



Teach Kids to Think and They'll Want to Learn

SUMMARY

When students are given the tools for thinking, reflecting, and extending their comprehension from literal to deeper levels of thinking, a passion to learn is established.

A teacher is balancing the art of planning lessons to teach district grade-level expectations based on New York state learning standards while addressing the individual needs of students. This teacher:

knows the lessons in the classroom today must shape students to be independent, creative, and critical thinkers for the future;

immerses the students in language-rich experiences through well-planned lessons and exposure to a variety of genres across all content areas;

cultivates students' thinking that reaches various levels;

diligently uses questioning techniques that can guide students to deepen their levels of understanding;

feels the rewarding responsibility to foster love of learning in all students.

This love of learning that is nurtured will empower each student to successfully enter the workplace of the 21st century. This teacher is any one of us.

This teacher is you.

Most of us do not think about how we think. We just do it. Yet there is much to consider when we decide to teach our students how to think. Creative thinking, critical thinking, and metacognitive thinking are three processes that interact in a dynamic way to advance students' comprehension, performance, and achievement. The interaction is dynamic because creative thinking allows thinkers to generate ideas. Critical thinking allows thinkers to evaluate the value of the ideas, and metacognitive thinking allows thinkers to reflect on their thoughts about those ideas. Through metacognition, thinkers begin to take control of their learning.

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For example, after reading a paragraph in a text, Victoria, a fifth-grade student, questions herself about the concepts discussed in the passage. She knows her goal is to understand the text. Self-questioning is a common metacognitive comprehension strategy that allows a reader to monitor his or her comprehension. Victoria finds she is unable to answer her own questions or that she does not understand the ideas in the text. She must determine what else she could do in order to meet her goal of understanding the text. She decides to go back into the text and reread sections of the material. After rereading, she can now answer her questions. Victoria decides she now understands the material. The metacognitive strategy of self-questioning ensures that the goal of comprehension is met.

Bloom's Taxonomy, Reciprocal Teaching, and Question-Answer Relationships are three strategies teachers can apply to guide students to take control of their own learning. Students begin to set their own purpose for their learning as they monitor their comprehension. An energy and desire to learn are established because students have been given the

tools for thinking, reflecting, and extending their comprehension from literal to deeper levels of thinking.

Reading is thinking that is cued by written language. We cannot think for our students; we cannot even show them the complex operations that make up the reading process. However, we can teach in a way that gives students a good idea of what effective readers do as we support them using these strategies daily (Fountas and Pinnell 2000).

The National Assessment of Educational Progress (NAEP 2003) is the only federally funded large-scale testing program in the United States. Reciprocal Teaching, Question-Answer Relationships (QARs), and Bloom's Taxonomy align perfectly within the NAEP framework of questions that require students to integrate information from a variety of sources. Students are increasingly expected to be comfortable independently reading a range of genres — fiction, nonfiction, procedural text — and evaluating texts they read. Fewer than one-third of the questions on state tests will require students to simply recall information (NAEP 2004).

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In addition, with mandated federal testing in grades 3-8, the thinking structures outlined in this article not only align with state and district standards, they can provide a solid sense of accountability as educators strive to prepare students not just to do well on tests, but to prepare them for the future.

Reciprocal Teaching

Reciprocal Teaching is a technique built on four strategies that careful readers use to comprehend text: predicting, questioning, clarifying, and summarizing (Palincsar & Brown, 1984). The teacher models each strategy by thinking aloud as he or she demonstrates the use of strategies. The teacher talks through his or her thoughts before, during, and after reading. Students then apply as the teacher facilitates group discussions. Over time the teacher gradually releases responsibility to the students for eventual independent application. The students take turns “being the teacher” and thinking aloud. They describe their thinking, using the principles of the strategy, as they monitor their comprehension (Oczkus 2003).

Question-Answer Relationship

QAR was developed by Taffy Rafael (1986) as a tool for clarifying how students can approach the task of reading texts as they ask and answer questions to deepen comprehension. The QAR strategy is one of the best

ways to help readers understand that reading requires thinking (Hollas 2008). It teaches readers where to seek answers to questions when they are given multiple-choice and open-ended questions. It helps students realize the need to consider information from the text and information from their schema (background knowledge). QARs provide a language that teachers and students can use to discuss, dissect, and analyze vague ideas in a reader's mind. This language is internalized so students can become independent as they comprehend text beyond the literal level.

A colleague and special education teacher, Laura Castagna, has found success implementing QARs within a small group of fourth-grade students. She noticed one student in particular. Before QAR was introduced, Nick had great difficulty comprehending text at the literal level. Over a few weeks, he grasped the different types of questions. As he became more independent, Nick said he felt like he knew a secret and he now knows how to find the answers. The essential idea of QAR is that reading involves a reader making connections between his or her background knowledge, the ideas in the text, and the author's purpose for writing the text. Developer Rafael named four categories of types of questions (Raphael, Highfield & Au 2006):

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Table 1:

Bloom's Original Taxonomy	The Revised Taxonomy
1. Knowledge	Remember
2. Comprehension	Understand
3. Application	Apply
4. Analysis	Analyze
5. Synthesis	Evaluate
6. Evaluation	Create

Right There: Text Explicit — the answer is in one place in the text.

Think and Search: Text Implicit — The answer is several places in the text.

Author and Me: The reader needs to think about what he or she already knows and synthesize that information with information in the text to make a basic inference.

On My Own: The answer is not in the text. The reader must apply a strong sense of background knowledge or research other texts to respond.

The Revised Bloom's Taxonomy

Benjamin Bloom created the Taxonomy of Educational Objectives in the 1950s as a way of delineating the different levels of thinking and student outcomes (Bloom 1956). In the 1990s, Lorin Anderson, a former student of Bloom's, led a team of cognitive psychologists in revising the taxonomy with the primary focus of making it more useful for teachers (Anderson & Krathwohl 2001). Table 1 outlines the differences between the original and the revised taxonomy. The main difference is in the language. The revised taxonomy states each category as a verb to encourage active, higher-level thinking. Note also that the category of *synthesis* is renamed *create* and has changed positions in the hierarchy.

Impact on Teaching

There are always opportunities to incorporate higher-level thinking skills within all literacy lessons — using meaningful texts — across the curriculum. Table 2 lists thinking strategies each technique can provide before, during, and after reading. I began to track the progress of all of my students within a special education resource room and an integrated classroom. All students were taught within small-group strategy instruction sessions. As I scaffolded instruction within a guided reading structure, I monitored the students' progress along with their ability to transfer the skills independently. The following evidence is based on a classroom action research project that I implemented over the course of last school year. I taught the students in a resource room setting or small-group

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Source: Lorin W. Anderson and David R. Krathwohl, *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* (Boston: Allyn and Bacon, 2001).

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instruction within an integrated setting. The students were fourth- and fifth-graders with learning disabilities.

Research in Action

My action research sought to describe how reading comprehension and higher-level thinking skills can be effectively promoted with struggling fourth- and fifth-grade students with learning disabilities. A second goal was to ascertain how best to proceed

with the planning and implementing of effective literacy instruction to guide students with learning disabilities to actively gain meaning from text.

Method:

This classroom research process was based on the principle of natural inquiry. I used a qualitative approach to deepen my level of awareness for the learning process within my resource room small-group instruction.

METHODOLOGY

Table 2:

	Bloom's Taxonomy	QAR strategies	Reciprocal Teaching strategies
Before Reading	Remember Explain Recall Predict Evaluate Analyze	Author and Me Predict Visualize Make Inferences and Connections On My Own Connecting to topic Activating Background Knowledge	Predict Clarify Question
During Reading	Recall Locate Explain Evaluate Justify Analyze Hypothesize Synthesize Interpret	Author and Me Think and Search Determine Importance Summarize Compare and Contrast Clarify Right There Scan and Skim Locate Information	Predict Clarify Question Summarize
After Reading	Infer Compare Contrast Classify Paraphrase Justify Evaluate Synthesize	Author and Me On My Own Think and Search Right There	Summarize Clarify Question Predict-beyond the text

When exposed to direct instruction that incorporates the QAR model, Reciprocal Teaching, and higher-level thinking according to Bloom's Taxonomy, students with learning disabilities can develop greater metacognition about their reading process in order to be independent active readers.

I documented student progress through the use of performance assessment and teacher observation. I evaluated students' abilities to remember, retrieve, summarize, paraphrase, apply, analyze, evaluate, create, and generate new ideas. I surveyed the students' metacognition through the use of questionnaires and anecdotal notes. Quantitatively speaking, I counted and recorded the accuracy of multiple-choice questions.

Claims Formulated from Research Findings:

I used a qualitative approach to formulate the following beliefs:

The teacher must provide explicit instruction to increase the likelihood of students applying higher-level thinking strategies independently.

Reciprocal Teaching provides a language for readers to actively connect with text.

QAR instruction helps students with disabilities realize the need to consider both information in the text and information from their schema.

When exposed to direct instruction that incorporates the QAR model, Reciprocal Teaching, and higher-level thinking according to Bloom's Taxonomy, students with learning disabilities can develop greater metacognition about their reading process in order to be independent active readers.

Impact on Student Learning:

Introducing reciprocal teaching with scripted "teacher cards" encouraged the students to intermittently make predictions, ask questions, clarify, and summarize. These cards provided a scaffold to guide the organization of each reader's thinking patterns.

The students began to incorporate the language of reciprocal teaching in their oral responses to indicate that they were beginning to internalize the process for independent thinking. For instance, students began their responses with "I predict" or "I wonder..." I observed the ease with which students said, "I don't get it. I should just reread to clarify." I found that using reciprocal teaching alone served to guide readers to make basic predictions and extend their thinking to paraphrase, recall, and activate their background knowledge.

Weaving in higher-level questions brought students to a deeper level of understanding. For instance, I used the principles of reciprocal teaching during a read aloud of *Grandfather Twilight* (Berger 1984). This story provided many opportunities to apply the principles of reciprocal teaching. Students actively made predictions, asked questions, summarized, and we reread to clarify when they needed. They used the familiar language to name their thinking. However, they stayed within the literal level of com-

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Students with learning disabilities are capable of reaching higher levels of thinking.

prehension. All of the students were actively engaged in gaining meaning from text. It was necessary to incorporate QAR and Bloom's Taxonomy to encourage students to reach higher levels of thinking, such as making inferences. The following is a sample of the questioning that guided them to understand the text at deeper levels:

I asked: *Where did Grandfather Twilight live?*

Students responded: *In the trees.*

I asked: How do you know this?

Students responded: *It was in the story we just read.* The students were able to locate the exact sentence in the text.

I repeated: *Yes, the answer was right there in the... students chimed in ... text.*

I asked: *What time of day was it in the story?*

Students: *Twilight*

I asked: *How do you know?*

Students: *It's right there in the text.*

Next I added: *In the story, what time of day is twilight?*

Students responded: *As it gets dark and the sun is going down.*

I asked: *How did you know the answer to that question?*

The students were quiet.

I asked: *Can you find the answer*

right there in the book?

The students said: *not really.*

I added: *Then you must have used your ... my voice trailed off ... waiting ... and then two students responded with excitement — schema!* (background knowledge)

Anchor charts displayed in my classroom guide memory and application of each strategy use. Over time, students were able to write down meaningful questions while applying reciprocal teaching, code the questions based on the QAR model, then identify the level of Bloom's Taxonomy to which their questions belonged. For instance, while reading *Ruby Holler* (Creech 2002) Michael wrote on a Post-it, *Why did Dallas call the bird a 'magical silver bird'?* He thought of the answer and coded it "Author and Me (AM)." He said, *Dallas likes to be imaginative because he is trying to feel happy.* Michael explained that he coded his thinking AM *because you have to use some clues from the text ... but you also have to think about what you think.* The group agreed that Michael achieved thinking at levels 2 (understand), 4 (analyze), and 5 (evaluate) of Bloom's Taxonomy. The best part is that Michael and his peers have shown signs of metacognitive, creative, and critical thinking skills. They are taking control of their learning. They took this control with them right back into their classroom.

My colleague Mary Laurine, a general education teacher, noticed the students were able to explain the process of applying QARs to a reading in the social studies textbook. Each student was able to transfer his or her knowledge to the general education setting. Mary noticed that the general education students benefited in ways similar to the students with learning disabilities. The QAR provided them with the language they needed to explain their thinking. In addition, the students with learning disabilities were provided with a structure to organize their thinking.

Implications for Future Teaching

Reciprocal Teaching, Question-Answer Relationships, and Bloom's Taxonomy can guide educators to make effective decisions about how to teach students how to think across genres and content areas. Teachers should discuss with parents the language of literacy and higher level thinking that their children are learning in order to further support transfer and independent use of higher level thinking. The results of applying these strategies have proven to me what I already knew — students with learning disabilities are capable of reaching higher levels of thinking. Through direct instruction that gradually releases responsibility to guide each

student, teachers can realize they are creating learning experiences that teach beyond the moment. They are teaching each student to be an independent, active reader — a reader who can think at higher levels.

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