Academic Strategies That Work for Gifted Students With Learning Disabilities

Mary Ruth Coleman

Gifted students who have learning difficulties are a puzzle and a paradox. Their areas of strengths and needs often interact, making academic success a hit-or-miss affair. The learning profiles of twice-exceptional students tend to be uneven: Sometimes these students shine, and sometimes they struggle (Coleman, 1992). When we think about ways to help them succeed in our classrooms, we can put in place basic strategies that maximize their strengths and that support them in their areas of need. This article discusses how students learn and addresses how we can apply learning theories to support gifted students who have learning disabilities.

Three Key Principles of Learning

The National Research Council's recent publication *How Students Learn* (2005) identifies three key principles of learning:

- Educators must build on the student's knowledge. Students come to the classroom with preconceptions about how the world works. If their initial understanding is not engaged, they may fail to grasp the new concepts and information, or they may learn the concepts for a test but revert to their preconceptions outside the classroom.
- Students must have a deep foundation of factual knowledge in order to develop competence in an area of inquiry; they must understand facts and ideas in the context of a conceptual framework, and they must organize knowledge in ways that facilitate retrieval and application.
- A metacognitive approach to instruction can help students learn to take control of their own learning by defining learning goals and monitoring their progress in achieving them. (pp. 1-2)

These three principles are essential for all learners if the information learned is to be useful, meaningful, and lasting. As early as 1929, Alfred North Whitehead identified what he called "inert knowledge" (Whitehead, 1929), which consists of information that we technically know but that we cannot activate and use for any meaningful purpose. A classic example of inert knowledge is logarithms—almost everyone encountered them in high school and again in college math classes, but a person who is not well versed in mathematical thinking probably does not remember how or when they might be useful. Even worse—perhaps we have no idea *why* we had to learn them. If we examine the three principles of learning, we can see that that these ideals were not part of our instruction when we learned logarithms. In other words, our prior knowledge and life experiences did not connect in a meaningful way with logarithms; we therefore did not organize the information on logarithms into a conceptual whole that we could apply to new circumstances. In addition, we did not apply our own self-regulatory skills to mastering logarithms, thereby intentionally making them "ours." (If you really did learn logarithms—congratulations, and please replace the preceding example of logarithms with something else.)

This example may seem extreme, but for a student with a learning disability, much of what we teach may feel like logarithms. Even the most gifted student with a learning disability will struggle to make sense of instruction unless we explicitly do the following:

- Activate the students' prior knowledge.
- Help them build conceptual frameworks that organize fragmented ideas into meaningful wholes.
- Help them develop self-regulatory, intentional approaches to learning.

The question is: How can we incorporate these learning principles into instructional strategies that we can use in everyday learning?

Four Variables That Can Facilitate Success

Coleman (2003) identified four variables that can help students be success-

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ful. These variables are time, structure, support, and complexity. Each of these variables operates like a rheostat, with individual students requiring differing levels of intensity for each variable to enable them to be successful. We next examine each variable and the strategies that we can use with our students.

Time

Oddly enough, even though time is the most flexible of our educational resources, we rarely use it flexibly to optimize learning. We all know that individuals do not learn at the same rate. Furthermore, the differences among gifted students with learning difficulties mean that the amount of time required for success will vary depending on the task and the topic (see box, "Success in Testing Situations"). How can we begin to use time more flexibly and provide more time for students who need it while allowing others to progress more quickly?

The main strategy that we can apply as we begin to use time flexibly is to use dynamic assessments to identify where our students are in their learning process. These assessments allow us to "check in" with our students for three things:

- What they know.
- What they do not know.
- Where they have misconceptions.

Dynamic assessments are not something that we do *to* our students, but something that we do *with* our students. They often involve a brief conversation with the students to learn what and how they are thinking. This assessment method capitalizes on the third learning principle, the use of metacognitive strategies to help students monitor their understandings.

Dynamic assessments enable us to match students' instruction with their learning needs through tiering of assignments. We give some students time for additional practice so that they can master the basics (what they do not know) while allowing other students time to focus on enrichment or challenging activities after they have shown what they do know. Dynamic assessments also allow us to design specific learning activities to help students correct their misunderstandings. By engaging in dynamic assessments that lead to tiering of assignments, we can use students' time more effectively (Coleman, 1996). In this way, time is not the determining factor in our instruction—learning is.

Structure

The second variable for success is structure. The concept of structure involves three areas: the structure of our curriculum and content, the structure of our pedagogy, and the structure of our classrooms. We next look at each of these areas to learn how we can use them to help our students who are gifted and learning disabled (GLD) become successful.

Structure of Curriculum and Content. For the structure of the curriculum or content, we need to remember the second learning principle, the idea of teaching to conceptual frameworks. When we put this principle into operation, it means that less is more in many cases. If we can identify the big ideas that we want our students to master, we can reduce the fragmentation of the information that we present and our students can concentrate on the most important learning activities (Bulgren, Schumaker, & Deshler, 1988). For example, instead of 15 math problems that repeat the same basic skill, we can use 1 problem in a more complex way (see Figure 1, "Less Is More: A Second-Grade Math Problem"). With this strategy, we ask our students to process their problem-solving more deeply so that they can begin to build meaning. We can ask our students for a reflective analysis of the following:

- How and why they used this method to solve the problem (their thinking behind solving the problem).
- Where this kind of math might be useful in real life.
- What they learned about solving this problem that they can apply to future problem-solving.

Although the less-is-more approach is helpful for all students, it is essential for students who are GLD. For these students, the fatigue of completing pages of rote computations often leads to numerous errors and to mindless inattentiveness, thereby reinforcing both poor work habits and incorrect mathematics. Again, we can see this approach to instruction in the words of Alfred North Whitehead (1929):

> Let the main ideas which are introduced into a child's education be few and important, and let them be thrown into every combination possible. The child should make them his own, and should understand their application here and now in the circumstances of his actual life.

The use of reflective questioning to deepen the learning experience also builds on the third learning principle, the metacognitive approach to learning that helps students monitor their understanding. The less-is-more strategy is key to helping us restructure our curriculum and content for student success.

Structure of Pedagogy. The second aspect of structure is how we present learning tasks. This is our pedagogical structure. All three learning principles

Success in Testing Situations

Many gifted students with learning disabilities are more successful in testing situations if the teacher allows them extended time. These students need the extended time to process the information (i.e., to determine what is being asked, to retrieve the needed information from memory, and to put the answer on paper). For students without a learning disability, this processing happens very smoothly, so they do not need the extended time. In fact, some students actually do worse when given extended time because they go back and change their initial answers. Just giving students enough time to process the information will help them be more successful.

Time is not the determining factor in our instruction—learning is.

Figure 1. Less is More: A Second-Grade Math Problem

$$\begin{array}{r} 142 \\ -\ 64 \\ \hline 78 \end{array}$$

(a) Show two ways you might solve this problem and tell which one works "best."
(b) When might someone need to solve a problem like this in their work or play?
(c) Is there anything "special" about solving these kinds of problems that you want to remember?

Student's answers:
(a) First method:

(a1) 

Student says: You can draw out 142 and then mark out the ones you don't want.

(b) Second method:

(a2)
$$\begin{array}{r} 1^{3}4^{1}2 \\ -6\ \ 4 \\ \hline 7\ \ 8 \end{array}$$

Student says: I fixed all the top numbers so they would be bigger. Then I did the take-a-ways.

(a3) I think that my second way is better because it was hard to count all the marks.

(b) Student says: You could have this problem if you were trying to buy candy bars that cost 64 cents. (Students can write their own word problems in this reflection.)

(c) Student says: What I think is that drawing pictures with big numbers is not good 'cause you make mistakes in counting.

apply to this aspect of instruction. The first principle, to build on prior knowledge, reminds us that unless we help students directly connect new information with their existing knowledge base, their learning is unlikely to have a lasting impact. Ellis (2001) noticed that middle school students with learning disabilities seemed to forget key information after they completed "the test." In fact, when he talked with them, they indicated that they intentionally forget, or erase, old information to make room for the next batch of material that they need to learn. This phenomenon may not come as a surprise to a middle school teacher, but it does make the accumulation of knowledge difficult.

The use of graphic organizers is a critical instructional strategy that helps students connect ideas with prior knowledge and with new information (Baxendell, 2003; Ellis, 2001). When our students create a "web of knowledge" at the beginning of a unit on the solar system, we can use it as an informal assessment to gauge the information that each student brings to the task. At various points during the unit, we can return these initial webs to our students and ask them to elaborate and refine their webs. If they use different colors of ink each time that they revisit the web, we can follow the progress of the student's understanding. The use of graphic organizers to explicitly show relationships across ideas is central to helping students make the connections needed to build conceptual understanding and to facilitate retrieval of information and, thus, learning. The process of reflecting on how our understanding changes as we learn, incorporates the third principle (metacognitive awareness) while we help students monitor their own learning.

Structure of Learning Environments. The third aspect of structure involves how we structure our classrooms and learning environments. When we use differentiated instruction to meet our students' needs, the learning environment should support this process (Kirk, Gallagher, Anastasiow, & Coleman, in press). We should have physical areas for quiet reflection, for small-group discussion, and for whole-group instruction. We should use varied lighting and sound to create comfortable zones for learning. At the very least, the environment should show respect for our students' ideas and work needs.

Support

"Support" includes three areas: emotional support, external scaffolding, and advocacy.

Emotional Support. Emotional support is the climate that we create to nur-

ture our students. A very clear thread runs through the comments of twice-exceptional students concerning their need for emotional support (Coleman, 2001a). When we ask twice-exceptional students why they were successful in certain settings, what we hear again and again is, "The teacher liked me!" The students make this statement with some wonderment and a feeling of awe, and they often follow such a statement with, "and the teacher really believed I could do it." A student often cites the power of this connectedness with a teacher as the motivation behind her or his decision to work hard (Salend, Elhoweris, & Garderen, 2003; Turk & Campbell, 2002). Although the emotional climate is not directly linked to the three learning principles, it sets the tone for all our learning experiences.

External Scaffolding. The second aspect of support, external scaffolding, or bolstering, has to do with the amount of assistance that a student receives to ensure that he or she can be successful. Assistance can come in the form of direct instruction, modifications using technology (e.g., spell-checkers and calculators), tutorials in areas of need, and targeted remediation when specific background skills and knowledge are shaky (Hitchcock, Meyer, Rose, & Jackson, 2002). The main goal of this type of support is to minimize the impact of the disability area on learning. The major learning principle here is the third principle, the use of metacognitive instruction.

Advocacy. The third aspect of support is advocacy. It includes our role as an advocate for our students, as well as our role in encouraging our students to become self-advocates. In nurturing self-advocacy, we must ensure that students come to know their strengths and their needs with accuracy. We must also help them develop ways to share this information with teachers and others who need it. One strategy that we have used with twice-exceptional elementary children is to have them write a letter to their teachers for the following year. We encourage the students to share information about themselves in these letters and to express their hopes and concerns for the coming school year. Figure 2 is a letter from Andrew, a third-grade student, to his fourth-grade teacher. The main purposes of having the student write the letter are to help the student reflect on his or her strengths and needs and to help him or her develop enough confidence to share these with others.

The purpose of all types of supports is to build the student's confidence and foster his or her ability to operate independently with success. Thus, we must tailor this support to the student's needs and then gradually remove it as the student gains more independence. The ultimate goal of all aspects of support is to help the student become an autonomous learner.

Figure 2. Andrew's Letter

Dear Mrs. Johnsen,

My name is Andrew. I have red hair so you will probably recognize me when I get to school but just incase here is a picture of me with my dog hero. I am really looking forward to 4th grade but I'm also kind of nervous. I know we will have lot's of books to read and I read pretty slowly. I hope I have enough time. I also can't spell, but my mom sayes "that's what spell check is for!" So I guess that will be OK. I hope your summer was great and I will see you soon.

Your friend to be,
Andrew

P.S. Look for me on day one!

Unless we help students directly connect new information with their existing knowledge base, their learning is unlikely to have a lasting impact.

Complexity

Complexity involves relationships across ideas. It is also the level of abstraction, that is, the guiding principles and generalizations that we use during instruction (Coleman, 2001b). Complexity is the sophistication in thinking in which we ask our students to engage, and they encounter it naturally as they learn more about any subject. Complexity is not something that we create to puzzle our students; it is something that we explore with our students to ensure that their learning is deep and that their understanding is solid. This is the second principle, the deep foundation of factual knowledge that has been organized into conceptual frameworks so that students can activate information and use it in meaningful ways.

When we think about how to help students with learning disabilities become more successful in school, we often jump to the conclusion that the work is too complex. In our attempts to be helpful, we may make things easier by reducing this complexity, but doing so only serves to undermine our students. Our goal should be to hold the complexity level as high as possible while we adjust the other three options—giving more time, structuring

the learning more explicitly, and offering additional support—to ensure that our students are successful.

Keeping the complexity level high does not mean making things artificially difficult or overwhelming our students with details. High levels of complexity encourage students to think deeply and to generalize meaning to new situations. To help twice-exceptional students achieve these goals, we must activate the other three variables. We must explicitly teach the relationships across ideas by using graphic organizers and other structures to show these relationships. We must encourage and support students while they develop their understanding, and we must give them time to reflect deeply on their learning.

The major strategy for keeping the complexity level high is to use questions that promote high levels of thinking. We can select any of several questioning taxonomies. Bloom (Bloom, Engelhart, Hill, Furst, & Krathwohl, 1956), the new Bloom (Anderson, et al., 2001), and Marzano (2001) are all examples of taxonomies for thinking. They all work to help us design questions that promote students' thinking. When we teach for thinking, we must also incorporate the conceptual frameworks needed to address these high-level questions in our instruction and in our assessments of learning. By teaching to the highest level of complexity and through providing the necessary time, structure, and support to reach these levels, we are building a solid foundation for our students' success.

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Final Thoughts

The ideas presented in this article are based on our knowledge about learning. We can apply them to all students, not just those who are both gifted and learning disabled. However, there is a crucial difference. Many students can succeed even if we are vague, disorganized, fragmented, and hurried; however, students with learning disabilities will not (Coleman, 2001a). Even our most gifted students with learning disabilities need us to teach with clarity, to make ideas explicit, and to build the relationships across ideas to anchor learning. As we work to meet the needs of our twice-exceptional students, we increase our power to reach all our students.

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Mary Ruth Coleman (CEC NC Federation), *Senior Scientist, Frank Porter Graham Institute, University of North Carolina at Chapel Hill.*

Address correspondence to Mary Ruth Coleman, FPG, CB #8185, University of North Carolina, Chapel Hill. NC 27514. (e-mail:mary-ruth-coleman@unc.edu)

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