

Unpack Your Thinking: Two Strategies that Promote Active Learning

Summary of what to expect:

Faculty attending this workshop will receive instruction in two strategies that encourage and equip learners to “unpack” their thinking. The “metacognitive” approach embedded in both makes them highly effective, as revealed in decades of research on improving student achievement. These two strategies support active learning in a range of learning environments, from a single lesson to complex processing of concepts and skills typically found in the cycle of learning used in the case study method. Participants will have the opportunity to learn the strategies, practice with a peer, and make application to their own course content for immediate use.

Five questions organize each strategy. These are:

1. What is it?
2. When do I use it?
3. What’s the procedure?
4. What comes to mind as you reflect on the process?
5. What are the implications for the learner and for future learning?

Notes on this session:

Think Aloud Protocol

What is it?

Think-Aloud Protocol is a strategy for gathering information about the way individual learners are processing written, verbal, or graphic information.

When do I use it?

When you need a framework for gathering data on reading comprehension or comprehension of verbally or graphically presented ideas. Use this strategy when learners are ready to develop an increased awareness of their own thinking.

What's the procedure?

With a partner:

When reading text:

- Ask partner to read a portion of text and then to voice his or her thoughts.
- Ask partner to report thoughts in a way that might be like a “news bulletin or play-by-play account of where you are.” However, the focus is on the thinking process as he or she figures out what the reading is about.
- Categories of verbal responses are shown below with examples:

<i>Monitoring of doubts</i>	I don't understand. This doesn't make sense.
<i>Signaling understanding</i>	What do I know?
<i>Analyzing text features</i>	How does this text work?
<i>Elaboration of the text</i>	What does this make me think of?
<i>Judging</i>	How good is this?
<i>Reasoning</i>	How can I figure this out? What might _____ mean?

When listening to verbal information or viewing information displayed graphically:

- Ask partner to talk aloud about what is going on inside his or her mind while listening or viewing.
- Encourage a free flow of thought that is more like “free association.”
- Allow partner to speak uninterrupted. Remember you are an “observer” of this process.
- As an alternative, videotape while the partner is thinking aloud. This will allow opportunity for self-assessment, as well as the chance to clarify and interpret his or her own reporting.

What comes to mind as you reflect on the process?

1. What do you notice about your understanding of this text when you use this “think-aloud” strategy?
2. How does your understanding of the text while using the “think-aloud” strategy compare to your understanding of text before you ever used the “think-aloud” strategy?
3. What plans could you make to use this strategy again? How important is it to you to use this strategy?

What are the implications for the learner and for future learning?

- You can practice active listening while becoming aware of what is going on in your students' thinking while processing information and developing ideas.
- Understanding patterns that occur creates an opportunity for you to become aware of different ways of processing information. For example:
 - attention to details
 - high degree of fluency in describing or elaborating on understanding
 - sketches out relationships among ideas “in air” or on paper
 - self-referencing in relation to what is processed
 - relating to experiences of others
- Putting into words your interpretation of what you gather from written, graphic, or verbal presentation of ideas gives you an opportunity to clarify and critique your understanding.
- Sometimes merely speaking your ideas out loud for the benefit of another prompts questions in your own mind that then lead to a clearer understanding or even a different understanding than you had at first.
- Using “think aloud” as a strategy can be helpful even if someone else is not asking you to do it.
- Writing down your “think aloud” in a journal can be as effective as speaking it out loud to another person.

K-W-L

What is it?

K-W-L is an active learning strategy that helps learners construct meaning from informational text by focusing attention in a direct way on three areas: what **I know**, what **I want to know**, and what I have **learned**. Although this strategy was developed for use in a reading setting, it can be used without specific information to read. The idea is that learners organize their thoughts around prior knowledge, intention, and summary for any learning task.

When do I use it?

Use this strategy any time learners need to sort out what they already know about a topic prior to studying or reading, to focus attention on what they want to know about the topic, and to have a structured place to identify what they have learned.

What's the procedure?

A three-column chart can be constructed with the following phrases:

What do **I KNOW**?

What do **I WANT** to know?

What have **I LEARNED**?

- Before reading, listening, observing, or acting, learners identify what they **KNOW** about the topic.
- Next, they list what they **WANT** to know about the topic.
- After the learning activity, reading, studying, and so on, learners identify and list what they have **LEARNED**. This list may include new and unpredicted knowledge, answers to questions from the WANT column, and knowledge that validates or invalidates items from the KNOW column. It is a good idea to visually connect the item under the **WANT TO KNOW** column to what is recorded in the LEARNED column. You can use arrows or other symbols that represent validation, correction, or brand-new ideas. As facilitator, use this strategy yourself. Modeling the process will help your group.
- Other ways to use K-W-L might be:
 - *Create extensions for learning in cooperative groups.* When information is recorded that represents a theme, interested learners could form a “group investigation” to further research that particular aspect of the study. Or, as apparently contrasting information is gathered and recorded; they could explore possible reasons for the discrepancies. K-W-L could be used to guide the higher-order thinking processes of checking the reliability of sources, uncovering assumptions, and validating evidence to support positions.
 - *Post lists for referral and updates.* As learners find information for the LEARNED column, it can be recorded in a public format on a whiteboard or electronically. This ongoing record of information can lead to further investigation of items from the WANT column that are not being addressed. If you use a wall chart, use Post-It notes to make it easy to move items around within the columns, to pick up for research by individuals, and to move to other project displays as outgrowths of the original K-W-L.
 - *Keep a new-idea list.* As new ideas are generated as a result of doing an assignment using this K-W-L strategy, keep an ongoing list of these ideas.

What comes to mind as you reflect on the process?

1. How could you use this strategy in making a decision in your personal life?
2. Contrast the quality and quantity of what you learned about a comparable topic without using K-W-L to the quality and quantity of what you learned about this topic using the K-W-L strategy.

What are the implications for the learner and for future learning?

- This straightforward strategy works very well in almost any subject area.
- Demonstrating the use at the beginning is an important part of the appropriate use.
- Learners should immediately make their own three-column charts or use a form so that they can keep an ongoing account of their personal awareness, focus, and learning outcome.
- Staying focused on what you are “supposed” to be learning may be one of your greatest challenges. This strategy will help you acquire that focus and track your progress.
- Make a clear connection between what you are looking for and what you find as you gain an understanding of the concept or skill at hand.
- In addition to using this strategy as you read, you can use it when you are acquiring information in other ways—listening, viewing.

What do I know?	What do I want to know?	What have I learned?

Think/Pair/Share

What is it?

Think/Pair/Share is a strategy that engages students in the process of focusing first as individuals, then in concert with partners, and finally as members of the larger group.

When do I use it?

Use with groups to introduce new concepts, to review previously taught concepts, and to generate new ideas. This is a creative thinking strategy. Group members are better able to collaborate in generating, combining, and reformulating ideas. This strategy also encourages personal accountability, promotes careful listening, and develops the habit of listening to other perspectives.

What's the procedure?

Ask students to

- Think through and/or write down your thoughts on the given assignment. This allows you
 - to reflect on and record your ideas before other comments alter your thoughts.
 - to confirm that you had already thought of sound ideas/answers before others offer similar ones.
 - to express your basic thoughts freely without becoming encumbered by necessary steps to refine those ideas.
- In pairs, try out your ideas with a partner. Actively listen to your partner. This allows you
 - to see strong points of each other's ideas/answers.
 - to test ideas before writing or speaking to a large group.
 - to revise/clarify your ideas in ideas/answers.
 - to learn new ways of approaching the topic.
 - to receive validation of your ideas/answers.
- Share your answer in open discussion, a written assignment, or a more formal presentation. This allows you
 - to recognize the value of private accountability and paired collaboration as ideas are generated, refined, and shared.
 - to experience the process of clarifying ideas prior to contributing ideas in a larger group setting.
 - to benefit from ideas from other participants at multiple levels of involvement.
 - to apply the same active listening practices used with a partner to the large group setting.

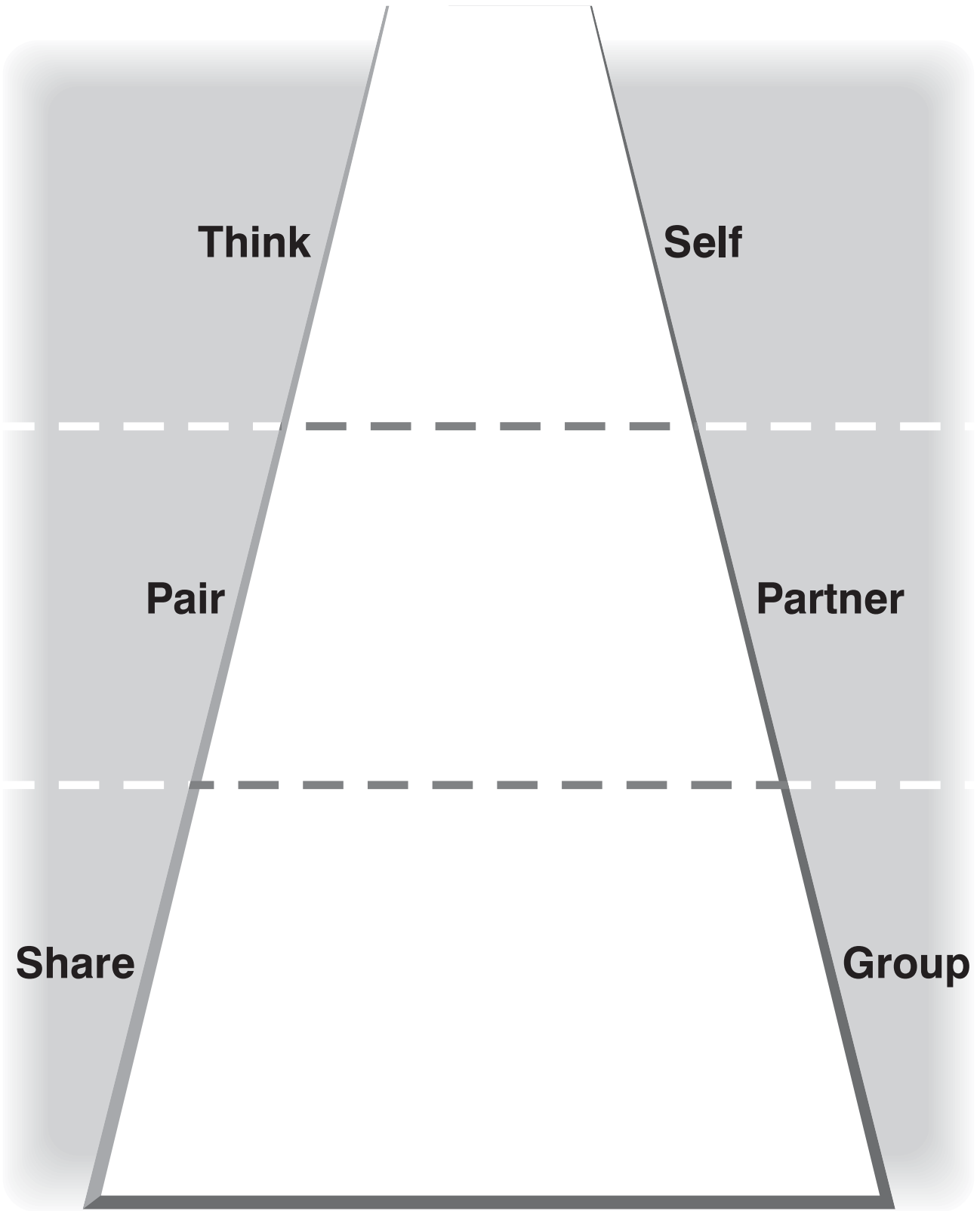
What comes to mind as you reflect on the process?

Use the following questions to prompt students:

- How could I use TPS the next time I want to get my thoughts clear about a topic being discussed in class?
- What did I notice about my own thinking when I moved from the first step (think) to talking with one other person (pair)?

What are the implications for the learner and for future learning?

- Since thinking itself cannot be directly observed, the only way anyone can know what is inside your head is for you to express yourself (speaking/writing/acting it out). The more you take the time to do this, the better you will get.
- Speaking or writing allows you to formulate your thoughts into patterns for communication.
- First two stages (think and pair) help you get your ideas together to be able to participate in the last stage, sharing. Provides practice in categorizing information as knowledge, skills, and habits of mind.
- Requires more of the learner than memorizing information.



Excerpt from pages 3 and 4 of “What Research Tells us about Teaching Thinking Skills” by Barry K. Beyer, Update 2002 to a chapter that appears in *Developing Minds*, 3rd Edition, Art Costa, Editor, Alexandria, VA: Association for Supervision and Curriculum Development, 2001.

Classroom research has demonstrated that three specific techniques prove especially useful in introducing novices to a new thinking skill: modeling, metacognitive reflection, and thinking aloud pair problem solving.

Modeling has long been recognized and demonstrated to be particularly helpful in the initial phase of skill learning. This technique is especially effective when it combines explaining the principles modeled with the actual demonstration of the skill procedures by which they are applied. An introductory thinking skill lesson that models an authentic, explicit procedure for carrying out a skill makes accessible to students a ready-made procedure for applying that skill. The modeled skill procedure also provides a take-off point from which students can gradually construct or develop more personalized procedures for carrying out the skill.

Research indicates that metacognitive reflection is also an extremely powerful technique for introducing new thinking skills to students (as well as for scaffolding subsequent practice of these thinking skills). This technique engages students in reflection on, verbalizing, sharing with others, and analyzing how, step-by-step, they recall doing (or what they believe they did) mentally to apply a just-completed thinking skill. Use of this technique helps students become more aware of the cognitive procedures(s) they employed and of procedures employed by others to carry out that same operation. Repeated use of metacognitive reflection during initial efforts to apply a new skill enables novices to recognize and to gradually construct, reconstruct and internalize effective procedures for applying the skill.

The third technique, think(ing) aloud pair problem solving, combines elements of both modeling and metacognitive reflection. Applied initially by researchers to mathematical problem solving and analytical reasoning, this technique involves student pairs in thinking aloud as they work through a series of related thinking tasks to identify an effective mental procedure for carrying out these tasks. While one student verbalized what he or she is doing mentally to complete a specific task, the other probes what is being vocalized to make the thinking explicit and the vocalization continuous. Upon completing the task and then reviewing the sequence of steps explicated, the pair compares the procedure they identified with a procedure employed by a skilled thinker in completing the same task. Switching roles, the pair then repeats the process with additional examples of the same cognitive task as they seek to generate an explicit effective procedure for carrying out the thinking operation on which they have been focusing. Whether used separately or combined, these three techniques of modeling, metacognitive reflection and think aloud pair problem solving make the invisible process of thinking visible so it can be replicated, revised, and/or refined as students seek to master a new or especially difficult thinking skill.

For copies of the entire article with citations and references for supporting research, please contact Ruth Loring at ruthloring@mindspring.com OR loring_r@nsti.tec.tn.us