30 Best Practices in Instructional Assessment

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OVERVIEW

Quality instruction matters in student achievement. Research has consistently demonstrated that the quality of instruction provided to students positively has an impact on their academic performance (Sanders, 1998; Wright, Horn, & Sanders, 1997). Furthermore, the central role of instruction in fostering the academic achievement of students is embedded in legal mandates both within current and previous legislation (i.e., the 2001 No Child Left Behind Act and the 2004 reauthorization of the Individuals with Disabilities Education Act [IDEA]). Starting with Public Law 94–142 (1975), federal mandates specifically required the special education decision-making team assure a student received appropriate learning opportunities prior to considering eligibility for special education services. This requirement remains in the 2004 reauthorization of IDEA, which again emphasizes that a child must have been provided with effective instruction, and is central to NCLB's demand for "high quality" instruction.

Yet, the quality of instruction often remains a difficult and delicate subject for school psychologists to address when working with classroom teachers. Several reasons exist for avoiding discussions of the appropriateness of instruction, one being that school psychologists are often uneasy discussing the complex nature of teaching and learning. Many variables interact to produce appropriate instruction. Determining and managing which combination of variables will produce effective learning and teaching is a difficult task. To effectively address instruction, school psychologists require a fundamental knowledge about learning and teaching, as well as practical skills in assisting teachers to investigate the interactions among variables comprising instruction, curriculum, and the student. This chapter addresses the core knowledge and skills school psychologists will need in conducting instructional assessments for the purpose of supporting appropriate instruction.

Evolution From Curriculum-Based Assessment to Instructional Assessment

For nearly 3 decades, since the 1970s, the term *curriculum-based assessment* (CBA) has been attributed to the formative work of Gickling (Coulter, 1988). Wanting assessment practices to be more instructionally relevant, Gickling, along with a small group of dedicated colleagues, embarked in a practical course of research, study, and implementation to reconcile two seemingly incompatible issues involving assessment and instructional practices. The first issue involved the predisposition of educators to use assessment very narrowly largely to identify students' deficiencies and then to use instruction to hammer away at correcting those deficiencies. Gickling's group believed this artificial separation between assessment and instruction prevented teachers from ensuring academic achievement for students. The other issue involved making certain that the learning tasks assigned to students were delivered at instructional levels, levels where learning and teaching could be maximized (Betts, 1946). These two issues were fundamental to developing a core set of principles for what became known as CBA.

As described by Gickling, the roots of CBA emanated from his observations of basic teaching practices

(Virginia Department of Education, 2005). He observed that the learning tasks selected for struggling students were seldom matched at their instructional levels. It was not that classroom teachers were not trying to make appropriate task selections, particularly during reading instruction. What was observed instead was that teachers routinely had difficulty when attempting to match materials to the learning needs of struggling readers. Prior observations and research confirmed that students' reading behaviors were influenced with the introduction of varying levels of challenge. As depicted in Figure 1, students' academic performance and related behaviors varied in concert with the manipulation of different levels of challenge (Gickling & Armstrong, 1978). This study represented the beginning of what would be 3 decades of research and practice on CBA and the focus of assessing student's performance within classroom curriculum for the purpose of assisting teachers in their delivery of effective instruction (Gickling & Havertape, 1981; Gickling & Rosenfield, 1995; Gickling, Shane, & Croskery, 1989; Gravois &

Gickling, 2002; Thompson, Gickling, & Havertape, 1983; Tucker, 1985).

Over time, increased confusion occurred as to the original intent of CBA, its practice, and its purpose. Although several attempts have been made to distinguish Gickling's original model of CBA from other curriculum-based techniques (i.e., curriculum-based measurement [CBM]), major confusion remains (see, e.g., Burns, MacQuarrie, & Campbell, 1999; Coulter, 1988; Shapiro & Elliott, 1999; Shinn, Rosenfield, & Knutson, 1989). It is our position that much of this confusion is related to (a) a lack of clarity as to the original intentions and purposes of the different models of assessment and (b) the continued sharing of the generic title "curriculum-based."

As an example of such differences of purpose and intention, Fuchs's (2004) review of the history of CBM states that CBM was originally conceptualized as "an alternative approach for the purpose of progress monitoring" and adds that CBM slopes can be used to "quantify rate of learning ... gauge a student's

Figure 1. Gickling and Armstrong's (1978) original findings related to levels of challenge.
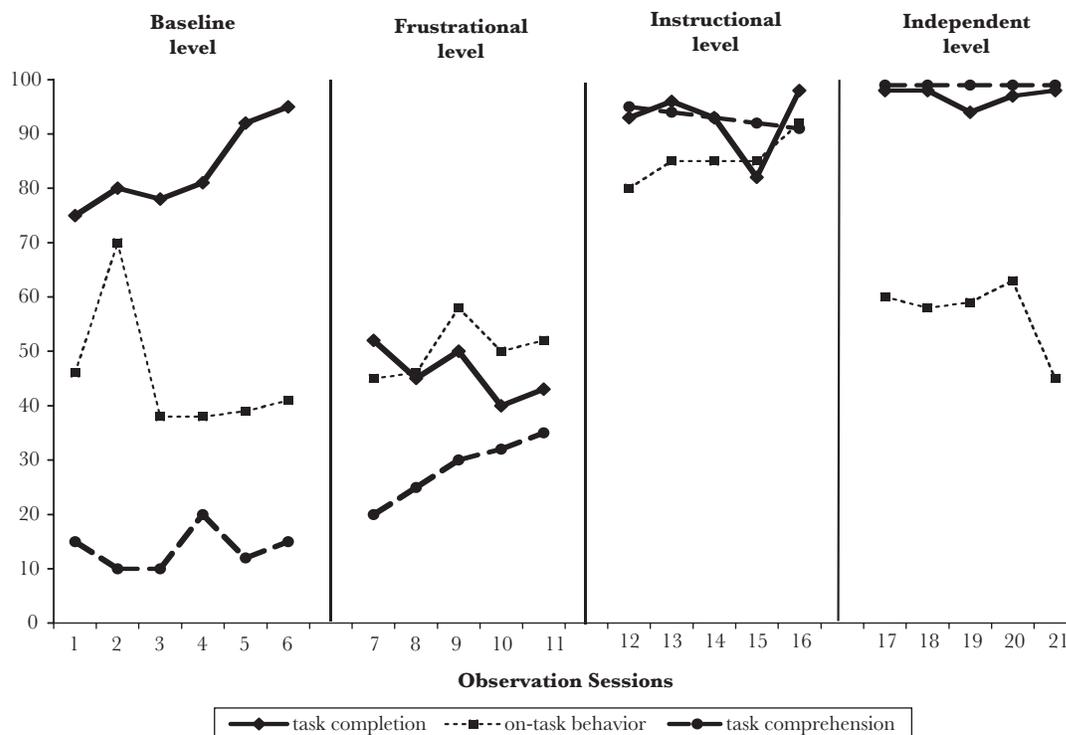
Note. Source: "Levels of Instructional Difficulty as Related to On-Task Behavior, Task Completion, and Comprehension," by E. E. Gickling, & D. L. Armstrong, 1978, *Journal of Learning Disabilities, 11*, 559–566. Copyright 1978 by PRO-ED, Inc. Reprinted with permission.

responsiveness to the instructional program and as a signal to revise the student's program when inadequate responsiveness is revealed'' (p. 188). The purpose then is to effectively monitor student progress with the intention of alerting educators as to when instructional programming requires change. Two primary contributions of CBM has been the establishing of psychometric properties of oral fluency measures and its validity in measuring student performance in the area of reading. However, while Fuchs notes that future research hopes to connect CBM as a measurement tool to instructional utility, such a purpose has not been established to date.

Conversely, Gickling defines the purpose of CBA as ''a system for determining the instructional needs of a student based upon the student's on-going performance within existing course content to deliver instruction as effectively and efficiently as possible'' (Gickling et al., 1989, p. 344). The intention of CBA is to guide ''the instructional process to provide the type of optimum learning conditions that are consistent with the effective teaching literature'' (p. 344). Hence, the major goal of CBA has been to use assessment for the purpose of ensuring high quality instructional practices, after which student progress can be effectively monitored, charted, and evaluated. It was then, and it is still now our view, that without first creating and ensuring optimal learning and teaching conditions, the measure of a student's progress (or lack thereof) will largely be predetermined.

It is not possible and nor is it the intention of this chapter to provide a detailed comparison between the various curriculum-based models of assessment and measurement. Instead, the point is to emphasize that each assessment method asserts different purposes. It is therefore the obligation of school psychologists and other educational professionals to distinguish between the purposes and match the appropriate assessment to the appropriate situation. However, to add clarity to the field we now prefer using the term *instructional assessment* (IA) rather than *curriculum-based assessment*, feeling that it is a more apt description of our work. While we continue to lay claim to the history and research that has provided the foundation of CBA, we believe that IA better represents Gickling's original intention and offers the field of school psychology clarity in communicating the work.

BASIC CONSIDERATIONS

Instruction and IA are grounded in the same effective learning and teaching principles. These principles must be systematically organized and managed to ensure optimum conditions for teaching and learning.

Figure 2. Seven instructional principles.
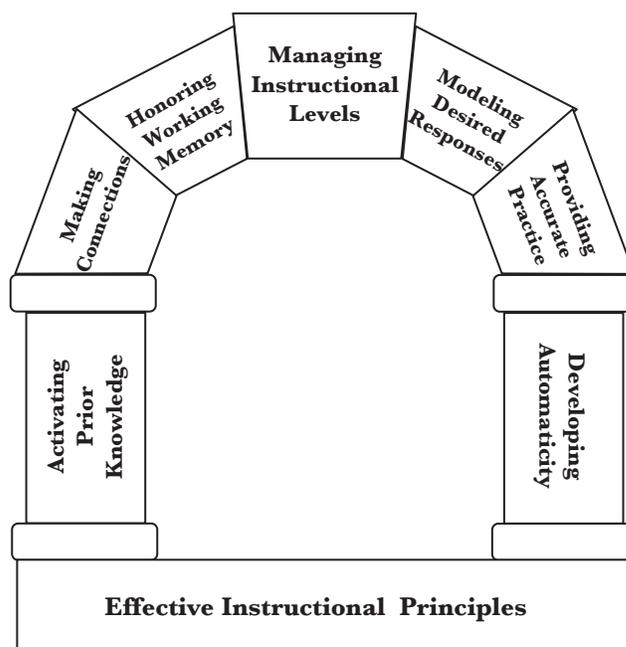
Note. Adapted from Gravois, Gickling, and Rosenfield (2007).

Principles of Quality Instruction and Assessment

Figure 2 provides a visual display of these principles in the form of a stone archway. The placement of each stone (or principle) represents key learning and teaching principles with the keystone, managing instructional level, being the centerpiece to effective instruction as well as for effective assessment. More than the mere presence of each principle, it is the practitioners' ability to manage these principles in an effective and strategic manner that produces the best conditions for both teaching and learning. If any single principle is violated, the remaining principles are insufficient to fulfill an effective instructional experience for either the teacher or the student.

Activating Prior Knowledge
Bloom (1976) stressed the need to attend to students' entry skills as the pivotal point for both instruction and assessment. After conducting numerous observations of teaching and learning, Bloom concluded that students were not graded based upon what they learn in particular courses of study. Instead, they were graded based upon their lack of prior knowledge before entering that course of study.

Prior knowledge is central to all learning. It refers to the skills and experiences that a student possesses and reflects the content skills and mental schemas that a student uses to connect new learning to existing knowledge (Shapiro, 2004). Wolfe and Brandt's (1998) research on prior knowledge is consistent with Bloom's (1976) concept that success in current learning is highly contingent upon a student's cumulative knowledge from experiences (see also Dochy, Segers, & Buehl, 1999). The lack of prior knowledge or inaccurate prior knowledge can have detrimental effects upon student learning (Shapiro, 2004). Further, Slavin (2003) suggests that students do not spontaneously use their prior knowledge. This implies that teachers need to actively engage students' prior knowledge and that an accurate assessment of a students' prior knowledge requires activation on the part of the assessor. While activating prior knowledge is increasingly recognized as an important part of effective instruction, its importance as part of the ongoing assessment process is frequently ignored and often violated. In contrast to traditional assessment practices that demand the same performance from all students regardless of prior skills or knowledge, IA deliberately attempts to honor and incorporate a student's prior knowledge into the assessment process.

Linking New Information to Known Information

Assessment and instruction are maximized when new information is strategically linked to prior knowledge. Building upon what a person knows is central to how the brain functions. The human mind constantly seeks to make meaningful connections between what is new and what is known (Wolfe & Brandt, 1998). Students lacking in prior knowledge and experience are easily overloaded with the amount of new information they are expected to learn and causes difficulties with making connections. For new information to be useful, the student must connect it with what they already know. Whenever the student is unable to connect new and known information, the new information becomes inaccessible, lacks meaning, and ultimately fades away (Crowley & Underwood, 1998).

Honoring the Limits of Working Memory

An assessment of prior knowledge helps to connect new and known information. However, the amount of new information that is presented must remain within the limits of the student's working memory. "Working memory is what you are paying attention to at any given point. So everything you are mulling over, making a decision about, or are learning, is at first in working memory" (O'Neil, 1996, p. 8). All new learning appears first in working memory. Before it is possible to organize and to store new information into long-term memory, it is processed first in working memory.

Research related to working memory has described various features that directly have an impact on a student's ability to effectively and efficiently process information (see, e.g., Dempster, 1981; Miller, 1956; Pascual-Leone, 1970). Specifically, working memory directly relates to instruction in that it (a) has a limited capacity that is developmental in nature and increases with age, (b) is short term in duration and requires undivided attention, and (c) will "shut down" when overloaded. While research recognizes that the limits of working memory remain fairly individualistic, the guidelines researched by Pascual-Leone (1970) and presented in Table 1 represent a good starting point when working with students.

As depicted in Table 1, the capacity of working memory gradually improves with age. For example, a 3-year old's working memory can retain about one new item at a time and the capacity increases to about seven new items (plus or minus two) for an individual 15 years and older (Miller, 1956). However, these ranges do not imply that first graders can learn only three new items per lesson. Instead, they suggest that instruction be strategically organized and delivered to present new information in limited sets so as not to overload working memory.

Introducing information beyond the range of a student's working memory can negatively affect the student's ability to retain and use new information. When overloaded, working memory loses its efficiency. Furthermore, if the new information is not actively engaged (i.e., rehearsed and practiced), working memory clears itself automatically. Finally, violation of working memory capacity does not only negate learning but often results in partial or fragmented learning.

Table 1. Researched Capacity of Working Memory by Chronological Age

Chronological age	Working memory capacity (Number of new items)
3	1
5	2
7	3
9	4
11	5
13	6
15 and older	7

Instead of connecting new information in a cohesive manner, students gain bits and pieces of information (Miller, 1956; O'Neil, 1996). Such fragmentation of learning can create difficulty for educators attempting to accurately assess students' prior knowledge.

Maintaining Instructional Levels

Central to achieving instructional success is the principle of creating and maintaining instructional level conditions for students. A successful instructional level confirms that the student has the prerequisite skill and knowledge to be successful, which in turn motivates the student to engage in the learning task (Borkowski, 1990; Meichenbaum & Biemiller, 1990).

Two types of instructional levels have been considered in the research related to the presentation of learning tasks. The first is related to a student's level of challenge when reading in connected text (i.e., reading narrative or expository text), and the second relates to a student working on discrete skills (i.e., spelling lists, math facts, letter identification). Betts (1946) first introduced the concept of instructional level as it related to reading performance. He noted that when students' accuracy of sight vocabulary (i.e., a combination of both sight recognition and word meaning) was within an approximate range of 93–97%, learning was enhanced and the effects of instruction were maximized (see Table 2). However, when the accuracy of sight vocabulary accuracy fell below 93%, overall reading comprehension began to deteriorate. Excessive challenge would often result in students becoming frustrated and instruction being ineffective. When sight vocabulary remained exceptionally high (98% or better), students had no difficulty reading but also were not necessarily challenged in new ways, a level identified as independent. Table 2 delineates ranges of known sight vocabulary when reading as a generally acceptable ratio to promote effectiveness of instruction and overall reading comprehension.

While Bett's original findings now permeate reading practice, it is interesting that only a handful of studies have been conducted to substantiate his research (see, e.g., Gickling & Armstrong, 1978; Leslie & Osol, 1978). A recent study by Cramer and Rosenfield (in press)

Table 2. Levels of Challenge for Comprehension and Practice Tasks

Levels of performance	Comprehension	Rehearsal and practice
Independent	98–100% known	90–100% known
Instructional	93–97% known	70–85% known
Frustration	Below 93% known	Below 70% known

provided additional support for Betts's work. An important finding from their study was the need to define instructional levels in reading by considering *both* word recognition and word meaning. Cramer and Rosenfield found that accuracy in word recognition alone (i.e., word calling), versus the more encompassing concept of sight vocabulary (i.e., word recognition and word meaning) remains insufficient to promote comprehension, especially when working with traditionally underserved populations (i.e., minority, urban).

The second area of research on instructional level relates to tasks that address discrete skills. Research originating during the 1970s and early 1980s extended the concept of instructional level to view the conditions necessary for drill and practice activities. Teachers who managed the amount of challenge successfully during rehearsal and practice activities at a ratio of 80% known to 20% unknown were consistently able to elevate student performance and retention (Archer et al., 1987; Shapiro & Elliott, 1999).

A review of the literature finds much more research focused on drill and practice activities than on reading comprehension. A number of these studies were designed to determine the so-called best ratio of known and unknown material for students (see, e.g., Burns, 2004; Gickling & Thompson,1985; MacQuarrie, Tucker, Burns, & Hartman, 2002; Neef, Iwata, & Page, 1980; Roberts & Shapiro, 1996; Roberts, Turco, & Shapiro, 1991). While results have generated varying best-fit ratios, the exact ratio remains elusive. Depending upon the study, student population, and the nature of the tasks being introduced, these studies have provided a range of ratios to use for achieving the best conditions for drill and practice instructional levels.

Table 2 presents the suggested ratio of 70–85% known items with 15–30% new information as a starting point in working with individual students during drill and practice task. While variation in these ratios has been presented in various research findings, any ratio below 50:50 known to unknown will likely be frustrating for students while ratios beyond 90:10 may not provide sufficient challenge.

Modeling Desired Responses

Students need to know what is desired of them within the learning situation. Modeling and demonstration by teachers of desired responses have the greatest impact if conducted after the preceding principles have been addressed (i.e., limits of working memory have been assessed and instructional level conditions established). Take, for example, the following statement from the

National Reading Panel (2000): "By listening to good models of fluent reading, students learn how a reader's voice can help written text make sense.... By reading effortlessly and with expression you are modeling for your students how a fluent reader sounds during reading" (p. 26). However, for students who struggle with reading and for whom the preceding principles have been violated, being presented a model of fluency will not likely provide success. That is, even with effective modeling of fluency by the teacher, if a student's entry reading skills are not matched effectively within instructional level conditions as described above, the student will not be able to apply the observed fluency skills and there is little chance that the modeling will produce the intended effects.

Providing Accurate Practice

The sixth principle of instruction is focused on helping students become accurate in gaining desired skills. There is substantial research dating back more than a century of the beneficial effects of corrective feedback on learning particularly for struggling students (Mason & Bruning, 1999). "Feedback helps learners determine performance expectations, judge their level of understanding, and become aware of misconceptions. It also provides clues about the best approaches for correcting mistakes and improving performance" (p. 2).

Practice enables students to engage in and to develop facility over the concepts and skills they are practicing. Acquiring and gaining facility in the use of new information and skill requires an adequate amount of repetition before this new information and skill become firmly implanted in a student's repertoire. Sufficient rehearsal and practice is needed for new words, language concepts, and information to work their way through working memory and become readily available in long-term memory. Table 3 depicts the number of repetitions that are needed to learn and retain new information in relation to students' ability (Gates, 1930; Hargis, Terhaar-Yonkers, Williams, & Reed, 1988). When investigating word skill development Hargis et al. determined that it does not matter if the word is decodable or not. It still takes 25–55 repetitions

Table 3. Repetition Requirements for Students

Ability	IQ	Repetitions
High	120	25
Average	100	35
Lower	80	55

for a new word to become instantly accessible as a sight word.

Developing Automaticity

Students also benefit from opportunities to elevate skill to levels of automatic performance, especially the fundamental skills associated with reading (see e.g., LaBerge & Samuels, 1974; Samuels, 1979, 2002). "According to the automaticity theory, a fluent reader decodes the text automatically—that is without attention—thus leaving attention free to be used for comprehension" (Samuels, 1979, p. 406). Samuels (1997) indicated that in the teaching of reading we "are often too eager to have children cover a year's work in a year's time, so that some children, especially those having difficulty with reading are moved too rapidly through a book, never having mastered a single page" (p. 380). Samuels contrasted the training and development of athletes and musicians to the development of readers; that is, struggling students need to be given sufficient practice time to not only become accurate but to become automatic in accomplishing each small step.

The importance of automaticity is equally true in the teaching of math. The recent position paper by the Mathematical Association of America (Loewenberg Ball et al., 2005) emphasizes a similar concept of proficiency within math. "*Proficiency*, as we use the term, includes both computational fluency and understanding of the underlying mathematical ideas and principles ..." and that "… certain procedures and algorithms in mathematics are so basic and have such wide application that they should be practiced to the point of automaticity" (p. 2, 3).

BEST PRACTICES

IA is specifically designed to align assessment with principles of quality instruction for the purpose of assisting in the creation of optimum learning and teaching conditions. The process of conducting an assessment has two phases. During the first phase, the assessor considers the principles of prior knowledge, working memory, and instructional level for the purpose of establishing optimum assessment conditions in which to observe the student's performance. Optimal assessment conditions are critical, otherwise "the quality of information is suspect when tasks are too difficult or too easy, when students do not understand the tasks or cannot follow the directions, or when they are to anxious to be able to do their best or even their typical work.... Requiring students to spend their time and effort on assessment tasks that do not yield high-quality,

useful information results in student's losing valuable learning time. Such a loss does not serve their interests and is thus an invalid practice" (International Reading Association & National Council of Teachers of English Joint Task Force on Assessment, 1994, p. 14).

Once optimal conditions are established, the assessor can then engage in observation and data collection to answer five relevant questions during the second phase (Gickling, 1998). These questions are:

- What does the student know?
- What can the student do?
- How does the student think?
- How does the student approach tasks that he or she is unsure of?
- What does the teacher do?

The following sections will detail the IA process as it applies to reading. First, we will review the critical dimensions to be assessed in reading, summarize the steps in the IA process, and finally we will provide a case sample that illustrates the process.

Dimensions of Reading

IA has embraced a core of professional practices that maintains a balanced perspective to reading and the reading instruction. The National Reading Panel (2000) has proposed broad dimensions critical in the teaching of reading: phonemic awareness, phonetic decoding, the vocabulary, fluency, and the development of comprehension strategies. These dimensions are incorporated and extended in IA by Gravois, Gickling, and Rosenfield (2007; see also Figure 3). Students' reading performance is viewed as much more than mastering a series of discrete skills. Instead it is a process of orchestrating various reading skills to efficiently and effectively derive meaning from text. Further, reading skills are viewed as interwoven and interdependent. The IA process is designed to assist the assessor (i.e., school psychologists, teacher) to manage the assessment process in an effort to determine how each student orchestrates his or her reading skills within and across these reading dimensions.

Comprehension and metacognitive strategies represent the defining and overarching dimensions of reading as displayed in Figure 3. Both contribute to, and directly result from, the effective application of the other five dimensions, including a student's language and conceptual understanding, word recognition, word study, reading fluency, and responding. For example, knowledge of individual words contributes to a student's

Figure 3. Dimensions of reading.
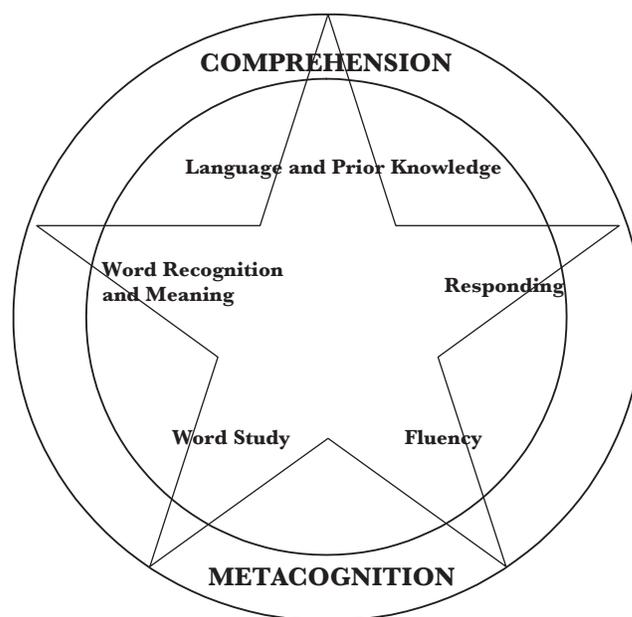
Note. From Gravois, Gickling, and Rosenfield (2007).

overall comprehension of the reading text. Likewise, being able to attack a limited number of unknown words successfully and to read fluently positively influences the student's ability to monitor and to understand what is read. Table 4 provides a working definition for each of the reading dimensions and a summary of questions to be answered for each dimension as part of the IA process.

Working within the student's comfort zone, the assessor's actions are directed at exploring a student's reading knowledge and skills within and across these dimensions. While the assessor may not be able to answer every question during one IA assessment session, the data collected should provide an effective starting point for working with the student and/or provide direction for additional assessments.

The IA Snapshot

IA should be thought of as a process and not as a singular event. Each time the assessor completes an IA with a student, it is viewed as one snapshot or sample of the student's reading performance. Each snapshot yields information that assists the assessor and teacher to guide the next snapshot and ultimately to make relevant instructional decisions. The number of snapshots conducted depends upon the assessor's ability to create instructional level conditions (i.e., manage the instruc-

Table 4. Reading Dimensions and Essential Questions

Essential dimensions	Essential questions
Language/prior knowledge The grammatical and broad range of experience that gives meaning to the student.	Does the student have adequate language, concepts, and experience to understand the text?
Word recognition The ability to identify, pronounce, and know the meaning of words that are linked together in print.	Does the student possess a sufficient sight-word pool to read and comprehend the selection?
Word study The use of organized approaches for unlocking words outside one's own sight vocabulary.	What strategies does the student use to unlock or figure out unknown words?
Fluency The speed of reading and the use of phrasing and expression during reading.	Can the student read with adequate speed and expression orally? How well does the student read silently?
Responding The ability to convey orally or in writing what was heard or read.	Can the student retell or write about what writing what was heard or read. was read accurately and effectively?
Comprehension The ability to confirm, predict, reflect upon, and retain the author's message.	Does the student grasp the meaning of what the author was conveying?
Metacognition The ability to monitor and to regulate one's own learning.	Does the student use specific strategies for monitoring his or her own learning?

tional principles) and the ability to gather sufficient data to answer the key assessment questions.

The steps associated with IA process are designed to achieve a specific outcome (see Figure 4). Phase I comprises three steps geared toward ensuring that the principles of effective instruction are adhered to and that the optimum conditions are created before having the student read. These steps also allow the assessor to begin observing certain reading dimensions. Once the reading conditions are optimal, phase II (steps 4–5) allows the assessor to focus on gathering data and observing the student's reading performance. The assessor makes strategic decisions throughout the IA process to ensure optimal conditions and to ultimately identify instructional targets.

Phase I: Creating Optimum Conditions

The purpose of IA is to assist teachers in delivering effective instruction within the classroom. As such, IA uses the curriculum materials of the classroom (i.e. current reading texts, novels, basal readers) as the content for the assessment. In considering which specific materials to have available for IA, the assessor should remain aware that a major dilemma frequently confronting teachers is that poor readers' language and conceptual skills are often *at or above* grade level while their ability to read are *below* expectations (Betts,

1946). This discrepancy between language and reading skills poses an equal dilemma for the assessor as to what materials to use for the IA.
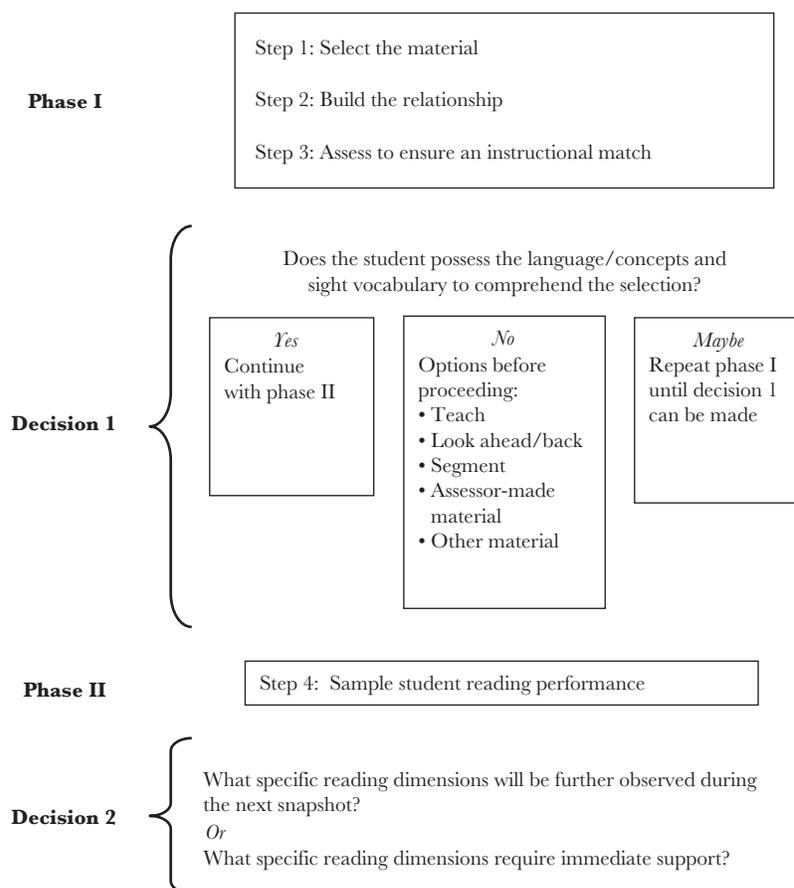
Step 1: Selecting Material
Since the IA process attempts to assess how a student orchestrates *all* of the reading dimensions, including a student's language and concept knowledge, the process begins with grade-level reading material (i.e., material expected to be read by grade-level peers) even if the student is currently assigned reading material below expected levels during daily instruction. However, if the student is currently reading in other than grade-level material, then samples of that material should also be available. Having the student's current reading material, as well as grade-level–expected text, allows the assessor a sufficient range of material to fully capture a student's knowledge and skills across all reading dimensions.

Step 2: Building a Relationship
If the assessor is unfamiliar with the student, the assessor should take time to establish a working relationship. The goal here is to build rapport with the student and talk directly about the reason for working together. The assessor explains to the student that IA is not to test him or her, but to find out what the he or she knows and what can be done to help him or her become a better

Figure 4. Instructional assessment snapshot.

Phase I

Step 1: Select the material

Step 2: Build the relationship

Step 3: Assess to ensure an instructional match

Decision 1

Does the student possess the language/concepts and sight vocabulary to comprehend the selection?

Yes	*No*	*Maybe*
Continue with phase II	Options before proceeding: • Teach • Look ahead/back • Segment • Assessor-made material • Other material	Repeat phase I until decision 1 can be made

Phase II

Step 4: Sample student reading performance

Decision 2

What specific reading dimensions will be further observed during the next snapshot?
Or
What specific reading dimensions require immediate support?

student. Even the most struggling reader wants to demonstrate what he or she can do and what he or she knows. This initial conversation also provides an opportunity to observe and assess the student's language skills and general prior knowledge.

Step 3: Assessing to Ensure an Instructional Match

Regardless of the estimated reading level suggested by the publisher of the text, there is often great variability in the readability levels within and between printed material (Doran & Fleischman, 2005; Lane, 1975; Popham, 2005). Before having the student read within the selected material, the assessor engages in two activities to assess the student's current language and sight vocabulary skills. The following activities also assist in determining whether the material will represent an instructional match in which the assessment process can continue.

Reading to the student (listening responding). The student's listening capacity and concept

familiarity with the curriculum being taught in the classroom (i.e., grade-level material) are assessed by reading to the student and then speaking with the student about what was read. After reading to the student, the assessor engages in a prompt hierarchy that begins with having the student retell without structured prompts from the assessor. The student is encouraged to "Tell about what was read" or "Tell what's happening so far in this story" or "Tell me more." The assessor then provides more structure for the student's response by providing aided prompts (i.e., Who? What? Where? When? Why?). The assessor continues to offer additional structure based upon the student's responses. These include providing forced-choice questions (i.e., "Was it hot or was it cold?"). Finally, in relation to the student's previous responding, the assessor can prompt the student to use visual clues or can reread text to further structure the student's responses. The assessor is observing the student's prior content knowledge, listening capacity, and oral language capacity to comprehend and respond to grade-level material. In particular, the assessor is observing the level of structure and support

that is required for the student to convey their understanding.

Since IA distinguishes overall comprehension (i.e., does the student understand what has been read aloud) from the student's ability to convey that understanding, the assessor is observing and collecting data not only on the student's knowledge but also the level of structure required to convey that knowledge (i.e., responding). Unfortunately, the reality of most classrooms allows only for aided responding by students. Students rarely are given opportunities to use and develop oral summarizing and retelling skills within the classroom. The instructional experience for most students consists of practicing and answering aided questions. The outcome is that many students become excellent at answering questions as a means to convey their understanding of text but are less skilled at retelling without structured guidance from the teacher.

Conducting a word search (sight vocabulary). The assessor begins to determine the student's sight vocabulary within the segment of text that follows the orally read passage. Being aware of the research on instructional level and information processing (Table 2), the assessor selectively points to words that the student has a high probability of knowing and intermittently points to words that appear more difficult. For most students, this translates to pointing to four to five basic sight words (i.e., *it, the, when, went*) and then a more difficult word (e.g., words with multiple syllables, irregular phonetic patterns), followed by pointing to easier words again. This 4:1 ratio of pointing to known and then unknown words allows the assessor to first gauge the student's word recognition while maintaining levels of challenge appropriate for working with discrete skills. Once the assessor determines that there is sufficient word recognition (i.e., 93–97%, Table 2), the word search can focus on word meaning. The assessor then points to strategic words or concepts and asks the student to describe the word's meaning or to use the word in a sentence.

The word search technique is quick, allowing the student only 2–3 seconds to say the word before moving to the next word when assessing word recognition. Students, when encountering unknown words, will often begin to use some form of word study (i.e., decoding, prefixes). The assessor should simply state, "We'll come back to it," and move immediately to a word that the student has a high probability knowing and resume the 4:1 ratio. The primary goal of the word search is to quickly assess the student's sight vocabulary (prior knowledge) in relation to the text. The temptation of both student and assessor to use and observe word study skills (i.e., decoding) is avoided during this step.

Assessment Decision 1

Steps 1–3 allow the assessor to decide whether the optimum conditions (see Tables 1 and 2) are present before continuing the assessment and having the student read. The specific decision question is: Does the student possess the language and conceptual background and the sight word vocabulary skills to comprehend the selection? If the answer is *yes*, then the reading assessment can continue within the current passage since the principles of quality instruction have been considered and established. If the answer is *maybe*, then the assessor can continue to conduct step 3 of the IA until sufficient information is available to make a decision. However, if the answer is *no*, then the assessment does not continue until the assessor takes additional steps to ensure an instructional match before continuing with the assessment.

While the most common option chosen by assessors for gaining an instructional match is finding lower grade-level material, IA encourages employing additional options first (Figure 4). For example, the first option, if the student's background knowledge of the content or sight vocabulary is only slightly limited, is to strategically teach the student the concepts or few sight words needed to elevate the passage to an instructional level. A second option in continuing the assessment is for the assessor to review the previous or following pages and select another passage within the same book that would meet the student's language and vocabulary needs. A third option is to use segments of the passage within the current text that contain vocabulary matched to the student's skill. A fourth option is to select alternative material that would match to the student's entry skills. A fifth option is for the assessor to use his or her knowledge of the student's sight vocabulary derived from phase I to create material that would be within the student's instructional level based upon the results of the word search. That is, the assessor could use the results of the word search to create a passage related to the existing content but composed of an appropriate ratio of known and unknown words. Such assessor-created material would provide the benefit of maintaining an instructional level but also provide material that remains related to the content of the original story.

The goal of each of these options is to create optimum conditions based upon effective instructional principles (e.g., Figure 2 and Tables 1 and 2). Since determining

challenge levels is only accomplished when task demands are considered in relation to the student's skills, these options enable the assessor to strategically manage the learning task and establish an instructional match before continuing with the assessment process.

Phase II: Answering the Assessment Questions

Once optimal conditions are established, the assessor has the student read aloud. The assessor observes the student's reading and records how the student orchestrates the reading process with particular attention to reading fluency, word study, and metacognitive strategies.

Step 4: Sampling Content Reading (Word Study and Reading Fluency)

Fluency can be represented by the rate at which the student reads (i.e., correct words per minute; see, e.g., Deno & Mirkin, 1977; Hasbrouck & Tindal, 1992). But fluency also refers to the prosodic features of spoken language: stress, pitch, variations, intonation, rate, phrasing, and pausing in the voice voices during oral reading (Rasinski, 2003). Word study refers to *any* strategy that the student uses to unlock words that are not quickly known by sight. The assessor analyzes a student's errors and observes to see if the student uses decoding strategies, context clues, or other means to gain understanding of particular words. Running records can be used to record the student's performance in these areas.

Assessing comprehension (reading responding). Assessing the student's reading responding follows the same sequence used for listening responding in step 3. After reading within optimal conditions, students are asked to retell with the assessor providing unaided questioning first, followed by aided questioning techniques to assess the student's general reading comprehension. Sampling the student's reading performance in this manner allows the assessor to observe and gather data related to the student's word-study strategies, fluency, and reading responding skills and to compare reading comprehension from both a listening and reading perspective.

Assessment Decision 2

For many struggling readers, the IA process represents the first time they have been observed reading under optimal conditions. This first IA snapshot though rarely provides enough information for the assessor and

teacher to choose an instructional focus. Instead, this first snapshot provides initial data about the student's reading performance that allows the assessor to guide subsequent assessments. At this point, the pressing decision question is: What specific reading dimensions will be further observed during the next snapshot? Once subsequent snapshots are conducted with additional observations and data collected, the assessor is ready to answer the question: What specific reading dimensions require immediate support?

The specificity of the assessment process, and the use of instructional level material to assure optimal performance, allows a clearer understanding of possible reading difficulties and, more important, the type of instructional strategies that can be used to support reading improvement.

Phase III: Teaching

The logical conclusion to the assessment process is to implement specific reading strategies to address the assessed areas of need while maintaining a balanced perspective with regard to the reading dimensions (Figure 3). The overriding goal of the assessment process is to manage the instructional principles (Figure 2 and Tables 1 and 2) by keeping all activities within the student's margin of challenge. The assessment process is naturally extended into the teaching process with a focus on maintaining and managing the same effective instructional principles while developing the dimensions of reading. The teacher targets the area(s) of need and continuously develops word identification, fluency, and comprehension skills concurrently using material that maintains an appropriate instructional match. The teacher's responsibility is to provide immediate feedback and to monitor and record progress frequently to ensure continued growth of the student's reading skills. The final decision question faced by the assessor/teacher is: What adjustments need to occur to ensure ongoing reading success?

Case Study

The following case study about a first-grade student named Taylor demonstrates the use of the IA process. Although a first grader was selected for this case, it is important to emphasize that the researched principles upon which IA is based, and the assessment process itself, are applicable to *all* grade levels and within *any* content. The IA process provides a structure for assessors to work with students across various ages, skill

levels, and curriculum content areas (see Gravois & Gickling, 2002, for a case study of the IA process for a struggling third grader). The current case study also highlights the importance of conducting IA with the teacher as an active participant.

Background

At the third marking period, the teacher described Taylor as a struggling reader. He was receiving reading instruction in the classroom and was also removed from the classroom for 30 minutes daily where he received reading support from a reading specialist. Taylor was described as a below grade-level reader, who had poor comprehension, low retention, weak decoding skills, and difficulties in spelling. Data from quarterly reading assessments showed that he had made very little progress since the beginning of the school year. His most recent reading assessment indicated that he read a beginning first-grade passage at 24 correct words per minute with 88% accuracy.

Several observations could be made about the presenting concern. First, most of the descriptions of Taylor were of things he could not do or did not know. Little information was provided about Taylor's existing skills or prior knowledge. The second observation was related to the data that were presented to support the expressed concerns. When reviewing the data, it was noted that at no point was Taylor's assessed perform-ance ever within optimal instructional conditions. Finally, the teacher could not provide specific informa-tion as to the types of instruction that Taylor was receiving in the reading support program. This last observation is consistent with many of our own experiences in working with struggling readers in that they receive out-of-class services but such services are rarely integrated or connected to the instruction provided within the classroom (see Slavin, 2003).

Phase I: Creating Optimum Conditions; Step 1: Selecting Material

The teacher provided the basal reader being read by first grade peers as well as little books being used by Taylor's reading group. The teacher also indicated that she read a chapter each day from a novel as part of her whole-class instruction. The assessor asked the teacher to make the chapter book available for the assessment as well.

Step 2: Building a Relationship

Taylor was told the purpose of the assessment, which was that the assessor and teacher wanted to help him

become a better reader and to help his teacher to become a better teacher. It was explained that the purpose of the assessment was to "Look for what he knew and what he could do." Taylor was also told that if something was too difficult or confusing to not worry, because we wanted to "Look for what he knew and could do." During this discussion Taylor volunteered information about his hobbies (i.e., he likes to ride bikes and play) and explained that he had a baby sister and an older brother. He was also able to describe how instruction occurred in his reading class. He explained that his teacher would read from the chapter book each day and then ask questions. She would read a page and then stop and ask someone a question. During reading he worked in a small group with four other students and pointed to the book they used (i.e., the little book). He also explained that when he went with his other teacher (i.e., the reading specialist) for reading that they worked on letters, sounds and completed worksheets.

Step 3: Assessing to Ensure an Instructional Match

The assessor chose to use the chapter book to conduct the first part of the assessment. The chapter book provided a more comprehensive story in which to observe Taylor's listening skills compared to the little books that only had one or two sentences per page.

Reading to the student (listening respond-ing). The assessor began by asking Taylor to summarize what it was he remembered from the previous chapters. Taylor was able to describe the plot of the story, referred to the characters using pronouns (*he, she*), and told the last thing that happened. He was able to provide names of characters and the setting when provided aided questions. He was also able to make a prediction when aided with: "What do you think will happen in the next chapter?"

After reading a selection from the new chapter, Taylor was able to retell the characters and events. With aided questions, he could provide additional detail about the setting, and make an inference about what the character was feeling. Because Taylor was able to provide enough information through unaided and aided questions, the assessor did not employ forced-choice or visual-referent questions.

Conducting a word search. Even though the chapter book would be too difficult for Taylor to read, the assessor chose to conduct the word search in that text. This is possible since the assessor would be able to

control the level of challenge by strategically pointing to known and unknown words within a 4:1 ratio. Further, the chapter book provided many more words to assess his sight word vocabulary than the little books, which had fewer than 25 words total.

The assessor first pointed to small structural words (*I, to, a, the*) and then pointed to high frequency words (*that, went, what, had, they*). The 4:1 ratio of known to unknown words was always used. As the word search continued, the assessor had the teacher record a list the known words from the chapter book. The assessor then conducted the word search in the little books using the same technique.

Interestingly, the amount of vocabulary in the little books was also considered frustration level. For example, there were a total of 15 words in the first little book. However, Taylor only knew three of the words when conducting the word search. Taylor's known words in the second little book was somewhat better but still considered frustration level (6 known out of 22 total words).

The word search was a learning experience for the teacher. The teacher had always assumed that the level of these little books was supportive of Taylor's reading, but quickly recognized that these books remained outside of the conditions that would be considered instructional level. At the end of the word search the following list of words were recorded by the teacher:

To	had	in	I	the	at	went	a	he	we
and	she	my	on	said	book	into	look	she	

Assessment Decision 1

After conducting phase I activities, the teacher and assessor agreed that Taylor's language and general prior knowledge skills were sufficient to interact with most first grade content. In addition, Taylor's ability to respond to the orally read text was judged by the teacher to be at or above the level of most students. The teacher highlighted the fact that Taylor remembered and could retell the previously read chapters and commented that many students would not have provided as much detail in their responses.

It was decided that Taylor's sight vocabulary was not sufficient to allow success in reading any of the available text, and so the assessor and teacher reviewed the options available before continuing the assessment (see Figure 4). The first option, teaching Taylor two to three words (his working memory range), would not sufficiently elevate any of the text to his instructional level. Likewise, the efforts of finding a different book that would likely have sufficient known sight vocabulary was

not a viable option considering the assessment experience with the existing little books. The option chosen was to use the known words recorded during the word search to create a new story within the instructional level conditions (i.e., teacher made).

Step 4: Sampling Content Reading

Taylor was asked to return to class while the teacher and assessor developed a story that would allow the assessment to continue. The following story was written in less than 10 minutes and provided the necessary conditions to continue the assessment. This story was written using the known words recorded from the word search and included three unknown words and estimated to have approximately 95% known words. It is noted that the underlined words were considered unknown.

> Look! Look at my book!
> "Look at my book," said Taylor.
> "I <u>see</u> the book," said <u>Mom</u>.
> "My book is <u>big</u>," said Taylor.
> "I <u>see</u> the <u>big</u> book," said <u>Mom</u>.
> <u>Mom</u> and I look at my <u>big</u> book.
> "Look in my book," said Taylor.
> "I <u>see</u> in the book," said <u>Mom</u>.
> <u>Mom</u> and I look into my <u>big</u> book.

Upon returning, Taylor was told that his teacher and the assessor had written a story just for him. He was told that the story was special since it had many words that he already knew and only a few new words. Although Taylor initially appeared apprehensive, he began to read the story aloud. He read with expression, providing emphasis when encountering punctuation (exclamation mark, quotes). His voice also showed inflection when reading the dialogue. When Taylor encountered new words, he used decoding to correctly read *big*. He initially said *mother* for *Mom*, but quickly self-corrected. He made no errors and read the passage in 45 seconds (78 words per minute).

Assessing comprehension (reading responding). The next step of the process was to assess Taylor's responding. Taylor was able to retell the entire story with no prompting. When asked what title he might give the story, he responded, "Taylor's Book."

Assessment Decision 2

The assessor and Taylor's teacher then engaged in a discussion as to which reading dimensions would be a focus for future snapshots. The teacher reflected on how

her picture of Taylor had changed. When the assessment started, she described Taylor as a student who had very few reading skills. After one snapshot under instructional level conditions, she observed that he had skills at responding, both in listening and reading, that when reading text at an instructional level he demonstrated fluency (both rate and quality), and that he was applying many appropriate word study strategies such as decoding and using context clues. The decision was made to conduct additional IA snapshots with an emphasis on further assessing Taylor's sight vocabulary. Specifically, attention was focused upon the sight recognition component of sight vocabulary.

Three additional snapshots were conducted and results were consistent with the first. The remaining snapshots used teacher made stories as the option necessary at assessment Decision 1. In each instance Taylor continued to read without error and consistently employed effective word study strategies to unlock unknown and new words. His fluency remained in the 65–85 word per minute range throughout the snapshots. During the final two snapshots, Taylor was taught how to do his own word search with published text. He was told to scan (i.e., look but do not read) at a page and put his finger on a word he knew and could pronounce. With practice, Taylor was able to quickly look at a page of any published book and identify words that he could pronounce and knew what they meant. This process resulted in a recorded list of 55 known words by the end of the final snapshot.

Step 5: Teaching

Results of the IA snapshots highlighted the area of word recognition for strategic instructional support. Taylor was taught how to conduct his own word search to help identify words that he knew. By using the word search the teacher was able to be strategic in designing and delivering instruction for Taylor. The teacher now had an understanding of Taylor's sight vocabulary (prior knowledge), an understanding of how many new words could be effectively introduced in both reading and practice (working memory), and how to manage reading tasks in the range of 95% known (instructional level).

Follow Up to Taylor

The teacher used the experience of the IA process to design and deliver instruction for Taylor and his entire reading group. Instruction for his reading group over the next several weeks was designed to gradually move these students from working in teacher-made material to working in published text. At first, the teacher had

Taylor and his peers conduct their own word search in targeted books. Using the known words from these books, the teacher strategically created stories written at each student's instructional level (95% known). She introduced new words within these stories that corresponded to the published text in the targeted books. In addition, the teacher used drill and practice activities (i.e., drill sandwich with seven known words and three new words) to further all students' sight vocabulary development. After 2 weeks of practice activities and teacher-made stories, Taylor worked successfully in the next published story with the rest of his class. This process was repeated two more times after which Taylor and his reading group were fully integrated back into published class material.

SUMMARY

The IA process is based upon established researched principles of learning and teaching that allows school psychologists and educational professionals to gain an accurate picture of a student's current knowledge and skills. IA is best practice because it provides an assessment method that results in the implementation of sound instructional strategies that produce positive growth in student performance. Since IA honors students' prior knowledge and their capacity to interact with new information, the results also provide the necessary information to create optimal teaching and learning conditions within the classroom setting.

While the underlying principles of IA can be applied to all curriculum content areas, this chapter highlighted its application to the area of reading. By utilizing the basic steps of IA, a school psychologist is able to select appropriate material, assess the student's performance within instructional level conditions, and identify the dimensions of reading requiring immediate support. The specificity of the results assists school psychologists, teachers, and other professionals to design, implement, and evaluate instructional strategies targeting the needed areas.

For school psychologists, the use of IA requires an increased understanding of the role of assessment for instructional decision making, especially during Tier 1. IA requires that school psychologists be open to incorporating assessment techniques that go beyond determining deficiencies within the individual students or simply monitoring and comparing performance among students. The successful integration of IA into the school psychologists' repertoire of skills will also require the development of consultation skills, which will

allow the IA process and results to be effectively and collaboratively shared with teachers.

However, a word of caution: While the IA process represents a valuable tool for school psychologists, the value and impact of any knowledge and skill is intimately linked to the school psychologist's ability to effectively give it away. Most school psychologists are painfully aware that it is easier to engage in conversations that focus on student variables than to converse about the impact of instruction on student learning. The ability of school psychologists to create an atmosphere in which instruction can be discussed requires more than knowledge about learning and assessment as presented here. Conversations about instruction require the capacity to build effective, collaborative, and professional relationships that can sustain reflection and result in professional growth and learning for all involved. (See Rosenfield, chapter 15, vol. 5, for these relationship skills and see, e.g., Knotek & Sandoval, 2003, for literature on consultee-centered consultation.) Without addressing both the content of instruction and assessment outlined in this chapter, and establishing a collaborative relationship with the teacher, school psychologists will find it difficult to effectively engage in meaningful work that enhances the quality of instruction students receive.

REFERENCES

Archer, A. L., Adams, A., Ellis, E. S., Isaacson, S., Morehead, M. K., & Schiller, E. P. (1987). *Working with mildly handicapped students: Design and delivery of academic lessons*. Reston, VA: Council for Exceptional Children.

Betts, E. A. (1946). *Foundations of reading instruction*. New York: American Book.

Bloom, B. S. (1976). *Human characteristics and school learning*. New York: McGraw-Hill.

Borkowski, J. (1990, May). *Moving metacognition into the classroom*. Paper presented at the Conference on Cognitive Research and Instructional Innovation, University of Maryland, College Park.

Burns, M. K. (2004). Empirical analysis of drill ratio research: Refining the instructional level for drill tasks. *Remedial and Special Education*, *25*, 167–175.

Burns, M. K., MacQuarrie, L., & Campbell, D. (1999). The difference between curriculum-based assessment and curriculum-based measurement: A focus on purpose and results. *Communiqué*, *27*, 18–19.

Coulter, W. A. (1988). Curriculum-based assessment: What's in a name? *Communiqué*, *18*(3), 13.

Cramer, K., & Rosenfield, S. (in press). Effect of degree of challenge on reading performance. *Reading and Writing Quarterly*.

Crowley, G., & Underwood, A. (1998, June 15). Memory. *Newsweek*, 38–39.

Dempster, F. N. (1981). Memory span: Sources of individual and developmental differences. *Psychological Bulletin*, *89*, 63–100.

Deno, S. L., & Mirkin, P. K. (1977). *Data-based program modification: A manual*. Reston, VA: Council for Exceptional Children.

Dochy, F., Segers, M., & Buehl, M. M. (1999). The relation between assessment practices and outcomes of studies: The case of research on prior knowledge. *Review of Educational Research*, *69*, 145–186.

Doran, H. C., & Fleischman, S. (2005). Challenges of value-added assessment. *Educational Leadership*, *63*, 85–87.

Fuchs, L. S. (2004). The past, present, and future of curriculum-based measurement. *School Psychology Review*, *33*, 188–192.

Gates, A. (1930). *Interest and ability in reading*. New York: Macmillan.

Gickling, E. E. (1998). *Instructional training manual*. Unpublished manuscript.

Gickling, E. E., & Armstrong, D. L. (1978). Levels of instructional difficulty as related to on-task behavior, task completion, and comprehension. *Journal of Learning Disabilities*, *11*, 559–566.

Gickling, E. E., & Havertape, J. R. (1981). Curriculum-based assessment. In J. A. Tucker (Ed.), *Non-test-based assessment*. Minneapolis, MN: National School Psychology Inservice Training Network, University of Minnesota.

Gickling, E. E., & Rosenfield, S. (1995). Best practices in curriculum-based assessment. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology III* (pp. 587–595). Bethesda, MD: National Association of School Psychologists.

Gickling, E. E., Shane, R. L., & Croskery, K. M. (1989). Assuring math success for low-achieving high school students through curriculum-based assessment. *School Psychology Review*, *18*, 344–355.

Gickling, E. E., & Thompson, V. P. (1985). A personal view of curriculum-based assessment. *Exceptional Children*, *52*, 205–218.

Gravois, T. A., & Gickling, E. E. (2002). Best practices in curriculum-based assessment. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 885–898). Bethesda, MD: National Association of School Psychologists.

Gravois, T. A., Gickling, E. E., & Rosenfield, S. A. (2007). *IC Teams: Training in instructional consultation, assessment, and teaming*. Catonsville, MD: ICAT Resources.

Hargis, C. H., Terhaar-Yonkers, M., Williams, P. C., & Reed, M. T. (1988). Repetition requirements for word recognition. *Journal of Reading*, *31*, 320–327.

Hasbrouck, J. E., & Tindal, G. (1992). Curriculum-based oral reading fluency norms for students in grades 2 through 5. *Teaching Exceptional Children*, *24*, 41–44.

International Reading Association & National Council of Teachers of English Joint Task Force on Assessment. (1994). *Standards for the assessment of reading and writing*. Newark, DE: Author.

Knotek, S., & Sandoval, J. (2003). Consultee-centered consultation [Special Issue]. *Journal of Educational and Psychological Consultation*, 14.

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology*, *6*, 293–323.

Lane, K. S. (1975). *The modified Dale-Chall Formula: A statistical comparison with two other readability formulas on intermediate level basal readers*. Unpublished master's thesis, University of Tennessee, Knoxville.

Leslie, L., & Osol, P. (1978). Changes in oral reading strategies as a function of quantities of miscues. *Journal of Reading Behavior*, *10*, 442–445.

Loewenberg Ball, D., Ferrini-Mundy, J., Kilpatrick, J., Milgram, R. J., Schmid, W., & Schaar, R. (2005). *Reaching for common ground in K–12 mathematics education*. Washington, DC: Mathematical Association of America. Retrieved January 17, 2007, from http://www.maa.org/common-ground/welcome.html

MacQuarrie, L. L., Tucker, J. A., Burns, M. K., & Hartman, B. (2002). Comparison of retention rates using traditional, drill sandwich, and incremental rehearsal flash card methods. *School Psychology Review*, *31*, 584–595.

Mason, B. J., & Bruning, R. (1999). *Providing feedback in computer-based instruction: What the research tells us*. Retrieved July 23, 2006, from http://dwb.unl.edu/Edit/MB/MasonBruning.html

Meichenbaum, D., & Biemiller, A. (1990, May). *In search of student expertise in the classroom: A metacognitive analysis*. Paper presented at the Conference on Cognitive Research and Instructional Innovation, University of Maryland, College Park.

Miller, C. A. (1956). The magic number seven, plus or minus two: On our capacity for processing information. *The Psychological Review*, *63*, 81–97.

National Reading Panel. (2000). *Report of the National Reading Council* (NIH Publication No. 00-4745). Washington, DC: U.S. Government Printing Office.

Neef, N. A., Iwata, B. A., & Page, T. J. (1980). The effects of interspersal training versus high-density reinforcement on spelling acquisition and retention. *Journal of Applied Behavior Analysis*, *13*, 153–158.

O'Neil, J. (1996). On emotional intelligence: A conversation with Daniel Goleman. *Educational Leadership*, *54*, 6–11.

Pascual-Leone, J. (1970). A mathematical model for the transition rule in Piaget's developmental stages. *Acta Psychologica*, *32*, 301–345.

Popham, J. W. (2005). Can growth ever be beside the point? *Educational Leadership*, *63*, 83–84.

Rasinski, T. (2003). *The fluent reader: Oral reading strategies for building word recognition, fluency, and comprehension*. New York: Scholastic.

Roberts, M. L., & Shapiro, E. S. (1996). Effects of instructional ratios on students' reading performance in a regular education program. *Journal of School Psychology*, *34*, 73–91.

Roberts, M. L., Turco, T. L., & Shapiro, E. S. (1991). Differential effects of fixed instructional ratios on students' progress in reading. *Journal of Psychoeducational Assessment*, *9*, 308–318.

Samuels, S. J. (1979). The method of repeated readings. *The Reading Teacher*, *32*, 403–408.

Samuels, S. J. (1997). The method of repeated readings. *The Reading Teacher*, *50*, 376–381.

Samuels, S. J. (2002). Reading fluency: Its development and assessment. In A. Farstrup & S. Samuels (Eds.), *What research has to say about reading instruction* (pp. 166–183). Newark, DE: International Reading Association.

Sanders, W. (1998). Value-added assessment. *The School Administrator*, *55*(11), 24–27.

Shapiro, A. (2004). How including prior knowledge as a subject variable may change outcomes of learning research. *American Educational Research Journal*, *41*, 159–189.

Shapiro, E. S., & Elliott, S. N. (1999). Curriculum-based assessment and other performance-based assessment strategies. In C. R. Reynolds & T. B. Gutkin (Eds.), *The handbook of school psychology* (3rd ed., pp. 383–408). New York: John Wiley.

Shinn, M., Rosenfield, S., & Knutson, N. (1989). Curriculum-based assessment: A comparison of models. *School Psychology Review*, *18*, 299–316.

Slavin, R. E. (2003). *Educational psychology: Theory and practice*. New York: Pearson Education.

Thompson, V. P., Gickling, E. E., & Havertape, J. F. (1983). *The effects of medication and curriculum task-related behaviors of attention deficit disordered and low achieving peers*. Phoenix, AZ: Arizona State University.

Tucker, J. (1985). Curriculum-based assessment: An introduction. *Exceptional Children*, *52*, 199–204.

Virginia Department of Education. (2005). *Instruction-based assessment: Where have we been and where have we yet to go?* Richmond, VA: Author.

Wolfe, P., & Brandt, R. (1998). What we do know from brain research? *Educational Leadership*, *56*, 8–13.

Wright, S. P., Horn, S. P., & Sanders, W. L. (1997). Teacher and classroom context effects on student achievement: Implications for teacher evaluation. *Journal of Personnel Evaluation in Education*, *11*, 57–67.