Whether students for whom English is a second language are receiving ESL services or are studying in the mainstream classroom, there are instructional considerations which are essential in comprehending the content of subjects such as math, science, and social studies. The purpose of this Bulletin is to provide teachers with suggestions for assisting English language learners (ELLs) in comprehending the distinctive language characteristics of the various content areas.

GENERAL SUGGESTIONS FOR TEACHING CONTENT TO ENGLISH LANGUAGE LEARNERS

1. Reading and writing are a part of content instruction; therefore, teachers need to be sensitive to the unique ways in which written language conveys meaning in specific content areas. Early grades typically focus on "learning to read and write", while the later grades emphasize "reading and writing to learn". This, however, masks the fact that learning content involves specific use of language. For example, science uses the language of observation, identification, description, investigation, and explanation, whereas math uses logical connectors to express similarity, contradiction, cause and effect, and chronological or logical sequence. Although such specific language is challenging for native users of English at grade level, it is particularly daunting for ELLs. As a result, content teachers at all grade levels need to be aware of the special use of written languageto convey ideas.

2. Schema elaboration is crucial for transmitting content comprehensibly. There are several ways any content can be rendered more comprehensible to ELLs: activation of background knowledge (e.g., webbing); focus materials (e.g., prepared study sheets); speech adaptations (e.g., modified questioning); group processing (e.g., assigning partners); checks for understanding (e.g., 'wh' questions); summarizing activities (e.g., learning logs); learning resources (e.g., reference materials); graphic organizers (e.g., graphs, charts); lesson modification strategies (e.g., copying teacher notes); and assessment options (e.g., projects). There are numerous, varied options for presenting content in contextualized ways as a bridge to comprehending context-reduced, cognitively demanding language.

3. Learning strategy development must accompany all instruction. Metacognitive strategies (i.e., planning and monitoring one's learning and evaluating how well learning has been achieved), cognitive strategies (i.e., mentally manipulating the material to be learned), social
strategies (i.e., interacting with others in learning), and affective strategies (i.e., monitoring one's emotions in the learning process), encompass a myriad of strategies which ELLs can acquire directly through instruction to become more independent learners.

4. Developing the critical thinking skills of analysis, synthesis, and evaluation through problem-solving tasks and activities simultaneously improves ELL language development and content knowledge. Analysis (i.e., the relationship of parts to the whole), synthesis (i.e., the combination of ideas for a particular purpose), and evaluation (i.e., judging significance or worth) are important skills for learning intended meanings and purposes. These skills, in effect, are crucial for ELLs to master in order to use to use language critically and efficiently.

SPECIFIC SUGGESTIONS FOR TEACHING CONTENT TO ENGLISH LANGUAGE LEARNERS

Space does not allow for an in-depth discussion of the discourse (grammar and vocabulary) of specific content areas; however, the following provides an outline of general considerations for mathematics, science, and social studies.

Mathematics. There are four basic areas in mathematics: concepts, computation, applications, and problem-solving. In each of these areas there is special grammar and vocabulary (e.g., the square of the quotient of a and b) which can alter the cognitive demand of mathematics from easy (e.g., simple computation) to difficult (e.g., word problems). Among the specific characteristics of mathematics are that it is conceptually dense; requires up-and-down as well as left-to-right eye movements; requires a slower reading rate; requires multiple readings; uses a variety of symbolic devices; and contains a great deal of technical language with precise meaning.

Science. Science has an inquiry-based, problem-solving orientation in which students learn to define a problem, state a hypothesis, gather data, analyze it, and make statements relating the hypothesis to the data. The opportunities for ELLs to use the language of science in a labora-
tory setting are varied and require listening, speaking, reading, and writing.

A textbook-based science approach contains abstract ideas which are developed by the use of logical connectors such as because, however, consequently, and for example. These connectors can be very difficult for ELLs to comprehend.

The language of science is complex and needs to be presented in context, not in isolated lists; and the more physical engagement there is in dealing with scientific concepts, the greater the potential for these concepts to be learned.

Social Studies. Social studies can play an important role in further acculturating English language learners into U.S. society. The content of social studies expands the U.S. experience of the students, and provides further insights into the values that shape the society, as well as the U.S. relationship with the rest of the world. The spirit of independence, the sense of individualism, the characteristics of government institutions, and individual responsibilities within the framework of freedom are examples of the cultural characteristics manifested through the content of social studies. Comparison and contrast with ELLs' cultures and a careful attention to prior knowledge are two important suggestions that teachers must consider. In addition, semantic webbing, Directed Reading Thinking Activity (DRTA), SQ4R (Survey, Question, Reading, Reciting, Recording, Reviewing), and paraphrasing and summarizing are techniques which greatly help ELLs to comprehend the cognitively demanding, context-reduced nature of social studies content.

In summary, content area instruction for ELLs must be addressed from a variety of perspectives, including the specific meaning conveyed in written language, schema elaboration, learning strategy development, and critical thinking. Not only is content information important, but the language through which the content is taught is equally important.

SOURCES: