Instructional Strategies
Techniques teachers use to help students become independent, strategic learners.

1.	**Identify similarities and differences**	Analyze two or more elements in terms of similarities and differences on one or more characteristics.
		
		• **Compare & Contrast --** Link to prior knowledge. Identify what students already know about the skill. Introduce words that students need to understand: alike, unlike, same, and different – before extending into the compare and contrasts words.
		Start with a picture to introduce the compare and contrast skill. Example: Show a picture of a big dog and a little dog. Allow students to talk about the picture and how the dogs compare and contrast. (explain how item is similar & different with respect to the characteristics)
		
		• **Classifying / Category** (Select what seems to be an important item, describe its key attributes, and identify other items that have the same attributes)
		
		• **Metaphor (**Identify a general or basic pattern in a specific topic and then find another topic that seems quite different at the literal level but has the same general pattern.)
		  ➢ Identify the important or basic elements of the information of 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** (Identify how the two elements in the first pair are related, state their relationship in a general way, and identify another pair of elements that share a similar relationship)
		  ➢ Help make connections between things that are very different
		    ✓ Pattern is A:B::C:D
		    ✓ A is to B as C is to D
		    ✓ happy:sad::big:small
		    ✓ happy and big are opposites of sad and small
		  ☞*Analogy problems are common in testing situations – PSAT, SAT, ACT.*

2.	**Summarizing & Note taking**	**Summarizing**
		• 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** • 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 Efforts**	• 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.
4.	**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
5.	**Homework & 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.
6.	**Nonlinguistic Representation**	*Graphic organizers* • Used to organize declarative knowledge or information • Helps show patterns and relationships *Pictographic representations* • Drawing pictures or pictographs • May use key words with symbols *Mental images* Construct or imagine a mental picture of knowledge you are Learning *Physical models* Models, concrete representations, or manipulatives *Kinesthetic representations*

		Physical movement associated with specific knowledge
		Flow Charts
		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.
7.	**Cooperative Learning**	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
8.	**Setting Objectives**	• Set objectives that are not too specific • Personalize objectives • Communicate objectives • Negotiate contracts
9.	**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
10.	**Generating & 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.
11. Cues, Questions, & Advanced Organizers	***Questions & Cues***
	• Focus on important information.
	• Use explicit cues.
	• Ask inferential questions.
	• Ask analytic questions.
	Advance Organizers -- Use to model the "How to" of the lesson. Tell students what they will be learning about and model the use of the organizer as students will later be expected to use it independently or in small groups.
	• 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
12. Questioning Techniques	**Variety 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.).
13. Recognizing Multiple Intelligences	**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)
14. 3 minute pause	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.

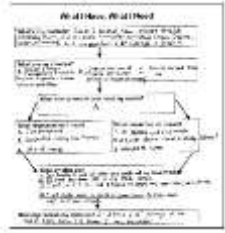|		
15.	**KWL** **Know, Want to Know, & Learned**	• Before reading, listening, observing, or acting, identify what you know about the topic. • Before reading, listening, observing, or acting, identify what you want to know about the topic. • After reading, listening, observing, or acting, identify what you learned about the topic.
16.	**Before, During, & After**	**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.) •
17.	**Concept Attainment Process**	Present 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*
18.	**Think Aloud**	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."
19.	**Written Steps**	**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.
20.	**Mental Rehearsal**	**Teach students to mentally rehearse the steps involved in a skill or process.** **Variations** • 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.
21. 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.
22. 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.
23. Create a Learning Environment		**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 you.
- 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.

24. Cooperative Learning	• Cooperative learning involves students working in small groups to complete tasks or projects. • Cooperative learning activities play an important role in increasing students' respect for and understanding of each other's abilities, interests and needs.

	- Keep groups small—two to five members is best (the larger the group, the more skillful group members must be). - Create diverse groups; this allows everyone to learn from each other's differences. - Structure groups in such a way that success depends on each group member being responsible for some part of the task. - Initially, group students and assign roles within each group. - Teach basic routines for classroom management, including forming groups quickly and quietly, maintaining appropriate noise levels, inviting others to join the group, treating all students with respect and helping or encouraging peers. - Monitor behavioral expectations by scanning groups, using proximity and friendly reminders, sitting and watching a group for a while, revisiting expectations, and when necessary, re-teaching expectations. - Ensure individual students are aware of their roles and responsibilities within the group. Post a list of roles or give students cards describing specific roles. - Discuss and model collaborative skills, such as listening, allowing others to speak, asking for help when needed, reaching consensus and completing a task within the allotted time. Students need opportunities to practice these skills, and receive feedback and reinforcement. - Allow students time to evaluate the cooperative learning process, both individually and as a group.
25. Think-Pair-Share	The teacher poses a topic or question. Students think privately about the question for a given amount of time, usually one to three minutes. Each student then pairs with a partner to discuss the question, allowing students to clarify their thoughts. Next, each pair has an opportunity to share their answers with the whole class. Think–pair–share is a cooperative learning strategy that provides opportunities for students to: - participate - learn from others - make connections.
26. Forming Learning Groups	There are many strategies to choose from when forming cooperative learning groups. Using a variety of strategies ensures that students have an opportunity to work with many different group members throughout the year. Consider the following strategies for forming groups. **Pairing up partners**—Students pair up with someone who falls into the same category. For example, students pair up with the first person they meet who is wearing the same color socks as them. **Pick a card**—Use old decks of cards to form groups. For example, to get groups of four, put together four king of spades, four queen of diamonds, and so on. Distribute the cards randomly and ask students to find the others with matching cards. **Chalkboard list**—This is a good strategy to use when students are finishing their work at different times. As students complete one assignment, they write their names on the chalkboard. When three names accumulate, they form a new group and move on to the next activity.
27. Group Roles	The roles in a cooperative learning group depend on the task. Before assigning roles, review the task and determine what roles are necessary for the group to be successful. **Roles could include:** **Checker**—Ensures that everyone understands the work in progress. **Timekeeper**—Watches the clock and makes sure the group finishes the task within the time allotted.

	Questioner—Seeks information and opinions from other members of the group. **Recorder**—Keeps a written record of the work completed. **Reporter**—Reports on the group's work to the rest of the class. **Encourager**—Encourages everyone in the group to contribute and offers positive feedback on ideas. **Materials manager**—Gathers the material necessary to complete the task. At the end of the task, the materials manager returns materials and turns in the group's work. **Observer**—Completes a checklist of social skills for the group.
28. Independent Study	Independent study is an individualized learning experience that allows students to select a topic focus, define problems or questions, gather and analyze information, apply skills, and create a product to show what has been learned. - cooperative teacher–student planning of what will be studied and how it will be shown - alternative ideas for gathering and processing information - multiple resources that are readily available - teacher intervention through formal and informal student–teacher communication - time specifically allowed for working and conferencing - working and storage space - opportunities for sharing, feedback and evaluation - student recognition for expertise and finished product - established evaluation criteria.
29. Portfolio	Portfolios are a chance for students to gather, organize and illustrate examples of their learning and accomplishments. It is the process of creating, collecting, reflecting on and selecting work samples that engages students in continuous reflection and self-assessment. **Purposes** - Students may develop a portfolio for many purposes, including: - documenting their activities and accomplishments over an extended period of time - monitoring and adjusting their actions and plans - communicating their learning with others - expressing and celebrating their creative accomplishments - providing a foundation by which to assess their personal growth and skill development, and to set future goals. **Benefits** - Portfolio development can be a useful strategy in health education because it allows teachers to see students' thinking. It also gives students a format and motivation for completing assignments and is helpful in assessing and communicating student learning. - Portfolios allow students a measure of autonomy and self-expression that can be highly motivating. **The portfolio process has four steps.** **Collect** -- Throughout the term, students should maintain a collection of their class work and any other pieces that show relevant skills and achievement. **Select** -- Teachers and students need to work together to establish criteria and begin the selection process. **Reflect** -- Each student to critique their work and reflect on its merits. **Share** -- The final stage in the portfolio process is sharing the portfolio with others.
30. Journals & Learning Logs	Journals and learning logs provide students with opportunities to record their thoughts, feelings and reflections on a variety of topics or experiences. Journals allow students to explore ideas and clarify their own thinking.
31. Cognitive	Are formats for organizing information and ideas graphically or visually. (cognitive

Organizers	organizers make student thinking visible) Students can use cognitive organizers to generate ideas, record and reorganize information, and see relationships.
32. Service Learning	Goal setting and action process that positively affects others. Provides benefits for everyone involved. Five Steps for Service Learning: - Prepare - Plan - Put the plan into action - Review & reflect
33. Idea Builders	**T-Charts -- organize** their knowledge and ideas, and see relationships between pieces of information. **Venn Diagrams -- compare** and contrast information about two or more objects, concepts or ideas. **P—M—I Decision Making Chart -- to** compare and contrast situations, ideas or positions. **K-W-L Chart** -- help students understand what they *know* (K), what they *want to know* (W) and what they *learne*d (L) about a certain topic or issue. They are an effective visual tool to tap into students' prior knowledge and generate questions that create a purpose for learning.

K W L chart

Mind Map -- It is an easy way to represent ideas using keywords, colors and imagery. Its nonlinear format helps students generate and organize ideas.