

## Attaining High Levels of Proficiency: Challenges for Foreign Language Education in the United States

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### Introduction

Recent events have highlighted America's security, military, diplomatic, and business need for individuals who can speak and understand languages other than English. In fact, the September 26, 2001, report of the House Permanent Select Committee on Intelligence states that language is the single greatest need in the intelligence community. Former Senator Paul Simon (2001) has pointed out, "Today, some 80 federal agencies need proficiency in nearly 100 foreign languages. While the demand is great, the supply remains almost nonexistent. Only 8% of American college students study another language."

Not surprisingly, if relatively few individuals learn languages other than English, even fewer learn them to high levels of proficiency. Yet, high levels of proficiency in all languages are crucial for meeting national needs. In order to achieve these language proficiency goals, significantly greater resources are required, particularly in the higher education community. There is great promise in the progress made to fill the need for resources in a number of languages, but the challenge is still great, given the number of languages and the investment needed to attain high levels of proficiency. In this paper, we investigate the adequacy and availability of new pedagogical methods and tools, information technologies, and testing proce-

dures for language training for achieving high levels of proficiency. The purpose of this paper is to discuss the successes and challenges of current approaches while suggesting new ways to help develop high-level speakers of foreign languages in the United States.

### Developing High Proficiency Levels

In the language teaching field, the term *high-level learner* traditionally refers to a level of 3 or higher on the 5-point Interagency Language Roundtable (ILR) scale or *Superior* or above according to the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines. A learner at the *Superior* level can "communicate in the language with accuracy and fluency in order to participate fully and effectively in conversations on a variety of topics in formal and informal settings" (American Council on the Teaching of Foreign Languages, 1999), while a learner at the higher *Distinguished* level "begins to approach the level of an educated native speaker" (Leaver & Shekhtman, 2002). In addition to demonstrating a high level of language proficiency, speakers at these levels possess the academic and discourse skills, such as the ability to hypothesize and persuade, that would be expected of any educated person in the target culture.

The U.S. postsecondary education system offers opportunities for students to develop language proficiency through language, literature, and cultural studies. However, the typical undergradu-

ate program offers only 3 contact hours per week, which, after 2 years, yields at most 180 hours of instruction. Even the *Advanced* level of proficiency (one level below *Superior*) can take up to 720 hours to achieve; to acquire proficiency at the *Superior* level in a language such as Russian, the Foreign Service Institute estimates that a minimum of 1320 hours is required (Omaggio-Hadley, 2001).

### Pathways to Proficiency

Despite the need for individuals with high levels of proficiency in a range of languages, there is little in the literature on how best to develop such speakers. Many instructors lack the training and background necessary to conduct proficiency-oriented courses to take learners from *Intermediate*-level competence to the *Advanced* level, let alone from *Advanced* to *Superior* or higher. However, there are several possible approaches to developing high-level language learners among the American population:

- building on the language background of heritage speakers
- starting language learning early to build a strong basis for second, third, and even fourth language learning
- providing intensive immersion experiences for students at the postsecondary level, including overseas study in a target-language culture

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# Attaining High Levels of Proficiency

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These pathways, preferably in combination, increase the likelihood that learners will develop high levels of proficiency.

## Pedagogical Approaches

If the United States is to develop highly proficient speakers of foreign languages, we must expand the number of Americans studying foreign languages, especially the less commonly taught languages (LCTL), and offer the types of classroom and out-of-classroom experiences that help individual learners build high levels of expertise. These are some approaches that may further this goal:

- Offering intensive summer institutes, such as those offered by Middlebury College ([www.middlebury.edu/lis/introduction.html](http://www.middlebury.edu/lis/introduction.html)) and the University of Wisconsin (<http://wiscinfo.doit.wisc.edu/seassi/>)
- Expanding curricular offerings, especially in professional subject matter areas (e.g., offering courses such as engineering and business in the target language) (see, e.g., Angelelli & Degueudre, 2002)
- Providing overseas study to immerse learners in the language and culture, such as programs in China that include content courses in Chinese and internships with Chinese organizations (see Kubler, 2002)
- Developing materials for upper-level students, such as the computer-mediated tutorials to teach *Advanced* skills in Russian that were developed at the University of Wisconsin-Madison
- Offering comprehensive programs in selected languages, such as those supported by the National Flagship Programs ([www.nflc.org/news/press\\_releases/FundingOfLanguageInitiativeAtFlagshipUniversities.htm](http://www.nflc.org/news/press_releases/FundingOfLanguageInitiativeAtFlagshipUniversities.htm))

## Technology

A number of different technologies, including distance-learning

courses, encourage and support the development and maintenance of high levels of proficiency. The World Wide Web brings authentic language and cultural experiences to the student. The Internet provides opportunities for students to interact with native speakers, to access culturally appropriate, high-level reading and listening texts, and to conduct research in their areas of expertise. Distance learning can combine texts, videos, CD-ROMs, and synchronous and asynchronous use of the Internet in effective ways, as exemplified by advanced online courses for Chinese, Japanese, and Korean developed at the University of Hawaii.

## Resources

The availability of resources for the LCTLs has increased steadily, but they remain especially hard to find for advanced language levels. A positive difference has come with the establishment of 14 federally funded language resource centers to strengthen the capacity of the language education community for both teachers and learners. For example, the Language Acquisition Resource Center at the University of San Diego has established the Center for the Advancement of Distinguished Language Proficiency, to build national capacity in developing near-native language proficiency, through direct instruction, materials development, publications, research, and faculty development. Another important resource is the database of LCTL course offerings (postsecondary and K-12) maintained by the Center for Advanced Research in Language Acquisition at the University of Minnesota, making it possible to identify schools and colleges where LCTLs are being taught. Information about textbooks and other materials in LCTLs is collected by the Language Materials Project at the University of California, Los Angeles. The International Research and Studies Program of the U.S. Department of Education has also been a major supporter of the development of

textbooks, course materials, dictionaries, and grammars for the LCTLs. Over 1,200 projects have been funded, most providing the core materials that many departments and centers now use for advanced language skills instruction.

## Assessments

To work toward the goal of developing high levels of proficiency in learners, we must also find ways to determine when learners have reached these levels. Some assessments measure high levels of proficiency, but they are not widely available. The U.S. government's oral proficiency interview (OPI) reaches beyond ACTFL *Superior* to ILR levels 4 and 5, but training for this test is limited in access. Similarly, a number of U.S. government agencies test listening and reading beyond the ACTFL *Superior* level. However, such tests are not released for reasons of national security and cannot be administered to university students. In addition, there are fewer trained OPI testers in the less commonly taught languages than in the commonly taught languages, and still fewer tester trainers to train new testers in LCTLs. Some initiatives are beginning to fill the gaps in assessment. For example, the Center for Applied Linguistics is developing a Web-delivered test of listening and reading proficiency in Arabic and Russian that will cover the range of *Novice* through *Superior* levels of proficiency. But many gaps remain.

## A Case Study: What Works in Russian

Russian is one LCTL in which some students have attained high levels of proficiency. The following sequence of courses and educational opportunities has proved successful in Russian:

- A solid foundation in Russian grammar, syntax, and pronunciation taught within a proficiency-oriented course progression at the beginning and intermediate levels

- Summer immersion experiences within the United States
- Established study abroad programs in Russian-speaking countries
- Fourth-year courses (offered on campus) in Russian, not necessarily limited to literary discussions
- Extended residency in Russia after graduation

Although the above-mentioned Russian course sequence is available at some institutions, the full sequence is not offered at most institutions. In addition, the critical fourth-year, post-study abroad course is often not available; this leaves students without a viable language course after the study abroad experience. Even with all these advantages, Russian language programs in American institutions routinely graduate students with only *Intermediate-level* oral proficiency.

### Challenges

Many challenges remain:

- Effective pedagogical approaches, such as intensive language programs in the United States and study abroad, need to be made available, affordable, and feasible for many students. Currently, early language programs are not widely available; study abroad is financially difficult for many students.
- Insufficient numbers of instructors have adequate training in language teaching or high levels of proficiency themselves.
- Although technology can improve the efficiency of language learning and can increase the number of listening and reading texts to which students are exposed, there is little incentive for university faculty to develop instructional software to enhance high-level learning. Technology costs are also problematic.

- Although diverse resources have been developed, adequate resources for the full course sequence are still unavailable in many languages.
- Few assessments are available to test high levels of language proficiency in many languages.
- Currently, there are few incentives for students to study LCTLs, nor are there adequate incentives to institutions to offer LCTLs.

### Recommendations

Language educators have made progress toward increasing student proficiency in many languages through technology, materials, and resource centers. Although more progress is needed for all languages to increase the number of students who reach high levels of proficiency, it is important at this time to focus on LCTLs in order to address current national interests. In order to increase the pool of students who complete language programs with high levels of proficiency, we must have a large pool of learners from which we can draw. Thus, we need to

- clarify and disseminate definitions of high levels of proficiency;
- support the development and use of more tests that measure high levels of language proficiency;
- provide incentives to K-12 school districts to develop well-articulated, sustained learning sequences beginning at the lower grades;
- support heritage language learning;
- provide incentives for students to attain high levels of proficiency;
- provide support to institutions that offer LCTLs;
- support teacher quality in foreign language teaching (K-12 and university faculty) across all languages;

- support effective and essential approaches to developing high levels of language proficiency; and
- research “what works” in language teaching and learning.

### Conclusion

The need for proficient foreign language speakers is clear in the context of national interests and security. The cost of ignoring this need has already been felt, and the situation will become even more urgent if sufficient planning and resources are not allocated to develop a language-proficient society that includes individuals with high levels of proficiency in critical languages.

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Symposium on the Development of Native-like Foreign Language Proficiency

<http://www.distinguishedlanguagecenters.org/symposium.htm>

## new products

### Teaching Spanish to Spanish Speakers: Online Resources for Professionals

This new ERIC/CLL Web page ([www.cal.org/ericcll/sns/](http://www.cal.org/ericcll/sns/)) provides links to publications, Web sites, projects, and events related to the teaching of Spanish to Spanish speakers.

### New ERIC/CLL Digests

Digests are short reports that synthesize current research, review the literature, describe teaching methods and program models, and offer practical ideas for teachers and others. These are our newest titles:

- *English Language Learners and High-Stakes Tests: An Overview of the Issues*
- *Heritage Spanish Speakers' Language Learning Strategies*
- *Interactive Language Learning on the Web*
- *Model Early Foreign Language Programs: Key Elements*
- *Nonnative-English-Speaking Teachers in the English Teaching Profession*
- *Textbook Selection for the ESL Classroom*
- *Thematic Literature and Curriculum for English Language Learners in Early Childhood Education*
- *Working With Young English Language Learners: Some Considerations*

These Digests can be read online at [www.cal.org/ericcll/digest](http://www.cal.org/ericcll/digest). To request a hard copy of a Digest (only one copy per title), mail one self-addressed stamped (55-cent) business-sized envelope for every five Digests to:

ERIC/CLL  
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### New Resource Guides Online

Resource Guides Online include information on and links to resources on specific topics in language education: ERIC/CLL publications, publications from other sources, Web sites, discussion forums, conferences, and abstracts of relevant ERIC documents. These two Resource Guides Online have been added to our Web site:

- American Sign Language (<http://www.cal.org/ericcll/faqs/rgos/asl.html>)
- TESOL Certification (<http://www.cal.org/ericcll/faqs/rgos/tesol.html>)

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### New ERIC/CLL Partner: AAAL

ERIC/CLL is pleased to welcome the American Association for Applied Linguistics as our newest partner. ERIC partners are organizations that have agreed to help promote ERIC, disseminate ERIC information through their newsletters and journals, enhance the ERIC database through the addition of relevant documents, and provide feedback on and suggestions for our products and services.

## partner news

### Center for Advanced Research on Language Acquisition (CARLA)

#### Eighth Annual Summer Institute Program

Linking research and theory with practical applications for the classroom, the CARLA Summer Institute workshops include discussion, theory building, hands-on activities, and networking with colleagues. This year's institute will include workshops such as the following:

- Material Development for Less Commonly Taught Languages
- Developing Assessments for the Second Language Classroom
- Styles- and Strategies-Based Instruction
- Immersion 101: An Introduction to Immersion Teaching
- Using Technology in the Second Language Classroom

<http://carla.acad.umn.edu/summerinst.html>

#### New Publications From CARLA

*Maximizing Study Abroad: A Students' Guide to Strategies for Language and Culture Learning and Use* is aimed at students who want to make the most of their study abroad experience. This flexible and user-friendly guide helps students identify and use a wide variety of language and culture learning strategies. Students can use this guide as they prepare for study abroad, during their experience, and after they return.

<http://carla.acad.umn.edu/working-papers.html#Maximizing>

*Maximizing Study Abroad: A Program Professionals' Guide to Strategies for Language and Culture Learning and Use* is designed to broaden program coordinators' understanding of language and culture learning and offers a wide variety of flexible ideas for improving pre-departure, in-country, and re-entry initiatives for study abroad programs.

<http://carla.acad.umn.edu/working-papers.html#professionalsguide>

## partner news

### National Capital Language Resource Center

#### New Publication

*The Elementary Immersion Learning Strategies Guide* describes how to incorporate learning strategies into an existing immersion curriculum in Grades K–6. Includes sample lesson plans. **\$13.50**  
[info@nclrc.org](mailto:info@nclrc.org)

### Center for Research on Education, Diversity & Excellence (CREDE)

#### New Publications

*A National Study of School Effectiveness for Language Minority Students' Long-Term Academic Achievement* reports on a groundbreaking study of language minority students in five U.S. school districts. The study examined student performance across different language program designs. This report describes the study, provides extensive data and analysis, and offers thought-provoking implications for educational policy at all levels. **\$25.00** <http://www.cal.org/store>

*Two-Way Immersion 101: Designing and Implementing a Two-Way Immersion Education Program at the Elementary Level* draws from over 15 years of research on two-way immersion programs. This report describes essential features of all two-way programs and variable features for which practitioners must make deliberate programmatic decisions. **\$5.00** <http://www.cal.org/store>

## news from cal

### New Culture Profiles

Designed primarily for service providers and others assisting refugees in their new communities in the United States, these booklets by CAL's Cultural Orientation Resource Center provide a basic introduction to the people, history, and cultures of specific refugee populations.

- *The Somali Bantu: Their History and Culture*  
<http://www.culturalorientation.net/bantu/>
- *The Montagnards (of Vietnam): Their History and Culture*  
<http://www.culturalorientation.net/montagnards/>

### New Publications from the National Center for ESL Literacy Education

*Adult English Language Instruction in the 21st Century*, researched and written by NCLE staff members Carol Van Duzer and MaryAnn Cunningham Florez, provides an overview of the field of adult English as a second language (ESL) instruction in the United States today. This publication describes trends and issues in areas such as program design and instructional practices, assessment, and integration of research and practice. <http://www.cal.org/nclc/languageinstruction.htm>

*NCLNotes* (v 11, n2). The Winter 2002-2003 issue of *NCLNotes* offers articles and resource updates that focus on assisting adults learning English for the workplace and community. In addition to favorites such as The Book Shelf and News Notes, this issue includes reviews of both new and classic resources.

<http://www.cal.org/nclc/Nnotes112.pdf>

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American Association of Teachers of Spanish and Portuguese  
American Council on the Teaching of Foreign Languages  
Center for Research on Education, Diversity & Excellence  
Central States Conference on the Teaching of Foreign Languages  
Japan Association for Language Teaching  
Linguistic Society of America  
National Association for Bilingual Education  
National Capital Language Resource Center  
National Clearinghouse for English Language Acquisition  
The National Council of State Supervisors of Foreign Languages  
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# Making Content Connections Through Foreign Language Instruction via GLOBE

Teresa J. Kennedy, University of Idaho

*"To study another language and culture gives one the powerful key to successful communication: knowing how, when, and why, to say what to whom."* (National Standards in Foreign Language Education Project, 1996, p.11)

The national standards for foreign language education are organized around five main goal areas—communication, cultures, connections, comparisons, and communities—each of which contains two or three content standards. This article describes an international project that can be used by language teachers to incorporate the two content standards of the connections goal area into their teaching by integrating academic content instruction with second language instruction. According to the national standards, "Learning languages provides connections to additional bodies of knowledge that are unavailable to monolingual English speakers" (National Standards in Foreign Language Education Project, 1996, p. 27). The two standards of the connections goal challenge foreign language educators to insert a more interdisciplinary approach into their teaching:

- Standard 3.1. Students reinforce and further their knowledge of other disciplines through the foreign language.
- Standard 3.2. Students acquire information and recognize the distinctive viewpoints that are only available through the foreign language and its cultures.

These standards imply that the foreign language should be a medium of instruction for academic disciplines such as mathematics, science, and social studies. Using the foreign language as a vehicle for teaching and acquiring subject specific knowledge is an effective way of integrating language learning with content area instruction.

## Content Integration

The integration of language and content instruction offers students the opportunity to continue their academic and cognitive development while improving their proficiency in a foreign language. Two common areas for integrating content with language study are mathematics and science.

Reilly (1988) describes the language of mathematics as having its own special vocabulary, syntax (sentence structure), semantic properties (truth conditions), and discourse (text) features. Instructional activities for math should promote language development through a natural, subconscious process that focuses on the concepts, processes, and applications of mathematics. These activities should build on

students' real-life experiences and prior knowledge and allow ample opportunities for social interaction. Lessons should utilize graphics, manipulatives, and other concrete materials that clarify and reinforce meaning.

Science, on the other hand, generally concentrates on concepts and relationships developed through observation, identification, description, experimental investigation, and theoretical explanation of natural phenomena. Students observe, classify, compare, measure, infer, predict, and find space and time relationships. The integration of mathematics and science into the language classroom provides a rich context for genuine language use. Moreover, such meaning-centered methods help students master science, mathematics, and language skills (Minicucci, Berman, McLeod, Nelson, & Woodworth, 1995).

## The GLOBE Program

The GLOBE program (Global Learning and Observations to Benefit the Environment) provides an excellent means for language teachers to integrate science—and other subjects such as mathematics, technology, and social studies—into their instruction (Kennedy, 1999; Kennedy & Canney, 2000). GLOBE is a worldwide, hands-on, school-based science program that provides students the opportunity to learn by—

- following identified GLOBE protocols to take scientifically valid environmental measurements of the atmosphere, bodies of water, and areas of land at or near their school.
- reporting their data to the GLOBE data archive via the GLOBE Web site or email.
- creating maps, graphs, and visualizations of data using free software tools available from the interactive GLOBE Web site, to analyze their data sets and make comparisons to data sets gathered by their peers.
- collaborating with scientists and other GLOBE students around the world through inquiry-based research projects based on their local data collections.
- publishing and disseminating their research at international expeditions and on the GLOBE website.

GLOBE participants include over a million students in more than 13,000 schools from more than 100 countries. GLOBE is an interagency program of the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the Environmental Protection Agency (EPA), and the U.S. Department of State. GLOBE students

collect atmospheric, hydrologic, geologic, and biometric data from their school's 90 x 90-meter study site in order to monitor conditions in their local community and make comparisons with other schools around the world. They report their data via the Internet to the GLOBE network, to scientists at NASA, and to other scientists around the world who incorporate GLOBE data with information received from satellites in order to verify or "ground truth" the information received from the satellite imagery. GLOBE students have reported data from over 9.3 million science measurements in the areas of atmosphere/climate, hydrology, soils, and land cover/biology.

## Using GLOBE with Second Language Learners

GLOBE is the perfect standards-based venue for students to conduct science projects and compare their results with those of other GLOBE students around the world. The GLOBE program can bring virtually every classroom in a school together to work on a single project with other students and scientists on an international level. Although GLOBE's primary focus is science, it also provides students of a second language with authentic opportunities to communicate in the language they are studying. Science serves as a focal point around which oral language and literacy can develop (Kennedy, 1999).

For example, teachers and their students can communicate with other GLOBE classrooms by clicking on the country of their choice on the world map found on the GLOBE Web site. With each click of the mouse, a more in-depth view of the country appears until finally, a representation of all the GLOBE-participating schools in that country is displayed, with a dot representing each school. By clicking on a dot for a particular school, students can examine the location of the school to make seasonal comparisons, view the school's data (e.g., weather measurements such as temperature, cloud type, and cloud cover), and ask specific questions of their peers at that school. These interactions provide the perfect venue for authentic language use outside the language classroom, consistent with all five goal areas of the national foreign language standards. Extension activities could include watching a weather report in the target language and later creating weather forecasts that can be video-taped or presented in front of the class.

GLOBE also conducts periodic Web chats in participating countries. These provide opportunities for spontaneous communication in the target language, helping students develop conversational skills that will enable them to discuss and further their collaborative research. For example, one Web chat that was conducted in Spanish featured Professor Juan Carlos Fallas Sojo, a meteorologist and university professor at

the University of Costa Rica. The discussion centered on El Niño and its effects, particularly in Central America. Students from many different schools in both South America and the United States participated. Many different dialects of Spanish were used, exposing students to a broad learning community.

## **GLOBE as a Tool for Interdisciplinary Study**

The GLOBE Teachers' Guide, as well as materials such as cloud and soil charts, instructional slides, and Web pages, provide language teachers with content curriculum that can be incorporated into their classrooms. Because GLOBE partners represent over half the countries in the world, with schools on every continent, in every time zone, and representing virtually every type of biome, the program naturally provides many resources for language teachers. Authentic materials ready for classroom implementation are available in all six United Nations' languages (Arabic, Chinese, English, French, Russian, and Spanish), and at least part of the GLOBE Teacher's Guide is now available in Dutch, German, Greek, Hebrew, Japanese, and Thai, with many other materials becoming available in other languages through GLOBE's international partners. GLOBE students are introduced to other languages and cultures as they engage in authentic projects and meaningful discussions with one another, with students in other countries, and with world experts in the disciplines they are studying.

GLOBE provides language teachers with a vehicle for integrating a wide range of disciplines, such as the arts and humanities, music, photography, and language arts. Art skills may be developed as students work with contour maps, draw landscape diagrams, and study soil colors. "The Sound of GLOBE," a compact disc featuring music written and performed by GLOBE participants from all over the world, is a wonderful addition to the music classroom. Students learn about photography as they take pictures of their local study sites and describe the pictures in written as well as conversational settings. GLOBE story books provide elementary students with a connection to many of the science protocol areas targeted by the program, while the GLOBE Teacher's Guide provides content information for rich reading activities at the secondary level. Descriptive and technical report writing about inquiry projects helps students hone their writing skills, and incorporating GLOBE into projects that require independent research on different countries affords students opportunities to gain in-depth cultural understanding and to build global collaborations. The GLOBE program also supports the multicultural study of social studies and geography by providing students with hands-on experience in basic geography skills

such as understanding latitude, longitude, scale, map elements, and spatial analysis. All the experiences described above promote rich conversational activities in the language classroom.

## **Using GLOBE with English Language Learners**

GLOBE can be an effective tool for working with students who are learning English as a second language (Kennedy, 2001). When conducted in English, GLOBE activities can facilitate English language acquisition by serving as content-based lessons that incorporate the *ESL Standards for Pre-K-12 Students* (Teachers of English to Speakers of Other Languages, 1997). In addition, GLOBE provides English language learners with the opportunity to participate in challenging science projects in their native language with little or no extra preparation on the part of the teacher, because materials ready for classroom use are available in many different languages. With GLOBE, English language learners (ELLs) can assume leadership positions in discussions and Internet exchanges with students from countries where their native language is spoken. GLOBE materials provide a means to create an enriched science program that actively includes all students regardless of their first language, enhance the academic achievements of the entire student body, integrate literacy skills in reading and writing with scientific inquiry, and provide ELLs the opportunity to learn the grade-level curriculum. The international link to other countries also provides a means for family members who speak little or no English to become involved in their child's education.

The 2003 revised GLOBE Teacher's Guide contains an expanded implementation section that provides teachers with additional sample lessons, unit plans, and pedagogical hints for using GLOBE in the classroom. It includes a specific section regarding the use of GLOBE in foreign language and ESL classrooms as a means of promoting global education and literacy development while reinforcing skill development in math, science, social studies, and technology.

## **Other Ways to Use GLOBE**

GLOBE provides authentic, life-centered curricula and opportunities for students in a variety of situations:

- inclusive classrooms where students with special needs may have a broad range of abilities and learning styles
- cross-age tutoring programs
- after-school clubs and community service-learning projects (Kennedy & Pedras, 2003)

GLOBE allows teachers to collaborate across disciplines, provides students with an integrated

view of their own learning, and enables students to see interconnections among the various subjects they study. GLOBE allows teachers to put the concepts of authentic learning, student-scientist partnerships, scientific inquiry, and standards-based pedagogy into practice on an unprecedented scale. Students behave as scientists and mathematicians while communicating in the language they are studying and connecting all the content disciplines in the school.

## **Summary**

Integrated language and content instruction offers a means by which students can continue their academic or cognitive development while they are developing a fuller proficiency in a second language. An approach that integrates second language instruction with the content of other curricular subjects has been shown to assist classroom teachers in reinforcing designated content areas and to ensure that second language instruction is meaningful to the students (Armstrong & Rogers, 1997; Curtain & Pesola, 1994; Krashen, 1997).

The GLOBE Program provides the opportunity for this kind of instruction by weaving interdisciplinary lessons into everyday classroom teaching. Other programs that successfully integrate content with language study are the Aconcagua Project, which incorporates geography, math, science, technology and language into learning objectives (Leloup & Ponterio, 1998), and NASA's CERES S'COOL International Project (Students' Cloud Observations On-Line), available in English, French, German, and Spanish. S'COOL, a partner of the GLOBE program, facilitates ground-truthing activities that allow students to compare surface- and space-based observations to learn more about clouds and climate (<http://asd-www.larc.nasa.gov/SCOOL>).

## **For More Information**

All GLOBE activities are conducted under the guidance of GLOBE-trained teachers. The first step in becoming a GLOBE teacher in your school is to attend a training workshop in your state. Schedules for workshops and registration forms are available on the GLOBE homepage at <http://www.globe.gov>.

For a listing of other NASA programs that provide free materials in other languages, visit [www.uidaho.edu/ed/nasa\\_erc](http://www.uidaho.edu/ed/nasa_erc), where an updated version of the document "NASA Materials in Spanish" (Kennedy, 2003), listing more than 50 programs and resources in Spanish and other languages, can be accessed. Click on the link *Materials in Other Languages*. In addition, the Web site offers many lessons that have been translated and enhanced from NASA Explores ([www.nasaexplores.com](http://www.nasaexplores.com)), which

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provides free weekly K-12 educational articles and lesson plans on current NASA projects that can be accessed through an internal search engine. Printable and downloadable, these supplemental curriculum resources meet national educational standards in science (NSTA), mathematics (NCTM), technology (ISTE, ITEA), and geography (NGS).

Also, NASA's Educator Resource Center Network (ERCN) serves as a clearinghouse for free educational resources for classroom teachers that are ideal supplements for content-based language instruction. Visit NASA's ERCN Website at <http://spacelink.nasa.gov/ercn> to find a complete listing of all Educator Resource Centers by state as well as those located on or near NASA Field Centers or at planetariums, museums, colleges, universities, and other non-profit organizations around the United States. You can contact any of these locations to obtain free NASA materials for your classroom.

**About the Author**

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