

Science Classroom Strategies for Limited English Proficient Students

Science teachers, who provide instruction to limited English proficient (LEP) students, must ensure that these students make academic progress while they are in the process of learning English. LEP students have to meet the same goals and objectives as students who are non-LEP. Whenever possible, beginning level LEP students should be provided content instruction in the home language of the students. However, when content instruction is provided in English, it must be made comprehensible through appropriate second language instructional strategies and clear expectations. Modifications for LEP students should include diverse teaching strategies. When assessing acquisition of content knowledge, students should not be penalized for lack of language proficiency. To support teachers of all subject areas in choosing effective strategies when working with LEP students in their classes, the following suggestions are provided. It is important to remember that these strategies should be introduced, extended, and expanded throughout all the levels according to the students' academic and linguistic abilities, and their interests.

At the beginning level, teachers should:

- start by linking lesson topics to students' prior knowledge;
- provide opportunities for students to learn and respond to the usual classroom; directions, for example, "raise your hand," or "put your name in the upper-right-hand corner," and extend those opportunities to commands dealing with science concepts;
- use repetition and consistency to monitor comprehension of instructions and gestures;
- use cooperative learning groups where independent students and/or students at more advanced levels of language proficiency can assist beginning students;
- use visual aids and manipulatives, label classroom items; match words with pictures, items, colors, and symbols that contribute to better comprehension of content lesson(s);
- provide opportunities for students to hear and practice the content language of science through the context of hands-on and cooperative experiences;
- categorize words, concept and ideas, which provide "hooks" for learning; and
- assign a learning buddy or mentor.

At the intermediate level, teachers should:

- include all strategies outlined for beginning level students;
- encourage students to ask questions to clarify their understanding;
- use concrete materials, hands-on activities, visuals, and real objects to provide multiple access and variety of multi-sensory approaches to learning;
- show students how to use graphic organizers to identify prior knowledge, prepare study guides, and restructure prior knowledge;
- provide books, articles, and other resources on content topics and teach students how to use them;
- show students how to ask and answer higher-level questions about content;
- teach and have students use technical vocabulary appropriate to the content of mathematics and science; and
- provide explicit instruction on how to use and/or develop diaries, math/science journals, projects, or picture collages.

At the advanced level, teachers should:

- include all strategies outlined for beginning and intermediate level students;
- provide clear examples of finished products when making assignments for book reports, class logs, lab reports, and research assignments related to science; and
- check student comprehension by asking students to explain what they have heard or read and where they have seen words, phrases, or situations dealing with mathematics and science.

In general, it is recommended that teachers of LEP students:

- increase their knowledge of second language acquisition and development as it relates to teaching students the academic language of science;
- adapt content, teaching techniques, and assessment to students' needs and levels of learning;
- encourage students to ask questions to clarify their understanding;
- involve parents and community members to build understanding through cultural exchanges;
- obtain background information about students' language and culture to ensure better understanding of students; and
- speak clearly and at normal pace with normal stress and intonation.