to an open-ended statement, such as:
    "Today I learned……."
    "……….(new concept) means/is like……."
Student responses can be written (anonymously) on an overhead before the next day's class to share with the group as a basis for review and clarification.

- **Free Reading / Writing (Journaling)** – Ask students to write continuously for a specified period of time (3 minutes, 5 minutes, etc.) to generate ideas on a given topic. Form or correctness is not a factor, it is the ideas that count.

- **Dialogues** – Students create a dialogue between two or more persons, historical figures, or characters being studied.

- **Brainstorm** – Collect, in writing, all ideas about a topic generated by an individual or a group.

Creating a Learning Environment

The learning environment needs to be adapted to ensure the success of all students. Consider the following:

- **Connect with students**
    - ✓ Talk informally with students about their interests before, during, and after class.
    - ✓ Greet students in and out of school.
    - ✓ Call students by first names as they come into class.
    - ✓ Be aware of and comment on important events in students' lives.

- **Monitor your own attitudes**

- ✓ Before class, mentally review students. Note those with whom you anticipate having problems (academic or behavioral).
- ✓ Imagine "problem" students succeeding in positive classroom behaviors – replace negative expectations with positive ones. This is a form of mental rehearsal.
- ✓ Consciously keep in mind your positive expectations when interacting with students.

- **Accept all students**
  - ✓ Make eye contact with each student; address all quadrants of the room.
  - ✓ Arrange seating to give you clear and easy access to all students.

- **Help students develop strategies for gaining acceptance from peers in and out of school**
  - ✓ Ask students about themselves rather than telling them about yourself.
  - ✓ Compliment students on their positive characteristics.
  - ✓ Avoid reminding students about their negative qualities or about bad things that have happened to them.

- **Help students develop a sense of comfort**
  - ✓ Frequently and systematically use activities that involve physical movement.
  - ✓ Periodically take short breaks that enable students to stand up, move about, and stretch.
  - ✓ Set up classroom tasks that allow students to gather information on their own, or in small groups, using sources that are away from their desks.
- Systematically switch from activities where students must work on their own to tasks in which they must organize themselves in small groups.
- Use 2 to 5 minute exercise breaks when energy levels start to wane as a regular aspect of instructional routine.

- **Establish and communicate classroom rules and procedures**
  - ✓ Generate clear rules and standard operating procedures for the classroom.
  - ✓ Communicate rules and procedures, discussing their meaning. Provide a written list, post, role-play, or model use.
  - ✓ Acknowledge changes in rules and explain reasons for exceptions.

- **Develop a sense of academic trust**
  - ✓ Exhibit a sense of enthusiasm about material presented.

- ✓ Link classroom tasks to students' interests and goals.
- ✓ Ask students to generate tasks that apply to their interest and goals.

- **Use classroom meetings to address issues**
  - ✓ Bring up issue or problem.
  - ✓ Give examples/clarify.
  - ✓ Identify consequences/norms.
  - ✓ Make judgments about norms and discuss values.
  - ✓ Discuss alternatives.
  - ✓ Agree on which ones to follow.
  - ✓ Make a public commitment.
  - ✓ At a later date, assess effectiveness.

- **Use a resolution of conflict strategy**
  - ✓ List facts pertinent to the conflict.
  - ✓ Make inferences about how the persons involved were feeling.
  - ✓ Propose and defend own resolution in light of those feelings.
  - ✓ Describe similar experiences.
  - ✓ Describe feelings of each participant in those situations.
  - ✓ Look at other ways of handling the situation.

Annotated Resource List

Joyce, Bruce R. and Marsh Weil (1996). ***Models of Teaching.*** NY: Allyn and Bacon

The fifth edition of *Models of Teaching* covers the rationale of and research on the major well-researched models of teaching and illustrates K-12 classroom use through scenarios and examples of instructional materials.

Marzano, Robert J. (1992). ***A different kind of classroom: teaching with dimensions of learning***. Alexandria, VA: ASCD.

This book describes the Dimensions of Learning program, a comprehensive K-12 instructional framework that teachers can use to improve the way they plan instruction, design curriculum, and assess student performance.

Marzano, Robert J., Debra Pickering, Jane E. Pollock (2001). ***Classroom instruction that works: research-based strategies for increasing student achievement.*** Alexandria, VA: ASCD.

What works in education? How do we know? How can educational research find its way into the classroom? Questions like these arise in most schools, and busy educators often don't have time to find the answers. Robert J. Marzano, Debra J. Pickering, and Jane E. Pollock have examined decades of research findings to distill the results into nine broad teaching strategies that have positive effects on student learning.

Marzano, Robert J., Jennifer S. Norford, Diane e Paynter (2001). ***A handbook for classroom instruction that works.*** Alexandria, VA: ASCD.

This handbook reviews research and presents instructional strategies that work best to improve student achievement. These strategies can be applied to all content, in all grades, with all students. Worksheets, blackline masters, and other materials are supplied to help you envision how to use the strategies in your classroom. To improve effectiveness in planning units, the authors describe a framework for using the strategies.

Saphier, John and Robert Gower (1997). ***The skillful teacher: building your teaching skills***. Action, MA: Research For Better Teaching, Inc.

Research for Better Teaching has synthesized much of the knowledge base on teaching in one practical and useful manual. The book divides the nuts and bolts of teaching into four areas: management, instruction, motivation, curriculum.

Wolfe, Patricia (2001). ***Brain matters: translating research into classroom practice***. Alexandria, VA: ASCD.

This book makes it clear that before we can effectively match teaching practice to brain functioning, we must first understand how the brain functions. It explores some implications of the research for practice: why meaning is essential for attention, how emotion can enhance or impede learning, and how different types of rehearsal are necessary for different types of learning. The author provides practical classroom applications and brain-compatible teaching strategies.

In developing this document, The Oswego City School District found the following resource very helpful: "Using Standards in Your Classroom: Teacher Resource Guide," created by the Vermont Department of Education.