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When I think of what it means to lead a literate life, I get a picture of long, relaxing hours with a good book. Or I think about the pleasure I experience through writing. For many of today's students, however, these experiences will not be a natural part of their lives. These students struggle with literacy and find little pleasure in reading and writing. As educators, we are faced with a challenging task: How can we help students develop a positive image of themselves as learners? How can we help students develop the practical intelligence needed for a literate life? This article reviews the scholarship on metacognitive learning, presenting specific strategies for making self-reflective learning a part of classroom instruction.

Here is a typical classroom situation: *Let's say that you just completed some well focused prereading vocabulary activities with your students. Now it's time for them to work independently. Their task is to read a short poem and complete a checklist. This activity asks students to record their emotional responses to the poem, generating information you plan to use for the class discussion. You want students to record their responses independently.*

You repeat the directions, answer questions, and offer suggestions. After offering a few final comments, you remind students of the goal for this lesson. Prompting them to begin their work, you walk around the room to observe how they approach this assignment.

Most students have started their work, reading the poem with confidence and ease. You notice that they refer to the vocabulary list you reviewed during the prereading session. It's evident that they are using "figure-it-out skills" to tackle this assignment. They are able to apply previous knowledge to this new task...just what you expected!

A few students, however, are in a different situation. They seem lost as they encounter unfamiliar words in the poem. One student moans with frustration, directing her complaints to you, "This is confusing. I hate this stuff. I don't even know what we are supposed to do."

You pause for a moment before offering assistance. You want this student to think through the information she was given during the prereading session, so you ask her a few basic questions, but she doesn't respond to your coaching. Although she is a competent reader, she is unable to analyze the task to determine how to respond to the checklist. It's evident that she wants you to tell her the answers.

This situation is a common occurrence in many middle school and high school classrooms. Some adolescents are successful self-regulated learners who approach classwork with determination and confidence. They demonstrate introspective skills as they analyze their assignment and find a way to work through their questions. Other students, by contrast, are passive, dependent learners who rely on the teacher or on other students for assistance rather than on their own abilities to resolve difficulties.

Understanding Students' Learning Skills

Why are some students successful with learning challenges while others are easily frustrated? How do students develop the ability to persevere with difficult tasks? And, very importantly, how can we help students develop the cognitive strategies needed for academic success? These questions relate to students' metacognitive awareness-their ability to reflect on their own thinking as well as their ability to develop and use practical problem-solving skills to resolve the difficulties they experience as learners. These skills, known as practical intelligence, enable students to adapt to and shape their environment, drawing on existing knowledge and using existing skills. Using practical intelligence, students are able to understand a task, recognize what needs to be done, and accomplish the task (Sternberg, 2003). These students have the ability to pick up information and apply it to learning challenges, confidently approaching classroom assignments.

Using practical intelligence, students can recognize when they are doing well and when they are going in the wrong direction. These perceptive students use metacognition to plan, regulate, and assess their own learning. Their success in the classroom motivates them to embrace learning tasks. Many other students, however, lack the practical intelligence and accompanying confidence that comes from well developed thinking and learning skills, and their unfocused attempts result in confusion and frustration. Ineffective learning strate-

gies are linked to poor metacognition, revealing that struggling students have not developed the practical figure-it-out skills to approach classroom challenges in a confident, independent manner (Williams, Blythe, White, Li, Gardner, & Sternberg, 2002). Because these students are unable to reflect on their thinking strategies, they are far behind learners who have this skill.

Reviewing the Research on Metacognition

Over the past three decades, well documented research studies have described the significance of metacognition, noting the positive impact self-reflective learning has on students' academic and personal growth. Researchers describe that metacognition plays a vital role in social learning and personality development, revealing that appropriately focused metacognitive instruction brings growth in practical intelligence, thus enabling students to gain greater insights into their own learning strategies (Flavell, 1979; Lambert, 2000). Self-regulated students at all grade levels can assess their knowledge and examine their cognitive processes, abilities that become more important as students move from elementary school into middle school and high school. Since skillful students are able to reflect on their own thinking, they can track their progress and assess their learning, essentially becoming more independent when they approach assignments. Many struggling students, however, fail to understand the learning process and lack introspective skills, resulting in unproductive approaches to their schoolwork. Through metacognitive instruction, however, students can learn to become aware of their own thinking, avoiding undue frustration in the classroom (Hoyt & Sorensen, 2001; Lifford, Byron, & Ziemian, 2000; Peverly, Brobst, & Morris, 2002).

Students can be taught metacognitive awareness, with research emphasizing classroom methods such as practicing techniques for introspective learning by talking about reading and thinking. Research recognizes that becoming a strategic learner through metacognitive awareness is a developmental and instructional process influenced by teachers' methods and materials (Jacobs, 2003; Paris & Paris, 2001). As cognitive demands increase in complexity from one grade to the next, the role of higher level thinking skills becomes more evident. Research indicates that even young students are able to monitor and assess their own learning, so instruction in metacognition on the elementary level is increasing, On the secondary level, studies of adolescent learning reveal that metacognitive awareness prompts students to develop practical thinking skills to use in their coursework as well as throughout their lives (Moje, 2002; Williams, et al., 2002). Through the life-long skill of metacognitive thinking, students can be taught to reflect on their own learning processes while they complete learning tasks. As evident, metacognitive awareness creates self-regulated learning, allowing students to develop greater cognitive maturity and practical intelligence.

Understanding Teachers' Metacognitive Skills

Most teachers have well developed metacognitive skills because their roles require insightful, highly conscious cognitive activity and plenty of practical intelligence. Consider the thinking processes we use as teachers to assess our planning and instruction. Metacognitive awareness allows us to reflect on our work, prompting us to evaluate our instructional goals, methods, and outcomes. For example, we might ask ourselves the following reflective questions after teaching a vocabulary lesson:

- What objectives did I have in mind?
- What was I thinking when I decided which instructional approach to use for this lesson?
- Did the students understand my explanations?
- How could I make the information easier to understand?
- Did I assess the students' learning appropriately?
- What do the results of my assessment tell me about student learning?

These questions are fairly typical of a teacher's mental processes, indicating that self-reflection is a natural part of teaching. A concern, though, is that metacognitive awareness is not being taught to students.

Making Metacognitive Learning Part of Classroom Instruction

Educators recognize that students' metacognition may be overlooked in the classroom because most instruction focuses on the content, not on the strategies used to learn the content. For many teachers, especially secondary content teachers, thinking about the mental processes a novice learner needs to comprehend the subject-area material is not a natural activity (Schoenbach, Braunger, Greenleaf, & Litman, 2003). Other reasons for neglecting metacognition relate to the fact that instructional time is at a premium, with teachers responding to the pressures of state assessment testing as well as to the demands of local curriculum guidelines, so the emphasis on learning strategies is limited. However, an essential is evident: What is more important than spending time teaching the practical intelligence skills needed for independent learning? Encouraging students to practice reflective thinking does not add extra content...it's a way to teach them the tools for mastering the existing content. In fact, many teachers have discovered that strategies for developing metacognitive skills can be embedded into traditional learning activities.

Here's an interesting point to consider: Students' metacognition helps teachers understand student learning. That is, we learn about ourselves as teachers when students are able to reflect on their learning. Reflective thinking allows students to offer valuable feedback, telling us where our explanations were effective and where they were confusing. Through metacognitive thinking, students are able to identify what they need as learners. The awareness of how our students learn enables us to better focus the instruction and make better use of class time.

As we know, some students are proficient, engaged learners who have developed metacognitive abilities on their own as they moved through the elementary grades into middle school and high school. With insightful knowledge of their learning styles, they independently recognize that they need to use a variety of problem-solving strategies to work through learning challenges. Most other students, however, need focused instruction as well as plenty of practice and encouragement to develop these abilities. Less proficient students are missing the "internal dialogue of metacognition, a deficiency that doesn't allow them to explore their own thinking processes. For struggling adolescent learners, discussions about introspective thinking may cause confusion and anxiety because they have become comfortable with a passive, dependent approach to learning (Joseph, 2006). Through guided instruction and practice over a period of time, however, these students can be coached to develop effective learning strategies while breaking the habit of depending on others to resolve their academic difficulties.

Reviewing Classroom Practices

How can we help students develop their practical intelligence? We can construct assignments that prompt students to practice new learning strategies and provide a supportive classroom environment, prompting students to develop their competence and confidence as learners. Research tells us that these lessons contain three main components: direct instruction through teacher modeling, on-going discussions about metacognition, and active classroom practice. In addition, these assignments include writing activities such as reading logs and self-assessment checklists to encourage students to reflect on their learning processes (Paris & Paris, 2001; Peverly et al. 2002). Of course, writing assignments should be appropriately structured as writing-to-learn activities, not just busy work requiring little more than copying factual information. The following section presents classroom strategies for helping students develop metacognitive awareness:

Modeling Thinking Strategies

Use mental modeling when working with students on reading assignments or problem solving activities. This think-aloud technique can demystify the reading process for students by explaining the behind-the-scenes thinking required for good comprehension. To model this approach, select a passage from the textbook and have students follow along as you read aloud, offering comments on the thinking strategies you use to work through the material.

Through mental modeling, you are demonstrating how a skillful learner approaches a task, providing insights that are unfamiliar to many learners. Remind students that problem solving or reading a text is not always a simple process; they may face confusion, distraction, and frustration. Emphasize that the students' role as metacognitively aware learners is to find ways to resolve the challenges, explaining that they can be successful if they develop and apply a repertoire of comprehension strategies. You will discover that pausing for explanations brings positive results because the demonstration slows down the reading process and gives students time to reflect on their thinking, thus encouraging an understanding of independent learning strategies (Schoenbach, et al., 2003). When we model our own thinking, we prompt students to become aware of how to use practical intelligence.

Using Reciprocal Teaching Activities

Reciprocal teaching (Palincsar & Brown, 1985) helps students become comfortable with metacognitive thinking because it provides steps for exploring texts and encourages students to think about their comprehension strategies. Students learn how to approach challenging texts through the step-by-step inquiry process of reciprocal teaching.

Begin this structured activity by selecting a passage from the text. Lead students through a think-aloud session to model four comprehension strategies found in reciprocal teaching:

- Generating questions based on the text
- Clarifying misunderstandings
- Summarizing
- Predicting the content of the next section from the text

Once you have demonstrated the types of thinking needed for each strategy through your think-aloud activity, have students work in groups to talk about the next passage from the text. Encourage students to move through the steps in the guided practice, supporting each other as learners and thinkers. Once students have practiced this activity in groups, they should be ready to work on their own. The goal is for the students to work independently through the steps of questioning, clarifying, summarizing, and predicting. With regular

practice and careful monitoring, struggling readers can learn to apply the strategies of reciprocal teaching to their reading (Slater, 2002). As you can see, this activity does not take time away from the content; it encourages students to learn effective ways to process the content.

Conducting Discussions About Thinking

Use class time to discuss effective thinking techniques. Remind students that purposeful interaction with the text when reading means that they can hear the author's voice speaking aloud in their minds. Good readers can demonstrate this to their peers by reading a passage aloud and explaining the thinking processes they use to comprehend the material as they talk to the text. You may be surprised at what students say about their strategies.

Provide opportunities for collaborative problem solving, encouraging students to discuss their approaches with their peers. Remember that metacognitive awareness may be second nature to successful learners, yet it is a new approach to learning for many other students. Spending class time discussing metacognitive thinking strategies encourages students to understand themselves as learners, promoting the development of practical intelligence.

Encouraging Self-Assessment

Continuous student self-assessment, an important part of metacognitive awareness, encourages independent learning and prompts students to become more aware of their progress. Checklists, reading logs, and skills inventories are all good tools for self-assessment. For a simple self-assessment activity, select a few paragraphs from your text and design a five to ten minute compare/contrast assignment. Ask students to read two paragraphs on different, but related subjects, and then have them compare/contrast the material. After students complete the assignment, focus on the cognitive strategies they used to approach the content. Encourage them to reflect on their thinking behaviors by asking themselves a series of questions:

Self-Assessment Questions for Students

- Did you understand the directions for the assignment?
- What were you thinking when you worked on the assignment?
- Did you feel confident? Confused? Frustrated?
- How did you resolve any difficulties you experienced?
- How would you evaluate your ability to concentrate on the assignment?

Promoting Questioning

Through questioning, students actively participate in their own learning, developing a wide range of cognitive processes. All students should be able to think, reflect, and question in an effective manner, yet questioning is often neglected because teachers feel the need to save time and move the lesson along at a pace that doesn't always allow much time for thinking and questioning. When students generate questions, however, their metacognitive skills develop because they must interpret, synthesize, analyze, and evaluate the material (Penticoff, 2002). Students can demonstrate metacognitive awareness by reviewing their background knowledge before reading as they preview the material and by continuously asking themselves questions while reading. Use prereading activities to help students recognize the connections between their prior knowledge and the new content. Questioning helps students develop their practical intelligence because they need to process the content.

Questioning, a powerful cognitive strategy, prompts students to focus their learning by searching for the information they want to know, helping them focus and organize their thinking. You can promote higher level thinking when introducing a new topic by requiring students to write five questions about the topic beginning with the word "Why." Remember that asking students to generate questions does not follow the traditional teacher/student roles, so some students may be uncomfortable with this approach because they prefer to take a less active role by having the teacher pose the questions. In addition, some students prefer questions that are easily answered by copying information from the textbook without having to think about the answers.

Designing Problem Solving Activities

Use problem solving activities to promote active engagement with the content. These activities require students to go beyond the basic recall of facts and move into analyzing the content and applying it to a specific situation. When challenged by problem solving assignments, students learn to recognize what they know and what they don't know, a major step toward metacognitive awareness. The following sample problem-solving activity requires a variety of thinking tasks including reading, researching, discussing, and writing.

As a news reporter for *Modern Literature*, you are assigned to interview an author and write an article for the next issue of your magazine. Choose one of the following authors: Alice Walker, F.Scott Fitzgerald, Ernest Hemingway, or Eudora Welty.

- Write a list of what you know about this author's background and work based on information discussed in class. Write a list of what you know

about this author's background and work based on information discussed in class.

- Compose a list of questions you would like to know about the author.
- Spend some time reading about your author and discuss your ideas with your group.
- Through research, find answers to your questions. Write one page of notes about the author's work and the time period.
- Write a magazine article. The article should be 2-3 paragraphs, and it should focus on information that readers of Modern Literature want to know about the author.

Offering Realistic Advice and Encouragement

Let's review a basic point: Effective learning requires productive, well focused thinking and dedicated effort...a concept many students don't understand because they believe that if they don't get it the first time, the material is just too hard for them to comprehend. This self-defeating attitude allows students to withdraw from learning situations. As a result, they never develop the practical intelligence necessary to be successful in the classroom. When students lack confidence as learners, they stop trying because they believe that others are more skillful and smarter. Talk with your students about this self-defeating cycle. Explain that successful learning develops through practice, concentration, and lots of effort.

All students benefit from thinking about their own thinking. Research notes that less proficient learners make the greatest gains when metacognitive instruction is part of their classroom instruction, yet these students need the most support (Williams, et al., 2002). To best assist struggling students, be aware of how they view themselves as learners and attempt to understand how they approach academic challenges. Serve as a learning coach by working with students through each step of mastering new strategies for understanding their own thinking. Encourage them to resolve their own confusions and persevere with their tasks, thus building confidence as independent learners.

Conclusion

Helping students develop their practical intelligence takes them into a new realm of learning. They are being moved out of their comfort zone of memorizing facts for a test when they are prompted to analyze their own thinking. Teaching students to monitor their cognitive processes by developing strategies for thinking, comprehending, and remembering is a valuable investment in their future. Through metacognitive instruction, students practice self-reflective thinking over a period of time, increasing the chance that these valuable strategies will strengthen their practical intelligence and become part of their repertoire as learners.

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