Despite evidence that secondary students who record notes perform better on recall measures and tests (Barnett 2003; DiVesta and Gray 1973; Kiewra 1985), most students are not explicitly taught how to record notes. Few, if any, students are given instruction on note-taking techniques and effective note-taking skills to enhance their own learning (Suritsky and Hughes 1996). In addition, the classroom environment or lecture may not prompt students to record and produce complete notes (Austin, Lee, and Carr 2004). These findings are troubling because research has shown that notes serve as the primary means of capturing lecture content (Suritsky and Hughes 1991) and that lecture information is directly linked to teacher-made tests, which often compose half of the student’s grade (Putnam, Deshler, and Schumaker 1993). Those students who are effective note takers or who are trained in note taking will more likely perform better on classroom tests than those students who used conventional note taking (Boyle 1996; Boyle and Weishaar 2001; Horton, Lovitt, and Christensen 1991; Lazarus 1991; Saski, Swicegood, and Carter 1983).

The Process of Note Taking

The note-taking process is a complex set of tasks. During a lecture, note taking can be quite challenging for most students because it involves using listening, processing, and writing skills simultaneously or shifting back and forth between these skills. For students with mild disabilities (MD) (e.g., learning disabilities [LD], mental retardation [MR], or emotional/behavioral disabilities [E/BD]), note taking can become overwhelming (Rowe 1976). When Suritsky (1992) interviewed students with disabilities about their note-taking skills, she found multiple problems. In her study, these students reported that they had difficulty deciding which important lecture points to record, recording notes quickly enough to keep up with the teacher, and maintaining attention to the lecture. These problems come as no surprise and illustrate the point that students, particularly those with MD, should be given explicit training in note taking to learn these skills and strategies and practice to integrate the coordination of these skills. Note taking is viewed as a process that begins prior to the lecture and ends after students review their notes. Understanding this process can help teachers and parents better prepare students for note taking.

Preparing Students to Learn

Prior to the start of the lecture, students should prepare to learn. As they enter the classroom, they should find a seat with a good view of the teacher and blackboard. If they have visual problems or difficulty copying information off the board or overhead, they should sit close to the front of the room. As they prepare to record notes, they should mark the current date and the
topic of discussion on the page. Noting the date and topic are key aspects of preparation because they will help students locate information more easily. If time permits, students may want to jot down some information about the topic to activate prior knowledge. For some students, the topic itself stimulates thoughts and memories. For example, if the topic is frogs, many students have already begun recalling thoughts from prior knowledge and their experiences, good and bad, with frogs. Whether they are thinking about the frog they caught at camp or the one they recently dissected in science class, because their thoughts are on the current topic, these ideas will personalize their notes for the day. Finally, part of the preparation process involves making sure that students have sufficient writing utensils and paper available so that they do not have to interrupt learning by searching for more.

During the Lecture

Once the lecture begins, students must use listening skills to attend to the important points of the lecture and then relate, or assign meaning to them (Kiewra 1985; Suritsky and Hughes 1996). By assigning meaning, students have to initially concentrate on and understand the main points of the lecture. Focus (i.e., on both the teacher and topic) is a key aspect of the listening process and involves using selective attention to receive the visual (the teacher and the notes on board or overhead) and auditory cues (the teacher’s voice). Attention to the teacher allows the student to listen to relevant lecture points. Moreover, by having students add details as they record notes, the content becomes more meaningful to them (Kiewra 1985). Those notes must be meaningful and understandable for students to effectively review them for an upcoming test or quiz. If not, they will have to spend additional time refining the notes through clarification, organization, or elaboration. More about this topic is in the following review stage of note taking.

As students hear lecture information, they begin to process the information to make it understandable and personalized. Paraphrasing is the most common method of personalization, whereby students record lecture notes in their own words (Suritsky and Hughes 1991). This technique involves using an abbreviation method that can help them record more complete notes (Hughes and Suritsky 1994). However, some students frequently use other deeper processing techniques (Bretzinger and Kulhavy 1979) to help them understand content or concepts, including elaboration and relating new information with prior knowledge (Craik and Lockhart 1972). Students should not try to record notes verbatim because this method is the least effective and most detrimental to learning (Hughes and Suritsky 1994). Instead, the key to becoming an effective note taker involves recording important lecture points in an organized manner as completely as possible (Kiewra 1985).

Cognitive processing of the information begins prior to the actual lecture as students set up and prepare to take notes. In most cases, they have already begun thinking about the topic. Cognitive processing involves distinguishing between essential and nonessential lecture information, determining foreign terms or unknown vocabulary, storing bits of lecture information in short-term memory long enough to accurately record it, and paraphrasing and elaborating on the main points (Kiewra et al. 1991). For many students, difficulty with any of these steps results in fewer or less complete lecture points recorded (Aiken, Thomas, and Shennum 1975). The ability to pick and choose the only important ideas, and then supplement them with details, is one key to processing notes efficiently (Kiewra 1985). For students with MD, determining these points is one of the most difficult aspects of the note-taking process (Suritsky 1992); however, teachers can improve this area by using cued lecture points. This technique is effective because students are more likely to record cued points than noncued points (Hughes and Suritsky 1994).

As students process the information from the lecture, they must also accurately record it. Writing notes involves recording information in a succinct, yet usable format. When notes are too sparse, the information may not be understandable later: if the have too much detail, the student may miss other relevant lecture points because they are too busy recording previous information. Recording important lecture points at a reasonably fast rate to keep up with the lecturer is key (Kiewra 1985). Using shorthand or abbreviations is a plus to recording notes efficiently, as is organization. This skill should be taught to students with MD because research has shown that they use far fewer abbreviations than their nondisabled peers (Hughes and Suritsky 1994).

After the Lecture

The last step in the note-taking process, which is often overlooked, is a review of notes after the lecture. Whether it occurs immediately after class or when studying notes for a test, the review process is an important one (Lazarus 1991; Suritsky and Hughes 1996). However, for some students, this task can have pitfalls. Research has shown that some students with MD are not aware that they should review notes; others are aware but simply do not review their notes (Suritsky and Hughes 1996). Reviewing notes often means looking over them immediately after class to fill in gaps, clarify poorly understood concepts, or correct spelling and handwriting legibility. For many students, reviewing notes is often the step missing from their note-taking repertoire. Yet, this step could allow
poor note takers to compensate for their inadequacies (Suritsky and Hughes 1996). The key during this step is to review notes immediately after class. The topic is still fresh and the review then becomes part of a routine for students. For example, students could compare their notes to fill in the gaps and complete various lecture points. They could also use their textbook to elaborate or expand class information. In doing so, students can add examples from the textbook to concepts in their notes. This technique will also enhance their understanding of the information they read in the textbook.

In other cases, they could use a review activity that links parts of notes to headings (Porte 2001). In summary, there are several keys to multitasking during the note-taking process. Initially, students should prepare by locating a seat where they can see the board and teacher and recording the date and topic on their notes. During the listening stage, they should focus on the topic and be given cued lecture points (or other attention-getting techniques such as questioning) to help them maintain this attention. During the cognitive process stage, students should record relevant information and then add details to personalize the content. Being able to recognize the instructor’s cues is an important skill for students trying to determine relevant lecture points. These cues vary from teacher to teacher and may be the reason why some students take better notes in certain classes. During note taking, students should be able to write the relevant lecture points at a sufficiently fast pace and in an organized manner.

If the information is initially presented in an organized manner, they can simply record the notes in a chronological or hierarchical order. Finally, immediately after the lecture, students should review their notes for gaps or areas of misunderstanding. If teachers allot five minutes for this task prior to the end of class, it could become part of a daily routine.

**Teachers Helping Students**

Because recording notes presents multiple opportunities to learn the information (e.g., once in class and later as they review or study their notes for a test), teachers should try to maximize these opportunities. The more that teachers do to present the crucial information in a clearly organized manner, the easier it will be for students to understand it and record notes.

During the listening and cognitive processing phases, teachers should present information in a way that gets students to focus on the important aspects of the lecture, which will help them record more notes. For example, simply writing important lecture points on the board can increase the likelihood that the same information will be found in students’ notes. In one study, students recorded up to 88 percent of the lecture information when it was written on the board (Locke 1977). Verbal signposts or lecture cues have also been shown to result in a greater number of notes recorded by students. Signposts (or lecture cues) are those statements used to alert students to important points. For example, “an important point to remember is” or “there are six parts to a cell.” This lecture cue alerts students that there will be six parts mentioned and that they should label their notes one to six. Because students with MD tend to record more cued lecture points than noncued points (Hughes and Suritsky 1994), teachers should use them to ensure that students record essential information. These cued points have resulted in students recording a greater number of notes and higher achievement (Maddox and Hoole 1975). Pausing or changing verbal intonation can also signal an important lecture point to students. Typically, the lecturer’s pause indicates to students that they should be writing down the information.

In terms of helping students during the cognitive processing phase, organizing information and relating it to previously learned content helps them understand the information in their notes. A number of studies (Howe 1974; Schultz and DiVesta 1972) have shown that organization aids students in recording clearer and a greater number of notes. In addition, researchers have found organized notes result in greater student achievement. Although some students may be able to organize information presented in a disorganized form, if teachers organize information prior to the presentation, they can be assured that students will spend more time recording notes and less time organizing information. Other organizational techniques include cognitive organizers, study guides, strategic note taking, PowerPoint slides, and guided notes (Austin, Lee, and Carr 2004; Boyle 1996, 2001; Boyle and Weishaar 2001; Boyle and Yeager 1997; Lazarus 1991).

Many strategies can help students record more notes. Teachers can use abbreviations and teach students shorthand to help them write faster. These techniques will help students record more notes (Hughes and Suritsky 1994). Slowing down the rate of the lecture is another technique that can aid students. Placing pauses in lectures also allows them to catch up and record more (Ruhl, Hughes, and Gajar 1990; Ruhl, Hughes, and Schloss 1987; Ruhl and Suritsky 1995). Researchers (Aiken, Thomas, and Shennum 1975) have conducted studies in which the instructor alternated sections of their lecture between listening (students simply listened to the lecture) and note taking. This method can reduce the pace of a lecture and, in the process, allow students to take more and higher-quality notes. Using designated pauses during the lecture also allows students to review their notes with another student. Typically, in the pause procedure, students are paired together and, at natural breaks in the lecture, are given a two-minute break to discuss main points in their notes with a partner. Research indicates that
students whose teachers used the pause procedure increased their recall and comprehension of lecture information (Ruhl, Hughes, and Gajar 1990; Ruhl and Suritsky 1995).

Incorporating a review of notes allows students to fill in gaps and helps them understand information. Reviewing notes immediately after recording them has also been shown to be effective at increasing comprehension. For example, Lazarus (1991) had a review period following student use of guided notes. This condition produced the greatest comprehension of the lecture. Regardless of the procedure used, research has shown that reviewing notes results in greater gains (Hartley 1983; Kiewra 1985).

In conclusion, although note taking is a complex process, teachers can help students become better note takers through a number of lecture modifications and explicit training. By helping students attend to important lecture information, students will record more notes. Through cues or signposts, teachers can highlight those points that students need to record. By preorganizing lecture information into categories, teachers can help students see the logical sequence and connections between lecture ideas and content. By using abbreviations and teaching students how to abbreviate, teachers can help them record more notes. Finally, by stressing the importance of reviewing notes, teachers can help students create accurate and complete notes that can later assist them during study periods.

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