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ABSTRACT

The manual is addressed to teachers, administrators, and teacher trainers helping students learn through a non-native language by integrating language and content. This audience may include English-as-a-Second-Language, bilingual education, or content (e.g., science, math, social studies) teachers with limited-English-proficient students in elementary and secondary schools. The manual presents a whole-education approach involving: (1) incorporation of content material into language classes; and (2) accommodation of students' limited English proficiency in content classes. The first chapter gives an overview of the integrated language and content approach, and the second chapter outlines specific classroom strategies and techniques. Chapter 3 offers suggestions for adapting standard textbook and workbook materials, and chapter 4 gives assistance in developing lesson plans. A variety of student assessment methods are discussed in the fifth chapter, including performance-based assessment, portfolios, journals, language-related content assessment, and assessment across the curriculum. Key issues in curriculum implementation are then addressed, including teacher cooperation/collaboration, administrative support, classroom organization, scheduling, bridging, and mainstreaming. Implementation models are described in chapter 7: individualized instruction; sheltered classes; integrated language and content curricula; and a whole-school approach. Similarly, models for staff development programs are outlined in chapter 8. (Contains 47 references and 88 resources.) (MSE)

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How to Integrate Language and Content Instruction

A Training Manual

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Second Edition

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PREFACE

As a result of demographic changes in our society, the number of language minority students in our schools is increasing exponentially. Delaying academic instruction, however, until the English language is fully mastered is detrimental to the eventual success of these students in school. High drop-out rates and frequent placement of language minority students in vocational education programs reflect the under-achievement of these students. Faced with the challenge of learning through a language other than their mother tongue, they need to develop the required language skills for participating in all aspects of schooling, while they strive to keep pace with native-speaking classmates in content mastery as well. A number of researchers have pointed out that the academic language of the content areas acts as a barrier to their success.

Several professional education organizations, such as TESOL (Teachers of English to Speakers of Other Languages) and NABE (National Association of Bilingual Education), through their journal articles and conference presentations, have advocated including content area material in language classes. The federal government has begun funding research and technical assistance programs that examine the effects or apply the methods of integrated language and content instruction. As a result, many educators have found that combining language and content instruction can be an effective way of helping these students succeed in their education.

This manual is addressed to teachers, administrators and teacher trainers, who are helping students learn through a language which is not their mother tongue, to enable them to effectively integrate language and content instruction. The educators may be ESL/EFL (English as a Second Language/Foreign Language) teachers, bilingual teachers, or content area (e.g., science, math, social studies) teachers who have limited English proficient (LEP) students. Language and content integration can be incorporated into a variety of instructional programs: ESL/EFL classes, bilingual education, content-based ESL, sheltered content, and mainstream content classes. Although this manual does

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not specifically address foreign language instruction, the approach could be used in these classes as well.

What Is the Objective of this Manual?

This manual presents a whole education approach to integrating language and content instruction in elementary and secondary classrooms. The approach can be used by both language and content teachers. Its underlying premise is that a child's whole education, both language and academic content growth, is a responsibility shared by language and content teachers.

The integration is twofold:

1) **Content material is incorporated into language classes.** This material includes subject-specific terminology, types of reading passages, required writing styles (e.g., science lab reports), and cognitive thinking skills. This type of instruction, referred to as content-based language instruction, prepares the students for the academic demands that subject area classes impose.

2) **Accommodation is made for the students' limited English proficiency in content classes.** This occurs through the adaptation of language and materials, the presentation of information that is more comprehensible to these students, and the focus on communicating about the content while increasing student interaction. This type of instruction, which can be referred to as language-sensitive content instruction, assists these students in their pursuit of academic success.

Crucial to the effective implementation of this program is the close cooperation of the language and content teachers, since input from both areas is needed.

This integrated approach is recommended for both language and content classrooms to bridge the gap that has often separated these two disciplines. With this approach, LEP students begin academic studies earlier, while receiving linguistic support and training in academic cognitive skills. They thereby increase their chances of understanding

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the subject matter and of succeeding in their education. At the same time, they gain English language proficiency.

Educators have recognized a need for a more integrated approach in order to address concerns that arise repeatedly in instruction of LEP students. A number of factors contribute to the motivation and achievement problems experienced by these students:

1) In ESL classes, teachers have concentrated on language development and have thus delayed academic cognitive skill and content instruction until a certain proficiency level in English has been reached.

2) In these classes, LEP students have felt isolated from the standard curriculum that other students in their grade level follow and also from valuable integration with native English-speaking students.

3) By not having the opportunity to demonstrate talents they may have in certain subject areas, many gifted students have gone unidentified.

4) When placed in mainstream content courses, LEP students have often fallen behind the other students, because they have not developed the cognitive skills needed to process the material successfully. Often no support systems exist to nurture these newly mainstreamed students.

5) Content teachers have not addressed the language needs of their LEP students within the framework of their subject matter objectives.

The combination of these factors contributes to a high failure rate among many LEP students and may preclude them from reaching their intellectual potential.

One reason that language instruction and content instruction have been kept distinct is that many teachers do not feel prepared to integrate the two domains. Language teachers have expressed reservations about teaching content subject matter which may be outside their

realm of expertise. Content teachers, similarly, may not understand language issues, nor be ready to use ESL techniques for which they have had little or no training, especially if they have a heterogeneous class of language majority and language minority students.

Certain administrative practices have also discouraged widespread use of this integrated approach. Frequently, there is insufficient planning time scheduled to allow content and language teachers to cooperate in preparing their integrated instruction. Curriculum guidelines with specific deadlines for meeting particular objectives may place heavy demands on the teachers, too.

Who Can Benefit from this Manual?

Elementary ESL teachers in pullout situations may want to complement and reinforce the regular classroom teachers' instruction. With this approach, these ESL teachers can contribute to LEP students' sense of accomplishment when they learn English and receive better preparation for the subjects they encounter in other classrooms.

Secondary ESL teachers may want to supplement a standard ESL curriculum which might be grammar- or function-based. By adding content themes, they can enhance the students' interest and facilitate their entry into mainstream courses at a level appropriate to their highest potential, not simply at the lowest level available because of their limited English proficiency. Some teachers who already teach a combined ESL and content course (e.g., Sheltered Science or ESL/Math) may use this manual to make their instruction more effective.

Bilingual teachers may want to further the use of content in the English section of their programs. These teachers can provide academic language training in English and help the students transfer their cognitive development from their native language to English. Moreover, this approach satisfies two-way bilingual program objectives, since instruction in the content component of the course is offered in both the students' native language and second language.

Regular classroom, or content, teachers may use this approach to facilitate the success of their students with limited English proficiency

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by becoming more sensitive to the language used in their materials and in their classroom discourse. While maintaining their focus on the instruction of content, they can learn to improve overall instruction by adjusting teacher talk, incorporating new activities, and adapting and developing materials for LEP students.

All teachers can use this manual to review the rationale behind the integrated content and language approach. Because the manual is a resource, teacher can begin using the approach by trying the techniques, the steps for material adaptations the lesson plans and the alternative assessment strategies presented here. With collegial and administrative support, teachers may also implement the suggested ideas for collaboration among language and content teachers.

Administrators and Principals. School administrators, and other educators responsible for the development and supervision of instructional programs, can utilize the ideas furnished in the implementation section of this manual to set up their own integrated program for language minority students or to help interested teachers in doing so. They can also review the success of the approach in other settings. In addition, the manual gives suggestions about providing time and space for the collaborative work of language and content teachers and recommendations for pre-service and in-service training programs.

Teacher Trainers can adapt the sample models of staff development sessions and training workshop agendas. If desired, they can incorporate into their presentations some of the sample techniques and lesson plans which are provided. The manual also offers them a resource that concisely relates the basic theory underlying the approach to actual classroom implementation of integrated language and content instruction.

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1 An Integrated Language and Content Approach

Overview

Current trends in education, both for the language minority and language majority students, emphasize increased communication and student participation in the classroom. In addition to the pedagogical changes taking place in the language field to integrate content into the language instruction (as described in the preface), changes are also occurring in the content area disciplines. Many of the major professional organizations involved in K-12 education are calling for curriculum and instructional reform to promote more student interaction, the recognition of student diversity, and critical thinking in the classroom.

NCTM (National Council of Teachers of Mathematics) has issued two seminal publications that are affecting mathematics education, *Curriculum and evaluation standards for school mathematics* (1990) and *Professional standards for teaching mathematics* (1991). In both publications, NCTM calls for increased communication in the classroom, better preparation of students for academic discourse and class participation, and connections between mathematics and other disciplines, including science and English.

NSTA (National Science Teachers Association) is currently working with its members and other educators and scientists to design a new scope and sequence for science in grades 6-12 (Brunkhorst, 1991). An important component of this Scope, Sequence and Coordination project will be the recommendation that teachers be aware of the cultural diversity of their students and refer to this knowledge when

preparing lessons. NSTA has also formed a special division to encourage multiculturalism in science education programs (Andersen, 1989).

AAAS (American Association for the Advancement of Science) has developed Project 2061, a science curriculum that is also reforming science instruction by streamlining the content to promote scientific literacy of the general public (AAAS, 1989). The organization has opened dialogue with educators serving language minority students to discuss ways to meet the needs of that population better.

NCSS (National Council for the Social Studies) is calling for more multicultural awareness among social studies teachers as well as more recognition of cultural and ethnic contributions to the subject. A task force is currently revising the "Curriculum Guidelines for Multiethnic Education" (1976), because NCSS wants its framework to reflect student demographic trends and educational needs.

The Approach

When teachers plan to develop their students' content knowledge and language proficiency, they also need to enhance the students' cognitive skills. Teachers must give careful consideration to the dimensions of these three types of academic growth in a gradual, systematic manner. The content should be presented judiciously, not with watered-down versions of the information, but with thoughtful isolation and reinforcement of the salient features of that informaton. Nonetheless, this presentation must be made using a language that is understandable to the language minority student.

Our integrated approach focuses on three principles which apply to both the content and language teacher:

1) the use of multiple media by teachers
2) the fostering of thinking skills in students
3) the student-centered organization of the instruction.

All teachers should impart information through a variety of vehicles that extend beyond the standard modes of lectures and reading assignments. For example, they can use realia, graphs, demonstrations,

and pre-reading and pre-writing strategies in order to place the information in a context comprehensible to LEP students. Teachers need to pay attention to the content to be learned, the language skills required to learn it, and the reasoning abilities needed to manipulate it (e.g., analyzing, synthesizing and evaluating). Additionally, teachers need to reorient their instruction into a more student-centered design. They should accept the role of facilitator and increase student-to-student interaction.

Through this approach, content teachers become sensitive to language problems that exist in their current textbooks, supplementary materials and teacher talk, and recognize other potential problems that their LEP students may experience. Mathematics textbooks, for example, will frequently use the terms *divided into* and *divided by* without much explanation of their linguistic distinction. For language minority students, especially those whose native language does not allow for these two ways of expressing division, the terms are often confusing. Problems with teacher talk vary from the rate of speech and the lack of wait time for student response to abbreviated instructions for completing a task and overcorrection of student errors. Two common pitfalls of instruction are assumptions of background information on the topic (i.e., where the teacher assumes students have the knowledge because it was "covered" in the syllabi of a course offered in an earlier grade) which may lead to unexplained references, and failure to restate or paraphrase questions addressed to language minority students.

The integrated approach helps language teachers as well, through a variety of methods used to introduce authentic and relevant content into the classroom. Language teachers are introduced to the style of content textbooks and the academic requirements of content courses. In general, the approach guides both language and content teachers in determining which concepts of a topic to focus on, how to sort and present those concepts for maximum comprehension, and how to promote language development among their students.

In this framework, each lesson has a language and a content component. These components are not necessarily given equal weight or time in each lesson, but are adjusted according to the teacher's daily

objectives. The goal for each teacher should be to develop academic achievement and language proficiency simultaneously.

Rationale

Students can improve language proficiency through content instruction as either the background or theme of lessons. Focusing on content, which is provided in context, can help decrease students' anxiety in language classes because they are less concerned about using the proper linguistic forms (which may make them reticent to participate in class) than about studying, discussing, and interacting with the content and one another. Moreover, in a content course, processing the subject material can be made easier by a teacher who nurtures the LEP students' linguistic development and encourages their active involvement. Research has suggested that increased student participation and peer interaction enhances the students' language acquisition better than teacher-directed activities (Doughty and Pica, 1986). Since English is the medium for content instruction, the students are continually exposed to the language and have many more opportunities to practice its use.

Much current research on second language acquisition discusses comprehensible input and communicative competence. The integrated approach presented in this manual incorporates both. The major features of this approach can be summarized as follows:

1) Cognitive and language skills are both developed. Cummins (1979) suggests that many LEP students have acquired BICS (Basic Interpersonal Communication Skills) by the time they exit ESL classes. That is, they have the language skills needed for face-to-face social communication. However, few have developed CALP (Cognitive/Academic Language Proficiency), which refers to language skills necessary for success in academic or cognitive domains. Further research (Snow, 1984; Collier, 1989) has shown that language minority students require 5 to 7 years of instruction

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before they are competent in the academic language skills needed to succeed in a mainstream class.

2) Language is learned effectively when it is the vehicle of instruction, not the object. Studies of immersion programs demonstrate that students reach high levels of second language development while mastering subject matter (Lambert & Tucker, 1972; Campbell, Gray, Rhodes & Snow, 1985; NCBE, 1990).

3) Input is made comprehensible (Krashen, 1981; Krashen & Terrell, 1983; Rigg & Enright, 1986) through a variety of means, such as the use of demonstrations, visual aids, hands-on materials, and manipulation of the content that the teachers include in their lessons.

4) Schema or background knowledge is built before a topic is introduced. Students need to be able to process material from the top down, having general knowledge of the broad picture before studying the details, as well as from the bottom up, being able to understand the vocabulary, syntax and rhetorical style (Carrell, 1983). This observation applies equally to oral discussions, reading comprehension, and writing activities. Graphic organizers (Black & Black, 1990) offer excellent frameworks for eliciting and developing background knowledge.

5) Input furnished by teachers needs to build upon the students' present knowledge. New material is introduced systematically in conjunction with the students' background information. For example, once a general topic has been discussed and students have shared their knowledge of it, pertinent vocabulary may be taught. Later, certain concepts such as grammar rules or writing processes can be examined through the vocabulary or the application activities that are planned.

6) Competence in communicative skills is demonstrated through student interaction with the material, fellow classmates and teachers. In negotiating interaction, students must sometimes rephrase their thoughts and correct their errors so that others can understand their meaning. Research encourages this negotiation because

it has been shown that as the teacher steps back from the role of lecturer and into the role of moderator, student language acquisition is enhanced (Long, 1983; Long & Porter, 1985).

7) Pair and group interaction patterns and activities are promoted in this approach, following Kagan's (1986) concept of cooperative learning. In this way, the students work together to learn the concepts and topics presented in the lessons. In a heterogeneous classroom with language minority and majority students, this cooperation can be particularly effective (Jacob & Mattson, 1987).

8) Learning strategies (Chamot & O'Malley, 1986; Oxford, 1990; Oxford-Carpenter, 1985), such as organizing and summarizing information and asking questions for clarification, are included. These strategies assist the students in meeting the demands of their academic classes.

9) Students are challenged intellectually. In traditional programs, ESL students may be placed in low-ability groups, where it is difficult for them to learn how to respond to the higher level classes with more complex demands (Richards, 1987). In the integrated approach, teachers hold high expectations for their students and deliberately promote critical thinking skills which will help them succeed in academic courses (Mehan, in press).

10) Whole language techniques are used in elementary and secondary language and content classrooms. LEP students need to be introduced to reading and writing in meaningful ways, especially if they have weak literacy skills in their native language. It is easier for LEP students to make th· link between oral language and print when awareness of it emerges naturally rather than when that link is explicitly taught. (Freeman & Freeman, 1991; Hamayan & Pfleger, 1987). In the integrated approach, teachers use real literature with students and promote reading and writing as enjoyable activities that are incorporated consistently in content area lessons.

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2 Strategies and Techniques for Integrating Language and Content Instruction

This section suggests guidelines, strategies and techniques for language and content teachers who use the integrated approach in their classes. Many of these are things that good teachers do naturally. However, it is worth enumerating them here so that their relationship to integrated instruction is explicit. Clearly the list is not exhaustive; rather, it reflects activities teachers can incorporate as they begin to integrate language and content instruction. Teachers may find that adaptations of techniques they currently use will be appropriate to the integrated approach as well.

Several of the strategies and techniques described below are used in the model lesson plans included in Section 4. These lesson plans describe language and content objectives, the thinking/study skills that may be addressed, the general theme and vocabulary, the necessary materials, the basic procedure, and extension activities for enrichment or other uses.

Preparing for the Integrated Approach

The following procedures are recommended during the planning of integrated instruction, while curricula and units are written. Close cooperation between content and language teachers is key to effective instruction.

- Observe classrooms

The language teacher can see what academic language and instructional methods and materials the content teacher employs, while the content teacher can see which strategies the language teacher uses with LEP

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students. The language teacher can also become familiar with the subject area textbooks.

- **Collaborate with colleagues**

Working together, language and content teachers can identify the language and/or academic difficulties and demands that particular subjects or courses may present for LEP students. Some examples of those demands are:

- reading textbooks
- completing worksheets
- writing reports
- doing library research
- solving mathematical and scientific word problems
- using rhetorical styles in essays (e.g., cause and effect, compare and contrast, argue and persuade).

- **Examine the content material**

The teachers can try to identify specific problems LEP students may have with the material in advance. Such problems do not result solely from the complexity of the passages, but from factors like the skills needed to complete accompanying exercises which may, for example, require some sequencing or summarizing of the material. Feedback from colleagues during the examination of materials can be very helpful.

- **Use a thematic approach to an integrated unit**

The teachers can develop several lessons (for a week, a quarter, or even a semester) around a theme. The theme should be addressed in both the language and content classes. For example, an environmental theme, such as deforestation, might be the focus of ESL and science lessons. Or, it might become a theme for the whole school whereby each class tries to incorporate the topic into lessons. (The model lessons in Section 4 are designed around themes.)

- **Identify objectives of the unit**

When developing the curriculum and syllabus for a course, it is helpful to keep in mind specific objectives and adjust the material accordingly in order to eliminate extraneous detail which may confuse LEP students.

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- **Identify key terms and words**

These terms can be pulled out and introduced in advance. It is also advisable to reinforce the new vocabulary throughout the lesson. Of particular interest are words which can clue students into what is expected of them, such as the terms *altogether, more* and *less* in math word problems, and *contrast* in expository writing.

- **Look for appropriate text materials**

The language teacher can choose content passages which illustrate the language structures or functions being taught. The content teacher can look for alternate versions of general textbooks which present the subject matter more clearly for LEP students or can adapt materials to suit the language proficiency level of the students.

- **Find real literature (fiction and non-fiction trade books, magazine articles) to complement and supplement text materials**

When using whole language techniques with LEP students, content and language teachers need to include real literature–close to the students' grade level and interests–in their lessons. This literature will model appropriate language for the students and also help forge ties between mainstream and LEP students as they read the same literature.

- **Simplify and/or adapt written materials**

If a lesson objective is to present new content information to LEP students (rather than experience reading real literature), it is important to make materials more comprehensible to the LEP students. This strategy is discussed in further detail in Section 3.

Remembering Basic Principles

Students are still learning English and the style of the American educational system, so teachers should present information as clearly and systematically as possible.

- **Announce the lesson's objectives and activities**

It is important to write the objectives on the board and review them orally before class begins. It is also helpful to place the lesson in the context of its broader theme and preview upcoming lessons.

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- **Write legibly**

Teachers need to remember that some students have low levels of literacy or are unaccustomed to the Roman alphabet.

- **Develop and maintain routines**

Routines will help LEP students anticipate what will happen (e.g., types of assignments, ways of giving instructions) without relying solely on language cues.

- **List instructions step-by-step**

It is advisable to familiarize the students with each step individually and not require them to find the answer or complete the whole process from the start. This procedure is ideal for teaching students to solve math and science word problems.

- **Present information in varied ways**

By using multiple media in the classroom, teachers reduce the reliance on language and place the information in a context that is more comprehensible to the students.

- **Provide frequent summations of the salient points of the lesson**

Teachers should:

- try to use visual reviews with lists and charts
- paraphrase the points where appropriate
- have students provide oral summaries themselves.

Adjusting Teaching Style

It is important to provide LEP students with ample opportunities for interaction and participation in the classroom. Teachers should not rely on a lecture approach. They should be more conscious of their own speech patterns and tolerant of their students' mistakes.

- **Develop a student-centered approach to teaching and learning**

Teachers need to become facilitators and let students assume more responsibility for their learning. When activities are planned that actively involve students in each lesson, the students can better process the material presented and acquire the language as well. Activities

which hold students' interest and engender motivation will also help improve their academic performance in class.

- **Reduce and adjust teacher talk**

Increasing the amount of student communication about the subject matter is important.

- Allow students more time to speak.
- Concentrate on talking about the subject material rather than about classroom discipline.
- Be prepared to rephrase questions and information if the students do not understand the first time.

- **Increase the percentage of inferential and higher order thinking questions asked**

These questions encourage students' reasoning ability, such as hypothesizing, inferencing, analyzing, justifying, predicting. The language used by the teacher or students need not be complex for thinking skills to be exercised. For example, to help students predict, a teacher might read the title of a story and ask, "What will this story tell us?" Teachers need to model critical thinking skills, in a step-by-step approach to reasoning, especially with young children.

- **Recognize that students will make language mistakes**

During the second language acquisition process, students make mistakes, even though they have been taught otherwise. This is natural in the process of learning a language. Make sure that the students have understood the information, but do not emphasize the grammatical aspect of their responses. When possible, though, model the correct grammatical form.

Teaching Multilevel Classes

Frequently, teachers have classes with students of mixed ability/proficiency levels. In language classes, advanced students may be interspersed with beginning students. In content classes, the same may hold true, but even more often language majority students (i.e., native English speakers) are mixed with language minority students. The

integrated approach recommends several strategies and techniques when these situations arise.

- Use cooperative learning

This effective strategy provides for diversity and individuality in learning styles and aids students in the socialization process. Paired and group activities (Jacob & Mattson, 1987; Johnson, et al., 1984; Kagan, 1986; McGroarty, 1989) promote student interaction and decrease the anxiety many students feel when they must perform alone for the teacher in front of the class. It is important for each student in the group to have a task which he or she may accomplish and thus contribute to the activity (e.g., recorder, final copy scribe, illustrator, materials collector, reporter). The ideal size for these groups ranges from 2-5 students.

- Incorporate peer tutoring

Students learn and share among themselves, when the teacher is a facilitator who monitors the students' understanding and progress. The tutors learn to explain and clarify concepts while the tutored students have the benefit of one-on-one interaction in a non-threatening manner. Some supplemental textbooks, such as *English skills for algebra* (Crandall, et al., 1989), are specifically designed as peer instruction materials.

- Incorporate process writing

Process writing, though initially implemented in language arts classes (Graves, 1983), is easily extended into content area classes. As with all process writing exercises, students begin with pre-writing activities. They may, for example, view a film or share the reading of an article that sets the stage for the content area topic. The class may also review key concepts and vocabulary to incorporate in the writing. Students involved in this approach learn to develop and elaborate on possible writing topics, create successive drafts, confer with peer editors and the teacher, and eventually produce the final version. They also learn to take responsibility for their work. During the process the students learn about language—specific to the content topic selected—in a meaningful and motivating manner. Word processing programs are particularly useful with process writing and should be used if available. They facilitate the draft and edit stages of the process and also allow students

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to concentrate on their writing style and organization, not on their handwriting.

- **Design lessons for discovery learning**

These activities allow students to discover new information on their own with guidance from the teacher. Teachers help organize the data and sometimes set out the procedures for students to follow. Students, individually or in groups, discover the results. Problem-solving activities (math) and open-ended experiments (science) are examples of discovery learning.

- **Use inquiry learning**

In these activities, students investigate a topic of their own choosing and teachers act as facilitators. Students identify a problem, hypothesize causes, design procedures or experiments, and conduct research to try to solve the problem. These activities work well in science and social studies classes.

- **Organize students into literature study groups**

As mentioned above, the use of real literature in class allows students of different ability levels to read and discuss the same passages together. Once a selection of literary pieces has been decided (either by the teacher, the students, or some combination), students form their own literature study groups according to the story or article they wish to read and review.

- **Include information gap activities**

These activities which include jigsaws, problem-solving, and simulations are set up so each student (in a class, or more generally, in a group) has one or two pieces of information needed to solve the puzzle, but not all the necessary information. Students must work together, sharing information while practicing their language, negotiating and critical thinking skills.

- **Plan lessons around questionnaires/interviews**

Designing questionnaires and interviewing respondents are excellent activities for heterogeneous student groups. In the design phase, all students can contribute and evaluate questions for inclusion. In the interview phase, the number of people each student may be expected to

interview can be adjusted to the student's ability. Also interviews may be conducted in students' first languages, though responses must be reported in English. A report and analysis of the interview responses may be conducted orally or in writing.

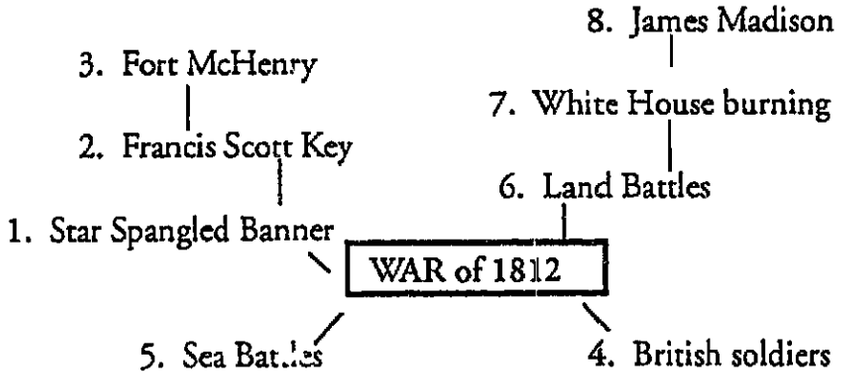
Implementing Techniques for "PRE" Instruction

Besides their limited English proficiency, many language minority students are also at a disadvantage in content classes because they lack background knowledge and/or experiential familiarity with the topic at hand. Teachers must plan activities in their instruction to provide some background schema for these students.

- Motivate students with semantic webbing

Often used as a pre-writing activity, semantic webbing is an excellent task for students to use before they read or discuss a new topic. This more sophisticated version of brainstorming allows students to organize their thoughts and categorize information. Students (with or without the teacher's assistance) may list items first and web later, or they may web as they list, creating new strands as categories occur to them. The web is then used by the students as they write on the topic, using the categories to organize their thoughts into paragraph form.

In the following example, students start with the War of 1812 and add on information about the historical event. (The numbers represent the order of students' ideas in building the web.)



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- **Use realia, illustrations, maps, photos**

Although the use of realia and other visual materials is a common activity in language classes, it is less frequently found in content classes. These items provide a quick, often non-language dependent, means of introducing students to the lesson topic. Such materials can also meet different student learning styles (e.g., tactile and visual) and offer critical thinking practice (e.g., asking questions like, "What do you think this represents?" and "Why are we looking at this type of map?").

- **Organize students into small groups then share with whole class**

The teacher may announce the lesson topic for the day and ask small groups of students to list what they already know about it. After a few minutes, the teacher has the groups share their ideas with the class as a whole.

- **Include "theme" listening activities**

Sometimes it is helpful to get students "in the mood" for a topic. The stage may be set by asking students to listen to a song, a poem or even a short story and having a brief discussion about it afterwards.

- **Include discussion of student experiences**

As new topics are introduced in class, students may be encouraged to share knowledge they may already have about the topic, along with any relevant real-life experiences they may have had. It is often helpful to build analogies upon their previous knowledge. In creating opportunities for student contributions, teachers validate the students' experiences which are often non-school related. In addition, teachers can discover misconceptions that students may hold and adjust their subsequent instruction accordingly.

- **Begin units with the K-W-L technique**

Using a standard form (see sample below), teachers distribute the "Know-Want-Learned" sheet to students individually at the start of each unit. Students complete the first two categories at this point. The learned category is completed at the close of the unit. Additional activities may be designed later, such as comparing what students thought they knew about the topic to what they actually learned.

UNIT THEME: ***Food Groups***

What I know about *Food Groups:*

What I want to learn about *Food Groups:*

What I learned about *Food Groups:*

Adapting Traditional ESL Techniques to the Content Classroom

Most ESL techniques encourage student interaction. By actively involving students in each lesson, they can better process the material presented and acquire the language as well. Their interest and subsequent motivation will also help improve their performance in class.

- **Bring realia into the lessons**

Teachers should use visual displays (e.g., graphs, charts, photos), objects, visitors, and authentic materials, like newspaper and magazine clippings, in the lessons and assignments. These materials help provide non-verbal information and address the preferred learning styles (e.g., visual and tactile) of some students.

EDRS

- **Do demonstrations**

When teachers use actions, they can show the meaning of new words (especially verbs), explain a science experiment, model language functions in the context of a dialogue, etc.

- **Use filmstrips, films, videotapes and audio cassettes with books**

Borrowing films, and other audio-visual materials from school/district media centers can help improve a content lesson. Often, teachers can find ones for a lower grade level which are nonetheless interesting and an excellent means of providing background or reinforcing information. It is useful to preview the audio-visual materials before showing them to the class, both for possible language difficulties and misleading cultural information.

- **Have the students do hands-on activities**

Content teachers should plan for students to manipulate new material through hands-on activities, such as role plays and simulations, TPR (total physical response), laboratory experiments, drawing pictures and story sequences, and writing their own math word problems.

- **Incorporate big books into lessons**

Using big books to teach reading has become increasingly popular in primary classrooms as more and more teachers use whole language techniques. Big books have worked successfully in ESL and bilingual classes too. Several publishers (e.g., Modern Curriculum Press, Scholastic, Inc.) are now creating big books for content areas, particularly science and social studies.

- **Design lessons with music and jazz chant activities**

Language teachers frequently use music and chants in their classes. These activities are motivating for students and also help teach English pronunciation and intonation patterns. Songs and chants on subject area topics would work well too. Students might even like writing their own rhymes or rap songs about topics like the rain forest, geometric figures, or historical explorers.

EDRS

- **Schedule sustained silent reading (SSR) sessions**

As educators try to promote more student reading both in and out of school, many teachers (often reading, language arts and ESL) have incorporated sustained silent reading in their classes. SSR adapts easily to content classes. Once a week, for example, students choose a book or magazine and read silently for 20 - 30 minutes. The teacher reads too. Teachers with LEP students can stock their classrooms with magazines, picture books, reference books and trade books on topics they are studying. There need not be any discussion about the reading selections, but some teachers may ask students to fill out reading logs (described below) or, on an ad hoc basis, introduce a favorite book or story to the rest of the class.

Meeting the Students' Cognitive Academic Needs

In many instances, LEP students need coaching and practice to improve their cognitive processing and production of content material. In order to do so, it is important for teachers to build upon the skills and knowledge students have already mastered. Each lesson should be crafted to include critical thinking and/or study skills. Some of these skills may have been initially developed in the students' first language and will be able to transfer to English.

- **Examine the topic through the students' listening and speaking skills first; then expand the topic through reading and writing activities**

Since the students' oral language skills usually develop more rapidly than their written skills, teachers can check the students' comprehension of the material and clarify any trouble spots before introducing reading or writing activities.

- **Be conscious of different learning styles**

Teachers can help meet the different learning styles of their students by varying the presentation and reinforcement of information.

- Alternate activities to address the visual, aural, tactile and kinesthetic modes of learning.
- Find out if your students prefer to learn from listening to theories or by applying information through hands-on activities.

- When reteaching information, choose a different mode of instruction.

(For more information, see Hainer et al., 1990.)

- **Incorporate thinking skill activities**

When planning each lesson, teachers must create opportunities to focus on thinking skills. Thinking skills can be developed through teacher-student questioning or through scheduled activities like problem-solving and decision-making. For example:

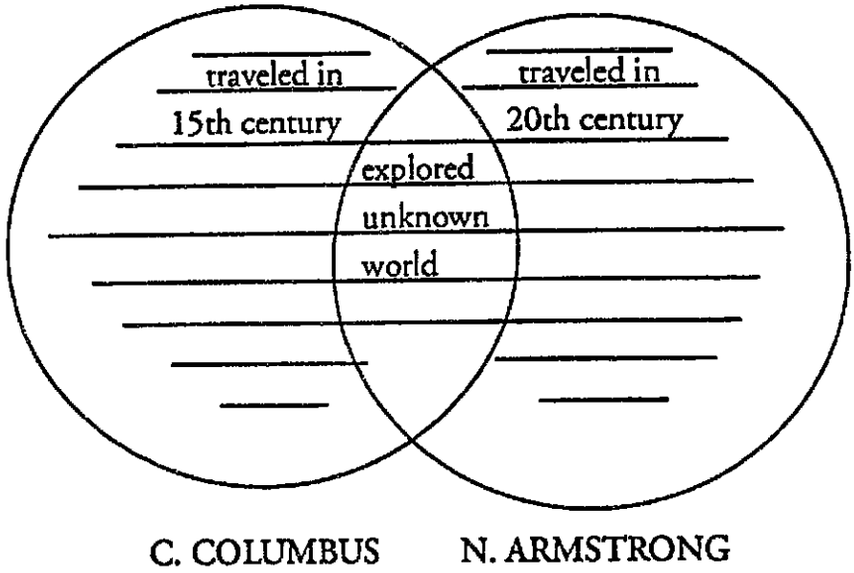
- predicting, categorizing and inferencing can be easily addressed in the warm-up and motivation phases of a lesson
- observing, reporting and classifying, (which can be done orally, in writing or pictorially) fit nicely into presentation and application phases
- sequencing, summarizing and justifying are skills which suit lesson reviews.

- Teach study skills

LEP students frequently need assistance in learning how to study. By teaching them study skills, teachers will give the students an important tool that they can use throughout their academic careers. For example, students can benefit from learning how to develop and use graphic organizers:

- outlines–for summarizing, for making predictions
- timelines–for organizing and sequencing events chronologically, for comparing events in different settings (e.g., states, countries)
- flow charts–for showing progression and influences on an outcome, for showing cause and effect
- mapping–for examining movement and spatial relations
- graphs, charts–for organizing and comparing data
- Venn Diagrams–for comparing and contrasting.

The following is a sample Venn Diagram to examine Christopher Columbus and Neil Armstrong. Where the two circles intersect, students write some similarities. Where the circles do not intersect, students write some differences. (Some students may only write a few words; others, several sentences.) This structure can become the draft for an essay comparing and contrasting the two explorers.



- **Develop the students' ability to use texts and other written materials**

Since the acquisition of details within a particular content topic is not the primary objective of the language course, language teachers have more time to develop the students' skills in analyzing:

- text as a whole--teachers demonstrate how to use (a) the parts of a book (table of contents, index) to find information and (b) headings, subheadings and illustrations in chapters to organize and enhance the information
- passages--teachers help students learn to draw inferences, synthesize information, make judgments, and provide justifications.

However, because these skills are demanded of the students once they are mainstreamed, content teachers need to incorporate activities to review student knowledge of texts and written materials, too.

- **Plan activities to train the students in attacking academic tasks, such as research projects, problem-solving, and essay writing**

Carefully planned academic activities help students make the transition from language class to mainstream content class. Teachers may plan a library project, for example, and walk the students through it step-by-step, preferably with peer tutors. They may also use process writing methods to help students write essays and research reports.

- **Present models for writing assignments**

Assignments required by mainstream content classes, like research papers and laboratory reports, are of particular interest to LEP students and their teachers. It is beneficial to discuss the model clearly so that the students know how each section is structured and why each section is important. Students should then be given practice using the model before doing a required assignment with it.

Checking Student Comprehension of the Content

- **Use strip stories or sentence strips**

Teachers write a summary of a lesson or reading passage or write out the steps for solving a math problem or for doing a science experiment on individual strips–either one sentence or several sentences per strip. These strips are distributed, out of sequence, to the student— individually, in groups, or as a whole class. The students then organize the strips into the proper sequence. To do this sequencing, each student may take a strip and physically stand in the proper place in front of the class, with classmates concurring or disagreeing with the positions and the students involved justifying their stances.

Sample strips for math:

$2^1/_2 + 3^1/_4 =$

$^5/_2 + ^{13}/_4 =$

$^{10}/_4 + ^{13}/_4 =$

$^{23}/_4 =$

$5^3/_4$

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- **Set up dialogue journals**

Many school systems are adopting "writing across the curriculum" approaches to encourage and improve student writing. Often teachers will use journal writing in their classes. Dialogue journals go one step further by having teachers respond to student writing in positive and supportive ways. Dialogue journals are not vehicles for editing student work; they are opportunities for students to express themselves. (For further discussion, see Peyton & Reed, 1990).

Teachers decide how often they want students to write (e.g., daily, twice a week) and how often they will read and comment on the journals. Some teachers might respond to every piece of writing; others might respond once a week or less. The teacher comments may vary in length and depth too. With less proficient students, teachers may ask them to start with illustrations in their journals and slowly move into writing. In this way, all students in a heterogeneous class can participate.

Some teachers choose to let writing be entirely student-derived; others provide the writing topics, at least some of the time. Some teachers use dialogue journals for lesson closure or motivation by having students summarize what they learned in the lesson (that day or the day before).

Although dialogue journals are not designed for correcting student work, they can guide teacher instruction. Teachers who see consistent problems in student writing or in student comprehension of the lesson topics can develop new lessons to address these issues.

- **Plan activities using drama and role playing**

Another popular ESL technique that works well in the content classroom is using drama. Teachers can ask groups of students to act out an event or topic studied, from the sprouting of a plant to a mock legislative debate in a state government. Teachers may assign roles impromptu or have groups research and write dialogues before performing. Mime also works well with students of beginning and advanced levels of English proficiency.

- **Check comprehension with cloze exercises**

Cloze exercises, popular for assessing reading comprehension, may be applied to different subject areas. For many clozes, teachers write a

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summary or take an excerpt (of a reading passage or lesson or class activity) and then delete every xth word. Students then "fill in the blank" with teachers deciding if they will score by an exact word or acceptable word method.

The following is an example of a cloze passage derived from a passage in a civics textbook:

> The First Amendment says we have _____ of religion, speech, the press and _____. We can follow any religion, say _____, write our thoughts, and meet in _____ .

- Have students complete reading logs

Reading logs can be used in any content class to reflect reading done from a textbook, a supplemental reader, a trade book or magazine and newspaper articles. Three categories may be set up on a standard form (see below): What I understood, What I didn't understand, and What I learned.

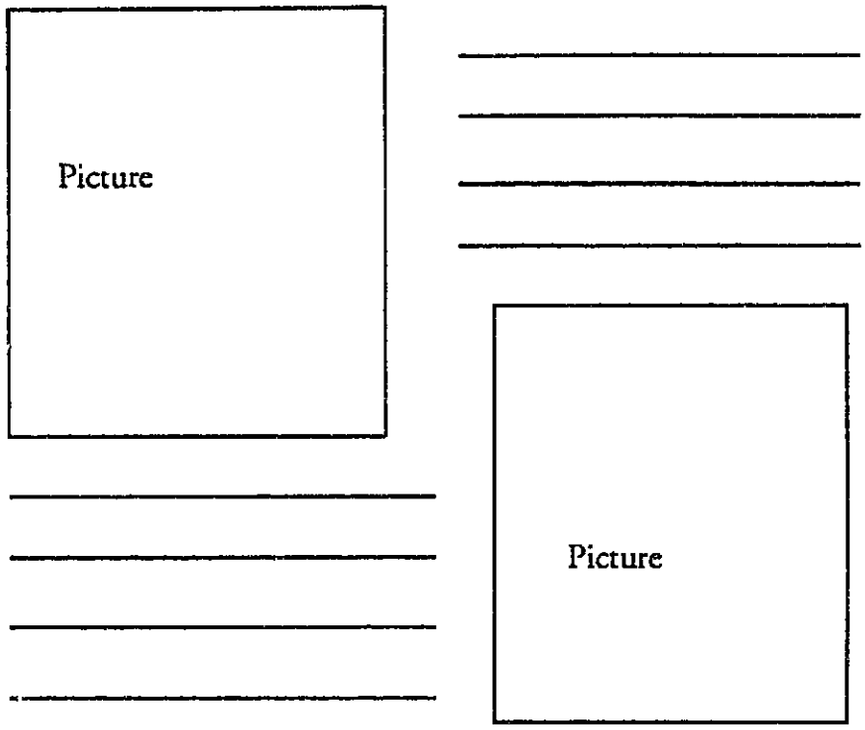
Reading Title: _____

What I understood	What I didn't understand

What I Learned:

- **Have students do story summaries**

As the graphic below shows, this activity has both a written and pictorial component. Students summarize a lesson, reading or experience (individually or in groups), by drawing illustrations and describing them. A format may look like this:



- **Encourage students to write headlines**

Students can practice their summarizing skills and, as they get more proficient, their descriptive language skills, by writing news headlines for lessons and topics discussed in class. For example, teachers may ask students to write a headline describing the results of a science experiment or titling an imaginary book review for a book they read.

- **Let students perform experiments**

Teachers may plan performance-based activities to determine student comprehension of the subject matter. A traditional example is the lab practical for science classes. This idea can be easily adapted to math classes, especially those that use manipulatives.

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- **Incorporate the LEA (Language Experience Approach) method**

This method has grown out of the movement to teach adults literacy skills, namely to read and write. After students have an experience (e.g., going on a field trip, cooking a meal, watching a film or videotape, performing an experiment, etc.), they dictate a summary of what happened to the teacher. (The teacher usually records on the board just as the students speak.) Students then work together to organize the written ideas and if desired, make corrections. The teacher may copy the dictation to use another day for review, motivation, or even a lesson on editing.

In a class with mixed proficiency levels of students, this activity can work well with small groups. The most proficient student in the group can be the scribe while the others contribute, organize and edit their work.

- **Have students write character diaries**

Frequently in social studies, and from time to time in other subjects, the lives of important individuals are studied. Students may read biographies and trade books, or watch films and videos, and then write a character diary, chronicling a week or two in the life of a particular individual. Students place special emphasis on the setting of the diary as well as the path towards accomplishment that the individual underwent during the week(s).

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3 ADAPTING MATERIALS

In order to integrate language and content, it is often necessary to use standard text and workbook materials. Indeed, since the LEP students will be mainstreamed, it is desirable to prepare them for such materials beforehand. Unfortunately, the level of the texts and workbooks may be inappropriate for some students. In those cases, teachers may want to consider adapting or simplifying content materials.

This section will explain some practical suggestions for adapting and simplifying materials. Some original passages from elementary and secondary textbooks are also included along with possible adaptations.

STRATEGIES FOR SIMPLIFYING AND ADAPTING MATERIALS

When simplifying or adapting materials, it is most important to present the main ideas of a passage in a clear and precise manner. The pivotal pieces of information should be stated first, and wherever possible, in a printed form that highlights their importance (e.g., bold print, underscoring, outlines, etc.). Stylistic composition is *not* the goal of adapted materials.

- **Decide what students need to learn from the text**

Teachers need to compare text information with curricular objectives and the academic needs and abilities of the students. In language classes, teachers have more flexibility about the content they teach the students. In content classes, where students are doubly burdened–learning the language and the content at the same time–teachers often need to select the amount and depth of material they present.

- Reduce non-essential details

It is possible to reduce the amount of text by eliminating some of the unnecessary detail. To do so, teachers should refer to the unit/lesson objectives determined in the planning stages.

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- **Focus on concrete references first, then develop abstract concepts**

It is generally most useful for LEP students if teachers begin with concrete examples and explanations of the material and then move to abstract concepts and interpretations.

- **Relate information to students' experiences as often as possible**

When possible, teachers can change character and place names to reflect the students' own countries. They can use examples of concepts (e.g., weather, transportation, making purchases, topography, etc.) that may be familiar to the students.

- **Represent the information visually**

Teachers are increasingly using graphic organizers like charts and graphs, timelines, maps, photographs, and pictures in their lessons. By putting real graphics into the reading materials too, they will aid the LEP students' understanding of the prose. Increasing the comprehensibility of the information is not the only goal of using such visual presentations, though. Because academic language is not always linear, students must learn to master methods for discerning and extracting information from charts and timelines.

Guidelines for Rewriting and Adapting

For the sentence and paragraph formation of the adaptation:

- **Put the topic sentence first, with supporting detail in the following sentences.**

- **Reduce the number of words in a sentence and the number of sentences in a paragraph.**

- **Consider word order.** There is no need to be fancy with the position of clauses and phrases. Use the subject-verb-object pattern for most sentences.

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For the vocabulary terms:

- Simplify the vocabulary that will be used, but retain the key concepts and technical terms.

- Do not use a lot of synonyms in the body of the text.

- Introduce new vocabulary with clear definitions and repeat those new words as frequently as possible within the text passage. Try to help students connect new vocabulary with known vocabulary.

For the grammar structures:

- Use the simpler verb tenses, such as the present, simple past and simple future.

- Use imperatives in materials that require following directions, such as a laboratory assignment.

- Write in the active voice, not the passive. For example, instead of writing, "*The Declaration of Independence* was signed by John Hancock," write, "John Hancock signed *The Declaration of Independence.*"

- Use pronouns judiciously, only in cases where their antecedents are obvious.

- Be careful with indefinite words like "it," "there," and "that" at the beginning of sentences. Instead of writing "There are many children working on computers," simply write, "Many children are working on computers."

- Eliminate relative clauses with "who," "which," or "whom" wherever possible. Make the clause into a separate sentence.

- Minimize the use of negatives, especially in test questions (e.g., Which of the following is *not* an example of...). If negation is necessary, use the negative with verbs (e.g., *don't go*), rather than negations like *no longer* or *hardly.*

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- **Preserve the features of the text that convey meaning.** For example, it is important to familiarize the students with sequence markers *(e.g., first, second)*, transition words *(e.g., although, however)* and prioritizing terms *(e.g., most important)*, since they need to learn how to recognize and use them. The degree of sophistication for these features, however, should reflect the students' language proficiency.

Sample Adaptations

- Secondary social studies

The following is an original passage from the text, *United States History 1600 - 1987,* (INS, 1987: 6).

> VIRGINIA
>
> The first permanent colony was Jamestown, Virginia (1607). These colonists came from England to try to make money by trading with Europe. They believed they would find gold and silver as the Spanish had found in South America, and then they would be rich. When they got to Jamestown, most of the men tried to find gold. They did not want to do the difficult jobs of building, planting food crops and cutting firewood. One of the colonists, John Smith, saw how dangerous this could be. He took charge and made everyone work to survive. He is remembered for his good practical leadership. Still, less than half of the colonists survived the first few years. Only new settlers and supplies from England made it possible for the colony to survive. The discovery of tobacco as a cash crop to be traded in Europe guaranteed that the colony would do well.
>
> MASSACHUSETTS
>
> Many of the colonists came to America to try to find religious freedom. The Catholics had troubles in England and other parts of Europe. The rulers of these countries told their citizens that they must go to a specific church and worship in a certain way. Some people believed differently than their rulers and wanted to have their own churches. The first group to come to America for religious freedom was the Pilgrims in 1620. They sailed across

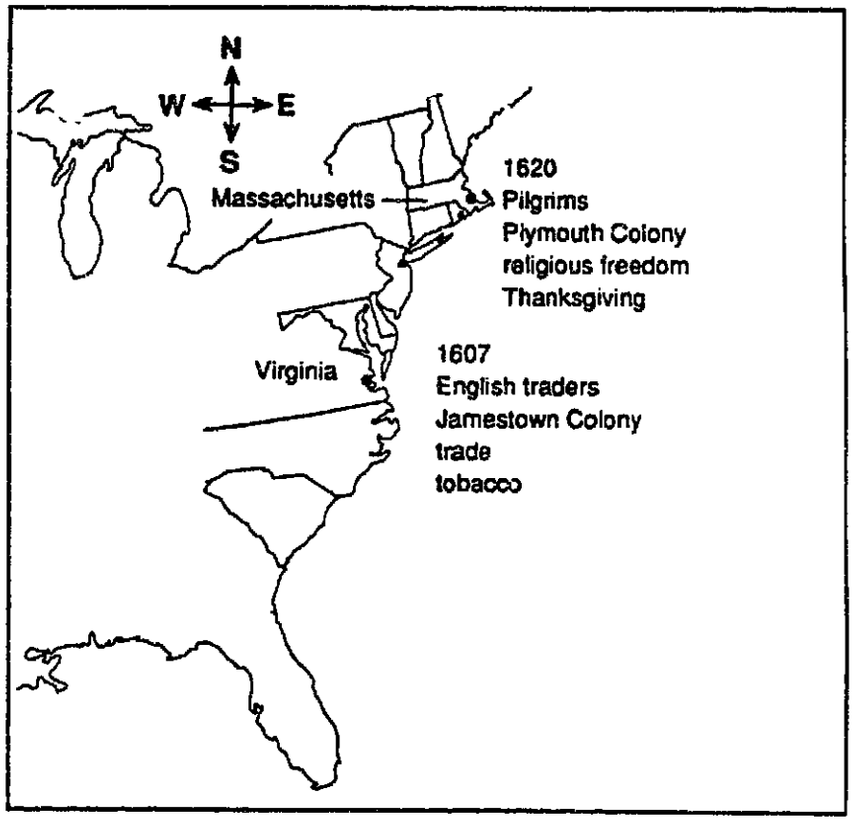
the ocean in the *Mayflower* and landed at Plymouth, Massachusetts. Before landing at Plymouth, the Pilgrims agreed on the government they wanted. The agreement was called the Mayflower Compact. It had two important principles:

- the people would vote about the government and laws; and,
- the people would accept whatever the majority chose.

The adaptation of the above passage was developed for advanced beginner/low intermediate-level LEP students in secondary school (Short, et al., 1991).

THE FIRST TWO COLONIES

This map shows the first two permanent English colonies in North America.



This layout, using a map and organizing the information about each colony in a comparable manner, offers the LEP students access to the pertinent details of the passage. The map places the colony names in context. The inclusion of the compass symbol can lead to a class activity on map skills.

Both a language and a social studies teacher could use this adaptation in the classroom. The language teacher may ask students to use the information to write sentences comparing the two colonies or may encourage predictions about the seasons according to the different latitudes of the colonies. The social studies teacher may expand on this material by having groups of students research one of the colonies in more detail. Since the students will have already been presented with this background information, they have a schema upon which to add and link more facts and impressions.

- Elementary science

The following is an original passage from the text, *Science 3* (Scott, Foresman, 1986: 129).

Do You Know?

Some Buildings Contain Fossils

Buildings made of limestone or marble might contain fossils. You might find fossils in rock cut to make space for new houses. When a road is cut through a hill of rock, fossils can sometimes be found. Broken pieces of rock and stone that you find on the ground might contain fossils. You might also find fossils if you walk along a stream, a river, a lake, or an ocean.

If you go fossil hunting, like the people in the picture, watch for shapes that look like pieces of plants, animals, or shells. These shapes were formed from animals or plants that once were alive. You might even find the shape of an animal's footprints as a fossil. But you will probably not find many complete fossils. They get broken in the earth over time.

What can you do if you find fossils, such as those in the picture? First, record the place where you found your fossils. Then, find out the names of your fossils. You might find a book which will help you label the fossils that you find.

In some parts of the country, fossils are very common. If you observe carefully, you might find fossils that can help you learn how some animals and plants might have looked years ago.

The adaptation which follows is designed for third and fourth graders. It shows an outline of the original passage and a pictorial representation.

FOSSILS

I. Types of Fossils

   A. Plants
   B. Animals
   C. Shells

II. Places where fossils are found

   A. Water
      1. streams
      2. rivers
      3. lakes
      4. oceans

   B. Land
      1. rocks
      2. fields
      3. mines
      4. building sites

III. Ways to identify types of fossils

   A. Record the place you find a fossil
   B. Look in reference and library books
   C. Take fossil to a museum

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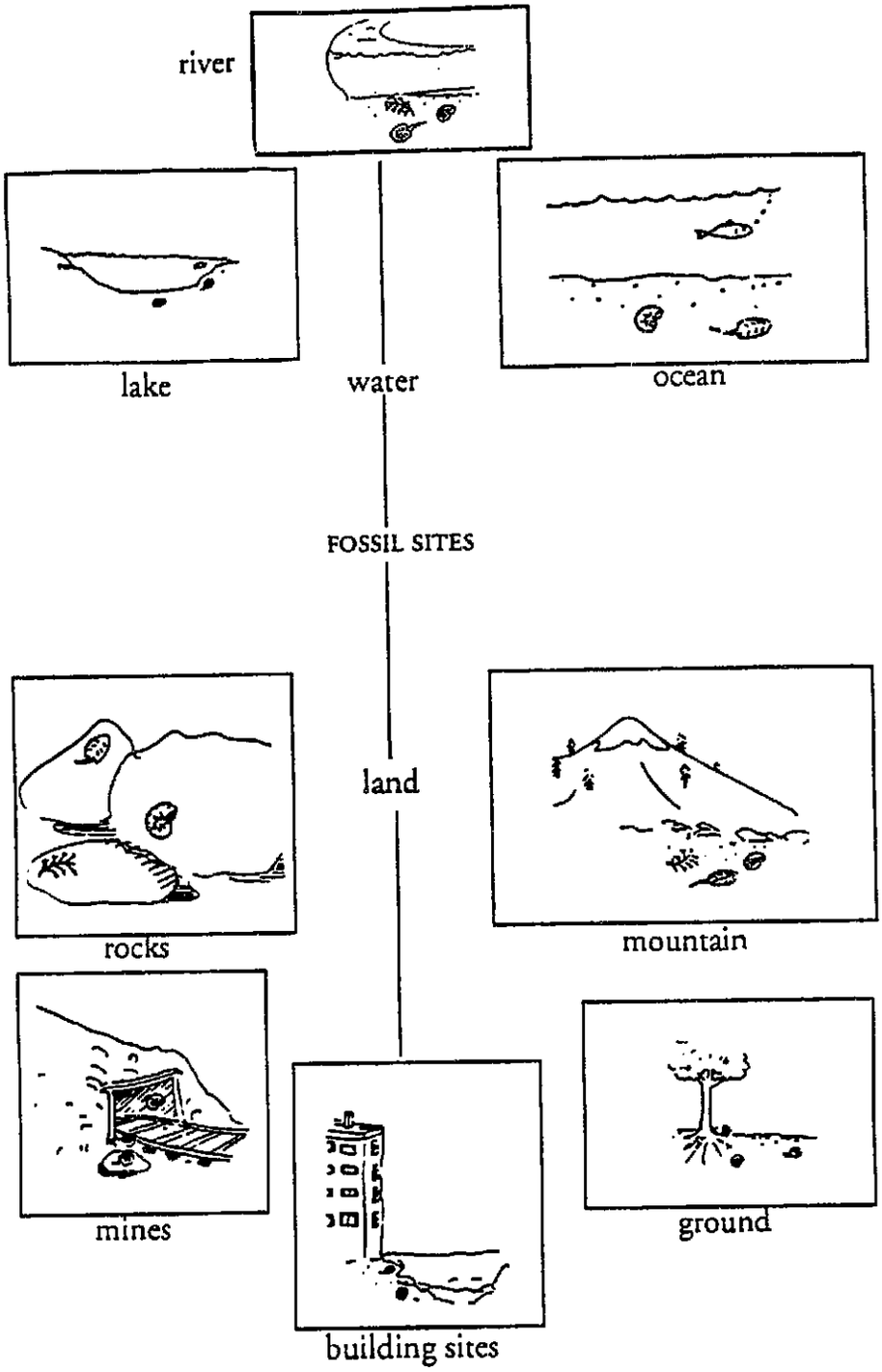
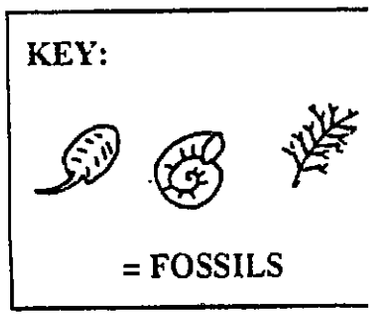
WHERE FOSSILS ARE FOUND





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The outline can be used by a language or a content teacher in a pre-reading activity. Students may be asked to discuss their knowledge of fossils first. Then the information they discuss could be referred to as the class reviews the outline. The pictorial adaptation can help explain key vocabulary. It also organizes the fossil sources into two categories—water and land. After a class discussion, the students may be asked to read the original passage.

The outline is a useful model for teaching study skills and students will become familiar with it if outlines are used regularly. As a post-reading activity, a teacher may ask students to create their own outline. This process should be introduced slowly. For example, the teacher may provide a partially completed outline the first time and ask students to finish it. The next time, students may work in pairs or small groups to create an outline. At a later date, students might write an outline on their own.

Whole Language or Adapted Materials?

When integrating language and content instruction, teachers should vary the types of materials they use. Both real literature (which includes trade books, folk tales, and textbook passages) and teacher-adapted materials have their place in lessons. The decision about which type of printed matter to use will vary from lesson to lesson.

From a whole language perspective it is important to expose children to material that is meaningful and natural and allows them to focus on communication. Often when the lesson's objective is geared to reading and writing instruction, real literature is the preferred vehicle. Real literature tends to be very motivating and also provides a model of language usage.

When the objective is a difficult content concept, adapted materials may be more appropriate, at least until the students master the new information. It is necessary, however, to review the adapted materials to ensure that all major pieces of information are included. The adaptation should not be "watered down," although it is intended to be linguistically simpler and presented in a structure that is easier to comprehend.

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4 Developing Lesson Plans

In integrated lessons teachers and students work toward content and language objectives. When developing lesson plans for integrated instruction, it is important for teachers to identify both types of objectives and plan activities accordingly. It is often useful to specify critical thinking or study skills to target as well. A teacher's or school district's preferred lesson format can then be used to develop the lesson.

The lesson format presented below includes four phases: 1) warm-up or motivation, 2) presentation of new material, 3) practice and application of new material, and 4) review or informal assessment to check student understanding. Most lessons also contain extension activities to reinforce or extend the concepts covered. A series of lessons thematically linked into units provide for sustained student interest as well as the opportunity to build systematically on prior activities.

The model lesson plans in this section deliberately offer an extensive range of techniques and strategies. They demonstrate the possibilities available to teachers for making integrated language and content more comprehensible. It is important to note that teachers may not have time to incorporate all these suggestions into their lesson plans every day, but should try to vary the activities they plan.

Certain procedures are more critical than others. These are:

- Selecting principal vocabulary terms to teach as a *pre-activity*
- Providing the opportunity for students to discuss the information and material orally, preferably before any written work is assigned
- Designing class activities for student-to-student interaction
- Deciding to use real literature or adapted materials.

The following model lesson outline may be used for integrated language and content lessons. While all lessons should include some language and some content objectives, an individual lesson need not address all the subcategories. Some lessons may reach content objectives from different subject areas, such as math (use division) and science (calculate average rainfall). Some may have literature; some may not. Some may focus on reading skills without listening practice.

LESSON PLAN FORMAT: INTEGRATED INSTRUCTION

THEME:

LESSON TOPIC:

OBJECTIVES
Language Skills
Speaking/Listening:
Reading/Writing:
Structures:

Content Skills:

Thinking/Study Skills:

Key Vocabulary:

LITERATURE:

MATERIALS:

MOTIVATION:

PRESENTATION:

PRACTICE/APPLICATION:

REVIEW/EVALUATION:

EXTENSION:

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This model lesson can be used with upper elementary and middle school students. It may take 2-3 days.

KEY THEME: Agriculture: Important food crops

(for American social studies when discussing Native Americans, Pilgrims, or current agricultural resources)

(for World social studies when discussing any corn-producing country's agricultural system, differences between agricultural and industrial economies, or current events regarding international trade)

TOPIC: Corn

OBJECTIVES

Language

Listening/Speaking:	Listen to a poem
Reading/Writing:	Read a poem Complete a comparison chart
Content:	Recognize different uses of corn (in the US/around the world) Locate corn-producing areas on a (US/ world) map
(American studies:	Recognize the role corn plays in American history)
(World studies:	Recognize corn as an import/export crop)
Thinking Skills:	Interpret a poem Compare the uses of corn in two countries Solve a problem Use reference materials
Key Vocabulary:	corn, maize, kernel, stalk, sheath, husk, crop, fodder, grind, cornmeal, import, export, trade

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LITERATURE: "Song of the Cornfield" poem by Gabriela Mistral (Chilean)

MATERIALS: an ear of corn in husk, individual corn kernels, maps (US/world), black line masters of poem, outline (US states/ world countries) map, outline chart

Note: In some countries (*e.g.*, France, Germany) corn is not used by humans as food; it is only fodder. In other countries (*e.g.*, Mexico, Guatemala) it is a major food staple.

Teacher uses realia so students identify corn tactilely. Their interest in the topic is enhanced when they share their native language names for corn.

Motivation: Have two volunteer students close their eyes; give each a kernel of corn and ask them to identify it. Show class the kernels and an ear of corn with the husk to introduce vocabulary and ask students to share their native languages' name for corn.

Students interact and discuss prior experiences with corn.

Presentation: In small groups, ask students to list any experiences they have had with corn—growing, eating, grinding, cooking. Share these lists with the whole class and look for comparisons in students' experiences.

The literature models language in the content context. Students interpret the poem by describing images. Students of different ability levels are able to work in groups to complete tasks.

Read the poem "Song of the Cornfield" to the class and ask students to discuss the images it creates for them and if the poem relates to their experiences with corn. Distribute copies of the poem to small groups and ask them to complete the worksheet.

As a class, share group responses and discuss the steps of corn production from planting kernels to finding corn in markets/groceries, in cornmeal, or in fodder.

Teacher uses a chart to help students organize and compare the information. The chart format allows students to use words and phrases, applying key vocabulary.

Practice/Application: Distribute the chart to small groups and explain that students will examine corn in two states/countries. As a class, brainstorm additional categories to compare on the chart (*e.g.*, if the country makes corn products—meal, oil, etc.). Then, in small groups, have students choose their two states/countries to examine and complete the chart, using reference materials and textbooks.

Using their group chart, have students write a few sentences in their journals comparing the role of corn in the two states/countries.

Students do individual journal writing.

Review: Display the outline map (US or world) on an overhead projector. As a class, develop a key for the map and have groups share their information to plot areas of corn agriculture, industry, etc. Then, using arrows to show trade, have students indicate sources of corn for areas where it is not grown.

Teacher checks class comprehension. Students also review some map skills.

Home Tasks:

1. Have students interview parents and neighbors about their experiences with corn—growing, eating, using as fodder, etc.
2. Have students collect recipes from their culture that use corn.

Extensions:

1. Have students bring in news articles or shopping advertisements that relate to corn.
2. Make a display of corn products (drawings, magazine cutouts or real objects) such as oil, cornmeal, cornstarch, popcorn, etc.
3. Make popcorn in class - compare a popcorn kernel to a "regular" kernel, discuss role of heat in the changes of state in the kernel.
4. Have students illustrate the poem.
5. Prepare a class recipe book of corn favorites.
6. Have students bring in corn dishes to share.
7. (Amer. studies) Read *Corn is Maize* by Aliki.
   (World studies) Make a bar graph to show top 4-5 corn-producing countries.

These tasks and activities extend and apply the information students learned and shared in class. The activities are varied to meet the academic needs and learning styles of the students. They also involve parents and others outside the classroom.

Long-term projects:

1. Write a short story about the life of a kernel and draw cartoon illustrations to accompany it.
2. Research the production and distribution of corn that is grown in one country and exported to another. Design a flow chart.
3. Imagine there is a severe drought in a country which produces corn and uses it for food. This country is very poor and cannot buy corn from another country. The leader asks you to investigate several options (3-4) for this country and make a recommendation.

These projects are designed to promote students' creativity while practicing the language and help develop some problem-solving skills.

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Song of the Cornfield
by Gabriela Mistral

The ears of corn
Look like little girls:
Ten weeks in the stalks
Tightly held they sway.

They have little golden fuzz
Like that of new-born babes
And motherly leaves
Shield them from dew.

And within the sheath
Like little children hidden
With two thousand golden teeth
They laugh and laugh without reason.

(Reprinted by permission of: Joan Daves Agency)

Read this poem together and discuss it in small groups:

1. Where is the corn the poet is describing?

2. What does the poet compare corn to?

3. Does the poet like or dislike corn?
   What words or phrases in the poem justify your response?

4. What role does corn play in your culture?

5. What do you think will happen to the corn described in this poem?

Note: A nice addition would be to use the original Spanish version.

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Sample Worksheet

Comparing the role of corn

Role of corn	(state/country name)	(state/country name)
name for corn		
source: produced or imported		
uses: food fodder		

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This model lesson plan may be adapted for grades 6-12. If presented in full detail, the lesson may require 1-2 weeks.

KEY THEME: Environmental Pollution
TOPIC: Littering (Solid Waste)

OBJECTIVES

Language

Listening/Speaking:	Recite/listen to a dialogue with meaningful content Discuss environmental issues as a whole class and in small groups Conduct interviews and report orally
Reading/Writing:	Design a questionnaires Complete a list or chart Write in a journal
Structure:	Question Formation
Content:	Recognize environmental problems Identify litter and patterns of littering Identify human influences on the environment
Thinking Skills:	Analyze problems Generate solutions Infer reasons for human actions
Key Vocabulary:	litter, garbage, dump, mess, environment, trash, cause, solution, solid waste, pollution, survey
Materials:	Teacher-made dialogue, poster, items of trash (empty soda cans, paper wrappers, broken glass, etc.)

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Motivation: *(Before lesson is presented)*
Two weeks before introducing this topic, hang a scenic poster on the wall. Some students may comment on the lovely view or ask vocabulary questions about objects in the scene. Every other day, attach an item that might be considered trash (candy wrappers, an empty box, an aluminum can) to the poster, thus creating a "trash collage." The students may be curious but do not reveal the purpose.

This activity whets the students' interest and visually represents some background information about the topic.

(To introduce the lesson)
Refer to the "trash collage" and ask students what they think it represents. Write student ideas on the board. Finally, through guided questioning, lead the students to recognize that the lovely place is being ruined by litter.

All students can participate. Teacher helps them make speech-print connections by writing their comments on the board.

Changing the focus, turn from the poster scene to the local environment, and add some additional vocabulary to the list. Then ask some of the more advanced students to explain why this happens and write comments on the board. Some students may venture consequences of the littering problem.

Presentation: Ask two of the more advanced students to volunteer to come to the front of the class, and role play the following dialogue:

This dialogue introduces some key vocabulary and causes associated with littering in an interactive way.

LITTERING AT SCHOOL

Student 1: Don't throw that on the ground.
Student 2: Why not? What's the big deal?
Student 1: Our school looks like a garbage dump.
Student 2: So what? Tell one of the younger kids to clean it up.
Student 1: But you littered.
Student 2: Everyone does it. Teachers do it too.
Student 1: You're impossible. Do you know what our school will look like if everyone continues to litter?

On the board, write the headings: PROBLEMS, CAUSES, SOLUTIONS, in chart form. Categorize and expand the vocabulary list with student input. Show students a written form of the dialogue.

Having begun with concrete examples (poster, dialogue), students can now expand and organize their information.

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In order to check on comprehension and practice writing questions, have the students take dictation. Dictate the following questions:

This activity incorporates some language practice for the students.

Where are they?
Who is talking?
What happened?
Why is one student upset?
Does this happen at our school?

Have pairs compare their work and ask volunteers to write their dictations on the board. Encourage students to peer edit. Discusses relevant grammar points (e.g., question words, verb-noun positions).

Ask students to think of additional questions about the dialogue. Write the student-dictated questions on the board. Work as a class to edit errors.

If desired, add questions, such as Why is there a problem? (cause) or What can you do? (solution).

This paired activity allows for oral language practice in the context of the lesson topic.

Practice: Have pairs role play the dialogue, "Littering at School," and discuss the vocabulary and issues together. Then have pairs ask each other the class-generated questions (more advanced students should answer first).

The review activity leads student to work individually at first, then with peers.

Review: After the structured conversation, ask students to write ten questions and answers about the topic (littering). Before they hand them in, encourage students to peer edit.

This task applies the topic directly to their lives.

Home task: For homework, have students write in their journals about the trash they see as they go to and from school for several days. As this task continues, expand the vocabulary list under PROBLEMS and put it on a poster or chart to hang in the room. Make two other posters, one with CAUSES and the other with SOLUTIONS as well.

The group offers all students a chance to participate.

Application: In small groups, have students discuss the causes of littering, then share ideas with the class. Write the ideas on the CAUSES poster. Then ask groups to consider solutions. Share students' suggestions and write on the SOLUTIONS poster.

Next, have small groups design a questionnaire to interview classmates, teachers, neighbors, family and friends. The questionnaire should be limited to five questions. If needed, help groups plan their questions but do not provide them with a full list. Possibilities include:

This activity reinforces the language structure objective.

Does litter bother you?
Do you litter?
What do you throw away as litter?
Why do people litter?
Who is responsible for solving this problem?
What can be done about this problem?

Home task: Have students conduct a survey for three days, each interviewing 10 people. (If they interview non-English speakers, they may ask questions in the native language, but should write responses in English.)

This task encourages interaction with non-classmates on the topic and may provide clarification practice as students explain their task to others.

Follow-up and Extension: Have students share this information in their groups. Have recorders in the group organize the results of the survey and a representative of the group report to the whole class. Help the whole class find ways of organizing and presenting the results of the survey. (Some students may list the results on posters, others may do a chart and quantify the responses. Some may prepare an oral report or a debate between individuals who litter and those who don't. Other students may create a role play or drama. Some may design a visual display or collage, highlighting *before* and *after* scenes.)

Each group contributes to the whole class. Optional presentations allow each group to choose the one best suited to their learning styles and academic skills.

Have students write a composition. Display the papers and if appropriate, encourage some students to submit their work for publication in a school/class newspaper.

Long-term Projects: Expand this introduction to individual generation of and influence on solid waste pollution to heighten students' awareness of other sources of solid waste (industrial, agricultural, municipal) and methods of disposal. Design additional lessons to help students research sources of solid waste in their communities and learn about local disposal methods, such as dumping, burying, burning,

These projects further students' problem-solving and study skill development.

recycling, etc. Students may want to form action groups to decrease solid waste pollution in their towns.

The following lesson is part of a two-week unit on plant classification in an upper elementary class. In previous lessons, students have discussed major parts of the plants, such as leaf, stem, root, branch, and flower. They have begun an experiment growing plants: some in constant light, some in daylight, and some in darkness. They are also observing the effect of watering on those plants. They have discussed the scientific process—hypothesis, observation, result, and conclusion.

KEY THEME: Plant Classification

TOPIC: Roots and Stems

OBJECTIVES

Language

Listening/Speaking:	Give and respond to oral commands Describe objects using adjectives
Reading/Writing:	Read a passage in text Record experiment predictions Label diagrams Report scientific observations
Structures:	to be + adjective future tense comparatives (more than, bigger than, higher than)

Content

Math:	Measure heights of absorbed liquids
Science:	Identify the functions of roots and stems

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Thinking Skills: Predict what will happen when a stem is dipped into colored water
Compare and explain heights of absorption in different plants

Key Vocabulary: absorb, soak up, fill, root hairs, minerals, sponge, rock, cotton, cloth straw, (carnation, celery), slice off, thick, thin, high, low

Literature: Passages on roots and stems in student textbook

Materials: carnations, celery, red or blue food coloring, water, plastic cups, dry sponges (yellow or white are best), cloth materials, cotton, bowls, rocks, straws

Motivation: Put a bowl of water on a desk or table. Show students a dry sponge and ask questions like:

Does anyone know what this is? (If no answer, tell them it's a sponge.)

Have you used a sponge? (If yes, *Where?, When?, Why?, etc.)*

What will happen if I put this in water?

Place in water to confirm student predictions.

This demonstration motivates the students and prepares them for the lesson.

Put a few drops of red or blue food coloring in the water.

What will happen to the sponge this time?

Immerse sponge. Have students compare and explain results.

Divide class into groups of 3-4. Give each group a bowl of water, cotton, a sponge, other cloth materials, a rock, and food coloring. Tell one student in each group to color the water. Tell groups to place different objects in the water and observe and record what happens through illustration and written explanation.

Students get to experiment and draw their own conclusions.

Presentation: Ask groups to report their observations and show their pictures. Each group, in turn, tells about one object and the other groups comment.

Groups share conclusions and receive feedback from peers.

Key vocabulary is introduced in application.

As the groups report, provide appropriate vocabulary when it appears in context, like absorb and soak up. Write the words on the blackboard and encourage subsequent groups to use those terms.

Visual representation aids LEP students' comprehension.

Have students look at the diagram of a plant in their textbook. Ask them questions such as:

Do plants need water? Why?
Do you ever give plants water?
How do plants drink water?

Using a similar diagram on the board or overhead transparency, review the root and stem parts of the plant by asking one student to point to them. Ask one student to draw arrows showing how s/he thinks water goes into a plant.

Teacher presents new information with visual aids.

Explain how plants absorb/soak up water. Review and point out the vocabulary—root, stem, root hairs, branches—on the diagram. Tell the students that the next experiment will show the absorption process. The experiment will continue for 3 days.

Teacher checks student comprehension through physical responses.

Show the carnation and celery stalk—tell the students the names of the plants. Put the two on a desk. Ask a student to come and pick up the carnation. Ask another student what the first student is holding. Ask a third which plant is left on the desk.

This demonstration is modeled by a student with teacher assistance.

Practice: Give 2 plastic cups, a carnation, and a celery stalk to each group. Use TPR and pictures with one student to demonstrate the procedure. The student should:

a) fill the cups 3/4 with water,
b) put in some food coloring,
c) slice off the bottom of the carnation and celery stalk, and
d) put the carnation into one cup and the celery into the other.

This cooperative group work lets students participate according to their abilities. Students practice thinking

In cooperative groups students listen and discuss pictures, then set up their experiment. Have groups use the worksheet to record their observations. The students discuss words or sentences to write under the pictures.

The whole group should guess how high the colored water will move up the plant and draw a line across the group's diagram. They can also try to write a conclusion.

skills (prediction, drawing conclusions).

Application: The groups read the student text on roots and stems. As a group, they answer the questions at the end of the passage. Students write their own responses after the group discusses the answer.

The group provides support for the individualized work.

The groups share their responses with the class.

Show the students pictures of different roots and stems, and ask them to describe them. Try to elicit such adjectives as thick, thin, long, short, little, etc. and comparative phrases.

Students apply their knowledge and practice the language.

Students measure the height of the liquid in each plant and record on chart. (They will do this for the next two days also.)

Review: Place a rock, sponge and drinking straw on the desk. Ask questions and have students use physical response.

Which one is like a stem?
Which one is like a root?

Students record information visually. This is an important science skill.

Have all students draw pictures to show how a sponge acts like a root, and a straw like a stem. Be sure they include arrows to show the flow of water. Some students can explain their drawings orally.

Even students with less proficient language skills can demonstrate their comprehension of the content.

Have students name and sort objects that work like roots or stems. Groups can write a few words or a sentence or two about the objects and how they function like roots and stems (*i.e.*, A straw is like a stem. Water goes up both of them.).

Extension:

1. Ask students to bring in food, or pictures of food, that are roots or stems (*e.g.*, carrot, celery, potato, onions, leeks).
2. Have students find pictures of different roots or stems in library books or magazines. They can bring in the books or draw pictures. Ask them to describe the root or stem with an adjective—some students may only dictate or write one word (*e.g.*, thick) while others may dictate or write full sentences.

This task extends the classroom information to the students' daily life.

These activities help develop academic skills students need for mainstream classrooms.

3. Some students may be able to read some of the information and do an oral or written report about it.
4. Develop a word search or crossword puzzle with the new vocabulary and appropriate adjectives.

Sample Worksheet

ROOTS AND STEMS

OBSERVATION CHART

DAY	(Hypothesis) WE WILL SEE	(Observation) WE SAW	(Result) HEIGHT	PICTURE
1				
2				
3				

CONCLUSION

_____

_____

_____

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5 Assessment of Integrated Language and Content

There are several reasons to assess student learning in the classroom: to measure student development and achievement, to guide and improve instruction, and to diagnose student knowledge of a topic before it is taught.

It is sometimes necessary to separate language from content for purposes of assessment, especially when a student is not succeeding in a course. In that case, the teacher needs to determine if the cause of the failure is that the content has not been mastered, or if the language of the subject is interfering with the student's learning of the content. This type of assessment serves a diagnostic function.

In other situations in the integrated language and content classroom, the design or development of the assessment must take into account the difficulty of the language involved in measuring the mastery of the content. Sometimes it is simply the language used in the assessment instrument that interferes with the student's application of known content information.

Although school systems will continue to use standardized tests to measure and compare student progress, ongoing informal assessment is also essential. When tests and quizzes are given, students should be made aware of the assessment objectives in advance. For each test, teachers need to decide the purpose of its language component–to measure fluency or accuracy. Regarding informal measures, though, several innovative schools and districts have added alternative instruments to their overall assessment plan, affording teachers more choice as to the techniques they use. This flexibility is particularly important for teachers using the integrated language and content approach, and

in this section we will discuss several assessment strategies that may be implemented.

Performance-based Assessment

The sample techniques below, which can focus on language or content or both, require student performance.

- **Following directions**

Students may be told to follow certain oral directions through a physical response. If these directions involve some content materials that the teacher knows the students are already familiar with, then the performance may be an effective means to check on students' listening skills. As a variant, the teacher may write the directions on cards that are distributed to students to check their reading skills.

- **Demonstrations and illustrations**

Students may be asked to demonstrate or illustrate a process, such as the procedures in a science experiment they have conducted or events in a reading passage they have discussed in class. In this instance, the students themselves decide what aspects of the process to focus on. Because the assessment activity is not heavily language dependent, the teacher can check the students' content knowledge.

- **Writing prompts**

An inverse of the technique above may be used to assess language development. Students may be shown a demonstration, illustrations, charts or graphs concerning a topic already discussed in class and be asked to write about it. Alternatively, students may be asked to describe the visual or physical representation orally. Throughout this production of language (written or oral), teachers can check on students' appropriate use of technical vocabulary.

- **Lab practicals**

Students have traditionally taken lab practicals in high school science classes. Such practicals have a role in integrated language and math or science classes too, as students have an opportunity to show their

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knowledge of equipment (e.g., scientific instruments, manipulatives) and of procedures.

- Technology

Computer and interactive videodisc (IVD) technology, including CD-Rom and CD-1, offer greater options for student assessment.

- Many available computer programs, that allow students to work at their own pace, keep track of student achievement on the computer-generated activities.
- Several programs have branching capabilities that forward students to new information or refer them back to some reteaching activities.
- Touch screen IVD programs can focus on students' listening and/or reading skills.
- CD-Rom and CD-1 add audio components to computer systems and can record and measure student speech.

Portfolios

An assessment tool that is increasing in popularity across the country is the portfolio. Drawn from its graphic arts' namesake, a student's portfolio is a tangible record of his or her skills in a particular area. Portfolios can be maintained for language arts classes, math classes, social studies classes–for virtually any school subject. They can be used successfully with elementary and secondary students. (See Hamm & Adams, 1991; Navarrete, et al., 1990; Tierney et al., 1991.) Portfolios are unique because they demand student participation in their creation and help teach students to make judgements about their work.

- The selection process

Portfolios are ideal for language minority students because the underlying philosophy of the portfolio gives students the responsibility for selecting the pieces to include, individually or with peer conferencing. Students therefore choose what they are proud of from the wide range of their products. This process suits the needs of LEP students who do not develop their language skills and content knowledge linearly, and thus often do their best work later in the term. Furthermore, whereas

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tests and quizzes usually allow only one shot at the task, work included in portfolios tends to be the final versions of many series of drafts. LEP students benefit tremendously from the drafting-editing-revising process which provides some accommodation for their developing language skills.

Teachers, however, often do play a role in the selection process. The size of the role varies from one teaching situation to another. For example, in a portfolio designed to assess growth during one quarter of the school year, one teacher may decide that students should include ten items. Of these ten, four are specified by the teacher (e.g., particular assignments or quizzes) and six are to be chosen by the students with the help of their peers. Another teacher may ask for ten to twelve items without any required pieces, but ask the students to write a brief justification for each piece selected. A third teacher may ask for ten items but require three to be first drafts, three to be the final versions (of those first drafts), and four to be chosen with the help of the students' parents.

- Criteria for assessing portfolios

Teachers need to establish and announce their criteria for evaluating the portfolios. In some classrooms, the teacher and students decide the criteria together. Some of the criteria teachers use include:

- variety–selected pieces display the range of tasks students can accomplish and skills they have learned
- growth–student work represents the students' growth in content knowledge and language proficiency
- completeness–student work reflects finished products
- organization–students organized the contents systematically
- fluency–selected pieces are meaningful to the students and communicate information to the teacher
- accuracy–student work demonstrates skill in the mechanics of the language

- goal-oriented–the contents reflect progress and accomplishment of curricular objectives

- following directions–students followed the teachers' directions for selecting pieces for the portfolio (i.e., if teacher requested eight items, student provided eight, not six)

- neatness–student work is neatly written, typed or illustrated

- justification or significance–students include reasonable justifications for the work selected or explain why selected items are significant

- The review process

Teachers rarely base their grading system entirely on the students' portfolios, yet they should decide the portfolio's percentage of the total grade and convey that information to the students in advance. Teachers have the option to grade a portfolio on a quarter, semester or yearly basis. Some teachers confer with their students about their submitted portfolios and refer to that discussion as they analyze the contents.

When evaluating portfolios, teachers may assign grades based on pre-established criteria, such as those listed above. However, teachers usually have additional objectives when reviewing their students' work. For instance, portfolios give teachers insights into their students' interests, into their facility for taking risks, and into their personal process of self-reflection. Sensitive teachers can utilize this information to design instruction that motivates students and fosters their development. Teachers may also review student work with a checklist in hand, marking student strengths and weaknesses. The areas that need improvement can, in turn, be developed into instructional interventions that might be presented to the whole class or might be addressed to individual students.

- The final portfolio

Some teachers encourage students to put together a portfolio at the end of the school year which differs from those turned in for a grade each quarter or semester. Although several pieces may be the same, the

purpose for this year-end portfolio is not. This final portfolio is an excellent tool for demonstrating significant student growth during the school year in language skills, critical thinking and content knowledge. The contents need not be all polished products, rather a progression of entries that show improvement over time are included.

In several schools this final portfolio accompanies the students to their new classes the following year. In this manner, the new teachers are introduced to their students' skills and interests more completely than results of a placement test could ever reveal.

JOURNALS

Like portfolios, journals are useful tools to measure LEP students' progress and achievement. Journals, which are created over a period of time, clearly display student development in language proficiency, in critical thinking skills, and in depth of content knowledge. Unlike tests and quizzes, journals do not measure the output of one class period, rather they show overall change and growth in student ability.

Journals and dialogue journals (discussed in Section 2) also nurture student self-confidence. Because students are responsible for the content of their journals, they are the main decision-makers.

- The journal writing schedule

How often students write in their journals, who reads their journals, and how often they are read are some decisions to be made jointly by the teacher and students. The schedules often depend on the teacher's objective for the journals. In some classes, students write in their journals daily; in others, two or three times a week. Some students like to share their journals with partners or with their cooperative learning group as well as with the teacher. Some teachers read the journals each time students write, others read them once a week. Some teachers write comments and respond to the writing, others do not.

- Assessment through journals

As mentioned earlier in this section, assessment is multi-faceted. For many teachers, the overall goal of journals is to encourage students to

write, write, and write some more. It is hoped students will enjoy writing. Therefore, the use of journals as assessment instruments must be carefully considered.

The least intrusive assessment practice may be using journals to measure student literacy development. To facilitate this, journal writing would occur naturally as part of the classroom routine with students choosing their own topics. All students, even those who do not yet write in English, should keep journals. If they are unable to write, they can draw pictures, copy words they know or see in their environment, and/or use invented spelling. Literacy will emerge as students write a few words and later, sentences, about their pictures and as they take greater and greater risks in their writing. Teachers can review the students' growth in literacy skills by reading the journals.

Another non-threatening use of journals as an assessment tool would be to discover students' prior knowledge of a topic. In this case, the teacher may want to assign topics for journal writing. Although this reduces student control of the journal, occasional use of this technique could assist teachers in preparing upcoming lessons.

To guide their instruction, teachers may also take more control of the journals' content by asking students to summarize the lesson each day for the last five minutes of the period. If teachers review these journals regularly they can adjust their lesson plans–reteach a point misunderstood by many students, move on more quickly to a new topic if full comprehension is apparent.

On rare occasions teachers may want to use journals to evaluate student achievement. This practice must be employed judiciously so that students are not discouraged from writing in their journals. For this purpose, teachers assign topics that correspond to the objectives of the class. They may focus on comprehension of the content and/or fluency or accuracy of the language. It is important to inform students in advance as to how their writing will be evaluated.

Language-related Content Assessment

Some content teachers may wish to design assessment measures that focus solely on the language of their discipline and not on successful completion of content tasks, like finding the solution to a word problem or listing three causes of the Civil War or balancing a chemical reaction. The *Pre-Algebra lexicon* (Hayden & Cuevas, 1989) is a teacher resource that offers model language assessment techniques for mathematics. The following examples are drawn from this document.

- Use cooperative learning tasks to measure knowledge of pre-algebra concepts

Language assessment, especially on informal measures to guide instruction and diagnose student comprehension, can be administered individually or in cooperative groups.

Directions: Divide the class into small groups of three students each. Give each group three sets of colored cards (e.g., Set A cards are blue; Set B-yellow; Set C-white). Set A contains a measurement; Set B, the type of unit (standard or nonstandard), and Set C, the classification of the measure (weight, volume, distance, time). Have the students match the cards appropriately. The students should display the results on their work table by arranging the cards in the correct order, as follows:

[Set A] » [Set B] » [Set C]

Set A	Set B	Set C
1. 21 steps	standard nonstandard	weight volume distance time
2. 200 pounds	standard nonstandard	weight volume time distance

3. 75 truckloads	standard nonstandard	weight volume distance time
4. 35 minutes	standard nonstandard	weight volume distance time

- **Use writing and illustration to assess the students' skills in applying definitions**

The students' written work does not need to be the exact definition of the figure described, only a comprehensible summary or paraphrase.

Directions: For each one the following, draw the geometric figure asked. Then write a sentence or phrase that describes the essential features of the figure.

Directions	Figure	Description
1. Draw an isosceles right triangle.		_____ _____ _____ _____ _____
2. Draw a hexagon.		_____ _____ _____ _____ _____
3. Draw a rectangle that has a perimeter of 10 units.		_____ _____ _____ _____ _____

- Use listening comprehension activities to measure student knowledge of the language of mathematical operations

The following technique works well in a paired student arrangement. One student has the expressions, the other has the response sheet.

Directions: Read each expression. Have the students circle the operation they hear (on a response sheet, like the one below).

	Expression	Response sheet Operation			
1.	fifteen times fifteen	+	-	x	/
2.	sixty-two divided by four	+	-	x	/
3.	the quotient of 20 and 5	+	-	x	/
4.	one less than twenty-seven	+	-	x	/
5.	eight increased by two	+	-	x	/
6.	four-ninths of twenty-seven	+	-	x	/

- Encourage students to design their own problems

In this technique students may be given specific information and then asked to create appropriate word problems. They do not need to solve the problem themselves.

Directions: Write a word problem that fits the solution/information given. Be sure to use complete sentences.

Information	Problem
1. $120 - (3 X $30) = $30	
2. 4 X 17 = ? rose bushes in the garden	
3. 3 X 25 = 75	

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Assessment Across the Curriculum

The move towards more informal assessment of student progress is not an isolated feature of integrated language and content classes. Professional teachers organizations such as NCTM, NSTA and NCSS have issued calls for the re-evaluation of assessment practices in schools and in several instances, have made specific recommendations for change (NCTM, 1990; NSTA, 1991). These organizations want to increase student communication about the content topics in the classrooms, whether it be an advanced placement biology course or a third grade social studies unit. Their goals, therefore, are similar to those who integrate language and content and many of their recommendations are reflected in the techniques described above.

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6 Key Issues in Implementation

Implementation of this instructional approach has occurred in various ways in schools across the country. Several models of implementation are discussed in Section 7. A general scenario of how integrated language and content instruction gains a foothold in a school and extends to additional classes and departments follows:

1) Efforts for integrating language and content are undertaken by an individual teacher, either language or content, who recognizes the needs of his/her students and tries to address them.

2) Teams of content and language teachers get together to discuss some of the difficulties their LEP students are experiencing and to find solutions. One teacher alone, or two working cooperatively, use the integrated approach illustrated in this manual.

3) This collaborative procedure spreads to several other teachers in a school and, perhaps, the success of the approach attracts the attention of curriculum supervisors and other administrators who wish to implement the approach district-wide. They plan professional development workshops and call on other resources from the public and private sector available in the district.

The following suggestions for implementation result from insights from past experience confronting multiple concerns, such as student motivation and achievement, teacher anxiety, and conflict with administrative directives and goals. These ideas for teachers and administrators offer a means for moving LEP students more smoothly through the transition from traditional ESL language classes to mainstream content classes.

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Cooperation/Collaboration among Teachers

- **Classroom observations**

Collaboration typically begins with classroom observations. In this way, language and content colleagues can see what problems their counterparts face and how they attempt to resolve them. Teachers should be comfortable with each other and with this activity for the observations to be successful.

As an important key to the professional growth of teachers who will employ this approach, each teacher plays two roles during the observations. The first is that of a student. Conten teachers, seeking to learn ESL teaching methods, can observe their ESL colleagues in class. Not only do they see some methods in real life situations, but they will also see how the ESL teachers handle discipline and classroom organization. Language teachers, preparing themselves to introduce relevant content, can attend content classes. They can become familiar with methodologies used to present content and to assess the students' comprehension of the material.

The second role, which occurs after the initial observations, is that of a coach. Besides observing colleagues teaching in their traditional manner to guide their own instruction, the teachers as coaches need to observe colleagues later when they are trying out the approach. Comments and suggestions for improvement can then follow through informal chats or scheduled feedback sessions.

- **Joint planning time**

To enable teachers to discuss and plan lessons, a school should ideally establish a team teaching policy that matches language and content teachers; however, few school systems are organized in this manner. An effective plan for success of the integrated approach is organized planning time for content and language teachers to work together.

There should be time allocated *before the school year begins* to focus on the overall curricula of the courses when the objectives for the classes are defined. The syllabi of the classes need to be planned, including decisions concerning which lessons should emphasize content, and which ones language. The textbooks and supplemental

materials need to be examined, so the vocabulary, language functions, and discourse requirements may be incorporated into the syllabi from the start. The sequence of topics that will be presented in separate language and content classes must be structured as well.

The cooperation does not stop on the first day of school. Nor should it be assumed that the teachers, on the basis of some training sessions and a copy of a new curriculum, are adept at using the approach or even have learned all the content topics and language features they will need to address. *Throughout the school year, teachers must schedule time together* when they can share their knowledge about the upcoming topics in the curriculum. Given joint planning time, content teachers can familiarize the language teachers with the subject matter they are expected to cover in their course. Language teachers, likewise, can prep their content colleagues to adapt instruction or preview vocabulary and certain grammar items. Further, teachers can write material adaptations jointly and/or review adaptations that have been done separately.

- Evaluation and revision

During the first year, a great deal of evaluation and revision of the curricula needs to be undertaken during planning sessions. Among the points likely to be raised at these sessions are: clarifications of certain topics (language and content); additional teaching methods; assessments of the materials used, the instructional approach and the students' progress; strategies to serve the underachieving LEP student; and programs to provide enrichment opportunities for the gifted and talented LEP student.

Administrative Support

- Teacher schedules with joint planning periods

Principals play an important role once new curricula are in place. The principals, along with department chairs (if they exist), need to design the teachers' workday so that joint planning time is included. The teachers may not have to meet every day, but their free periods should correspond.

In the same vein, principals need to arrange release time for teachers to observe their colleagues in class. In some schools that have started using this approach, teacher duty periods are cut, so that the planning time is more flexible. Those districts have hired school monitors to manage such duties as lunchroom supervision and study hall. In other schools, principals hire one substitute teacher who substitutes for many different teachers–one period for each. Then each period one teacher is free to observe a colleague.

- Professional development

Principals and other administrators need to provide encouragement and support. Joint pre-service and in-service training for the language and content teachers is recommended. Periodic workshop sessions offered throughout the school year are particularly beneficial. In this way, the teachers will have time to try out the approach, discuss problems with it, share successes, and implement new strategies under the year-long guidance of a teacher training consultant.

Since it is unlikely that all the teachers in a school district will be trained in the approach initially, the administrators must carefully select the teachers who will participate. The teachers trained in the beginning can become trainers for colleagues at later dates. (See Section 8 for information on the training of trainers.)

- Student placement

Administrators are key decision-makers in the overall placement of students. Current research has shown that LEP students are often at a greater disadvantage when they are isolated from their peers than when they are "untracked" and placed into regular classrooms where they interact with native English speakers and the standard curricula. Administrators can play a major role in getting teachers to accept heterogeneous classrooms. Encouraging teachers to integrate language and content instruction and supporting them with training opportunities will provide them with tools for working with multi-level classrooms. (Certainly in some instances, such as when LEP students have extremely low levels of English proficiency, a content-based ESL class will be more effective at first.)

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Classroom Organization

The following suggestions refer to instructional decisions made by teachers and reflect recommendations for facilitating the integrated approach.

- Physical appearance

The rearrangement of desks into groups, circles or pairs is important for promoting student interaction. Setting up study carrels and learning centers for both enrichment and remedial instruction is recommended. Adding realia to the classroom—objects on shelves, pictures, posters, photos and student artwork on walls, and student progress charts for specific projects—makes the area more interesting and relevant to the students. To promote independent reading, a small library with trade books, magazines, newspapers and student-published stories should be created.

- Student preparation

The students will need to be trained for certain *interactivities* (i.e., activities that promote interaction). It takes time and patience to accustom students to doing cooperative group and paired work. Showing them new activities requires introductory sessions, and may take several attempts, before the students can perform in the desired manner. Teachers, in preparing their lessons, must take into account the extra time the new strategies will demand until everyone is familiar with them.

- Heterogeneous classes

There are two types that can be described, depending on the policy of student placement within the school.

Mixed language minority and majority students - Content teachers need to raise the native English speaking students' awareness of the language problems their non-native speaking classmates will experience. By developing their sensitivity, the teachers can expect increased communication and, as they work together, improved cross-cultural understanding among the language groups. Teachers should have the English speaking students serve as peer tutors for the non-native speaking ones.

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Mixed levels of LEP students - Frequently, in classes with LEP students, some learn the language and grasp the material more quickly than others. In school situations where quick learners cannot be moved into a higher level class, teachers must augment their lessons, so that those learners will continue to progress and not become bored. Providing them with learning center activities is one solution. Other options include using them as peer tutors or giving them individual library and/or computer assignments which will enable them to become the class "experts" who assist their classmates during later class assignments.

SCHEDULING

Efforts must be made to schedule students into classes that meet their linguistic and academic needs and also maximize their intellectual potential. Counselors, administrators and teachers of LEP students should discuss the school's master schedule to identify and arrange avenues for students advancement.

- Coordination of students and teachers

When content and language teachers collaborate (working on related curricular objectives), the guidance counselors should organize students' schedules so that the LEP students in one class are placed in the other as well.

- Semester courses

Some students, especially those who have recently entered the country and those of lower language proficiency, may make rapid progress in their language and academic development. They should not be held back simply because they were placed in one class at the beginning of the year. Instead, when they are ready to move into a more advanced course, they should have opportunities to do so. To facilitate this, several school systems have instituted semester courses.

- Credits

The question of credits for the classes also needs to be addressed. At present, most schools offer a limited number of elective credits for ESL classes. Some schools offer none. This practice often hinders

the LEP students' receipt of a diploma within the four high school years, especially if they start their secondary education at the lowest ESL level. There are some schools, however, that offer English credits for ESL classes. The approach to integrating language and content should help persuade administrators that a required credit should be given for language, as well as content, classes.

Bridging

- Integrate language and content

In schools that only offer ESL language classes and regular content classes, it is often difficult to bridge the gap between the two. Unfortunately, many gifted and talented LEP students are denied enrichment and more advanced content classes because their English proficiency is limited and their academic skills are underdeveloped. Content-based language classes and language-sensitive content classes can help to solve this problem.

Clearly, students who speak no English need primarily ESL language classes in the beginning, but they can still attend classes that are less language dependent, such as physical education, music and art. At the same time, language teachers can start introducing content. After several months, depending on their acquisition, the students can begin language-sensitive content classes, such as science, math and social studies. Then, they can be slowly mainstreamed into the content classes where they are most likely to be successful, complemented by ongoing content-based language instruction.

Mainstreaming

- On-going support

Once LEP students are mainstreamed, it should not be assumed that they no longer need assistance. Understandably, they will confront situations where they have little background knowledge of the material or will be asked to do a type of report or experiment for which they are unprepared. Support must still be provided for these students. They should have access to additional resources, geared to levels of English

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proficiency level, where they can look up information. Their former teachers should make every effort to be available for questions, advice and supplemental help.

- **Tutorial/buddy programs**

Establishing a tutorial or buddy program, either with peer tutors or adults, is highly recommended. The peer tutor/buddies may be former LEP students or native English-speaking students. The adults may be other school staff members, students in adult education classes, or parent and community volunteers.

- **Follow the achievement of mainstreamed LEP students**

It is useful for guidance counselors to follow the performance and achievement of former LEP students for at least their first year in mainstreamed classes. This information can be used in two ways: to arrange support services for those students as well as students who will be mainstreamed in the future, and to inform ESL teachers of their former LEP students' progress so they can adjust the integrated instruction they offer to prepare current students better for the academic demands they will encounter.

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7 Models of Implementation

Several school districts have implemented the integration of content and language instruction in a variety of ways:

1) ESL teachers plan content-based language classes on a course-by-course basis.

2) Content teachers, recognizing the problems for their LEP students (in classes with language majority students), organize their courses to be more language-sensitive. This frequently begins in one department, e.g., among science teachers.

3) Language and content teachers set up sheltered classes for the LEP students. In this case the focus of the class is on the subject matter content with one teacher or department addressing both the language and content issues.

4) An entire ESL curriculum is written to integrate content with a greater emphasis on language study than found in the sheltered content classes.

5) The curriculum from a content area is redesigned to incorporate methods and activities that promote language development as well as subject matter knowledge. Other departments often observe the success of this approach and attempt to implement the integration as well.

6) Some schools plan a "language across the curricula" or "whole-school" approach. This model expects all teachers to be responsible for the language training of their students.

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All of these models work most effectively with administrative support and professional teacher development. A coaching component to the in-service training is an excellent resource for the teachers. Classroom observations can be conducted as teachers try out the strategies and follow-up feedback sessions can be held over a period of several months.

One by One: Content-based ESL and Language-sensitive Content

These classes tend to develop informally as an individual teacher recognizes the need to adjust instruction to meet the LEP students' needs more directly and often seeks help from a colleague or two. For example, an ESL teacher wants to prepare students for their transition to mainstream classes and thus plans lessons to give them exposure to some content area vocabulary and concepts in one or more subjects. This language teacher may approach a content teacher for some ideas for content material to address in class. The content teacher may have several LEP students in class who do not participate nor appear to comprehend the subject matter. After asking an ESL colleague for suggestions, this content teacher adjusts the style of instruction, perhaps using more paraphrasing, introducing key vocabulary, and assigning LEP students to peer tutors.

The school administration may not be fully aware of the changes occurring in some classrooms. There is rarely administrative support and resources for teacher training and materials development. In general, teachers learn about content-based ESL or language-sensitive content through journals and other professional literature they read, sessions they attend at conferences, and discussions with colleagues. These classes may be found in elementary and secondary schools.

Sheltered Classes

These classes have commonly been called "Sheltered English" if taught by an ESL teacher, or "Sheltered Content" if taught by a content teacher. The model seeks to make academic instruction compre-

hensible in English to LEP students, using some of the strategies described earlier in this document as well as methods individual teachers have developed over the years in response to their classroom situations. While the students are learning the subject matter, they are also acquiring additional vocabulary and language skills (Northcutt and Watson, 1986).

In a sheltered class, the ESL teacher trained in content objectives, or a content teacher trained in ESL methodology and sensitive to the language demands of the course syllabus, is responsible for teaching content through courses such as ESL/Social Studies or ESL/Math. These classes primarily appear in secondary schools and the administration provides support for their implementation. In effective sheltered programs, the ESL teachers and the content teachers collaborate in planning their syllabi and share their materials and techniques during the school year.

Integrated Language and Content Curricula

Integrated language and content curricula can be developed for elementary and secondary grades. These curricula systematically integrate English language instruction with the concepts taught in social studies, science, mathematics, or other content areas. Thus, the content is the vehicle through which the language is learned. The curricula should describe sample key vocabulary, language functions and skills, and applicable listening, speaking, reading and writing competencies for specific topics. It can divide the competency requirements not only by grade level, but also by the English proficiency level of the student.

Integrated curricula may be developed by one department in a school or by several. These curricula are often theme-based and the classroom materials are chosen carefully to include real literature, a content area textbook, adapted readings and other supplemental materials. In successful programs, the ESL department and at least one content department participate in the integrated instruction. These departments design their curricula to be mutually reinforcing.

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Whole-School Approach

Some school districts, like Queensland, Australia, and some schools like the International High School at LaGuardia Community College in New York have developed a "whole-school awareness" program. They have arranged for co-involvement of mainstream and language teachers. The teachers form task groups to analyze the syllabi, work programs, textbooks and tests of the subject areas (e.g., English, mathematics, science, geography, business, etc.) in order to identify the language functions and genres (types of texts, rhetorical styles, etc.) found in each.

At the International High School students are never offered an ESL class. Rather, each content teacher wears an ESL hat and is responsible for the language development of the students. All curricula are designed by the collaborative teacher groups to spiral and reinforce language as well as content information.

Schools in Queensland have taken a "functional-notional" view as the linguistic framework. The task groups investigate what the learners have to do with the language in order to understand and communicate and then provide explanations of the functions at all grade levels and for all subject areas. By organizing commonalities of functions among subject areas, teachers implement a coordinated approach across the curriculum. The individual teachers, however, are responsible for the subject matter language of their classes (e.g., technical vocabulary), with the exception of these function commonalities.

After discovering the language demands associated with the subject areas, the content objectives of the curricula are reviewed. Queensland teachers prepare topic units to incorporate the functional language perspective and devise exercises and graphic outlines that focus on the language functions. Teachers may also include informal assessment measures, such as those described in Section 5, and analyze the types of test questions they ask and the features of written responses. This analysis would enable the teachers to find "model" responses that could be presented to the students.

In Queensland, the whole-school approach resulted in several positive outcomes (Houston, 1986):

1) the development of a collaborative relationship between ESL and content teachers;

2) an increase in opportunities for professional exchanges and interaction between secondary and primary schools;

3) clear examples of obvious improvement in students' performance and attitude; and

4) insights gained by the mainstream teachers about language that were found to be relevant and applicable to many of the native-speaking students as well.

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8 Models for Staff Development

Since professional development may be needed to assist teachers in preparing for successful integration of language and content, this section includes some sample agendas of training workshops where this approach has been presented. The workshop leaders are responsible for facilitating the initial collaboration of the language and content teachers and for helping them recognize the important qualities they bring to this cooperative venture. The rationale which supports this approach is explained in the workshops, and time is provided for discussions of individual situations.

The length of a workshop and training program may vary according to the needs and the resources of a school or district. (The State of Florida, for example, has mandated that all teachers who interact with language minority students receive between 60 and 200 hours of in-service instruction.) In general, workshops may be held during half or full-day sessions or one to two week seminars. A training program may last for several workshops or may be ongoing throughout the year.

In any model of professional development, it is important to design follow-up sessions for assessment, problem-solving and suggestions. The teachers, after having been introduced to this new approach, still need guidance in its implementation. Not all of the potential snags for each teacher can be anticipated at the workshops, so an opportunity to give and receive feedback during implementation is essential. A coaching system set up within the schools can address this issue.

Peer coaching may be established within a school if teachers' and supervisors' schedules are flexible and there is administrative support. Otherwise, trainers can act as the coaches, making observations and holding follow-up sessions several times a year. The advantage of a peer coaching arrangement is the proximity of the teacher peers. Even if

observations and feedback sessions are scheduled for specified intervals, fellow colleagues, who work together daily, can support one another and discuss problems at any time.

In the case where the trainer is the coach, the use of dialogue journals is recommended. Teachers may act as the "students" and write about their experiences using the integrated language and content approach in their classes. This reflection is important as teachers try to accommodate the newly-learned strategies and techniques to the abilities, interests and needs of their students. Periodically the trainer receives the journals and responds with encouragement, suggestions and possibly clarification of a strategy discussed in a workshop.

Sample Workshop Agendas

- **Half or full day in-service workshop**

The first sample agenda describes a half-day in-service program for language and mathematics teachers. Among the presenters are teachers who were previously trained in the approach and are using it in their classes. The workshop focuses on the application of the approach to mathematics:

The Communicative Approach to Teaching Mathematics

8:30 Welcome and Overview of Integrated Language and Content Instruction

8:45 Content-Based Language Instruction and the Language of Mathematics:
Presentation of the rationale, research findings, and approaches currently used in different school districts

9:15 Language-Sensitive Mathematics Instruction: How one math teacher alters his instruction by modifying his teacher talk and assignments

9:45 Break

9:55 Video and Discussion: *Communicative Math and Science Teaching*

10:45 Teaching Techniques and Materials for Integrating Language and Mathematics
In the language classroom
In the mathematics classroom
English Skills for Algebra

11:30 Assessing the Language of Mathematics:
The *Pre-Algebra Lexicon*
Portfolios
Journals

12:15 Summary:
Math/Language Activities in Your Classroom

- Weekend seminar

The following agenda represents a weekend seminar, essentially two days of training. This type of workshop can be particularly effective when held away from the teachers' school building. Working together for several days engenders closeness and camaraderie among the participants. In this workshop, language and content teachers from various disciplines participate, as do administrators. The trainers can then remain in the area and observe the teachers during the following week, meeting after school for feedback sessions.

Integrating Language and Content Instruction in Middle Schools

Day 1 (Friday evening)
Introductions
Overview of integrated language and content instruction
Rationale
Key issues in implementation

Dinner

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Day 2 (Saturday)

Focus on the Language of Mathematics, Science and Social Studies

Examples from French and English

Linguistic Features of Mathematical and Scientific Problem Solving

Analysis of Student Transcripts

Discussion: How to Integrate Language and Content Instruction

Video presentation: *Communicative Math and Science Teaching*

Teaching Techniques and Material Adaptations

Lunch

Examination of Integrated Materials: *English Skills for Algebra* (math); *Of the People; By the People, For the People* (social studies)

Discussion of assessment strategies for language and content

Introduction to the *Pre-Algebra Lexicon* (PAL)

Lesson Planning

Small groups develop a lesson for a specific class

Day 3 (Sunday morning)

Group Lesson Planning (continued)

Group Presentations of Lessons

Summary and Evaluation

- **A workshop series**

The next model shows a series of workshops that can occur during a semester. The length of each workshop is three hours. As the teachers

grow more familiar with the approach, the tasks they perform outside the training sessions become more extensive.

Session I:	Why integrate language and content? Successful models and strategies.
Session II:	Implementing language and content instruction in secondary classrooms.
Session III:	Designing integrated lessons.
Session IV:	Presentation of lessons to entire school staff.
Session V:	Issues of curriculum and materials development. Action plans for the future.

Throughout the semester, the teachers maintain journals to record their experiences and observations as they implement integrated activities. At the start of each session, problems noted in these journals are raised and suggestions from the group are generated. In pairs or individually, the teachers design lessons for their classes which integrate language and content instruction. They prepare and offer a presentation for the entire staff at their school. Several teachers may be summer curriculum writers and so the training group provides guidance and recommendations for their work.

- Year-long training

This final model represents a successful three-year training program that involved elementary and middle school teachers from two neighboring districts. A critical difference between this model and the ones discussed above is the establishment and nurturing of teacher teams. Each school maintained one team per year that included a language teacher (ESL or bilingual), several content teachers of math and science, and an administrator (principal or vice principal). By the end of the three years, many teachers within one school were trained. In some of the schools, the integration of language and content became a whole school approach.

This training program begins each year with a three and one-half day summer institute for new teachers involved in the project. During the following two semesters, trainers observe in the teachers' classes and provide feedback. Consultants and trainers may act as master teachers and teach a demonstration lesson in several of the classes. A Fall Reunion is held with teachers from the summer institute. At this meeting additional methods and techniques are discussed, implementation problems may be raised, and teachers present a lesson they have used successfully. A Spring Reunion is also held with participating teachers and administrators from all years. The meeting focuses exclusively on teacher lesson presentations. These lessons are then collected, organized and redistributed as a package to all participants.

INTEGRATION OF LANGUAGE AND CONTENT INSTRUCTION SUMMER INSTITUTE

Friday or Sunday afternoon

3:00 Introduction
Project overview
Institute objectives and agenda

The integrated approach
Definition and rationale

School implementation: Examples from teachers

4:00 Small groups: School needs assessment

5:00 Reception

Monday

9:30	Language arts across the curriculum Whole language approach
12:30	LUNCH
1:30	Integrating language and mathematics Whole group and small group activities
4:00	Wrap-up

Tuesday

9:30	Integrating language and science through cooperative learning Whole group and small group activities
12:30	LUNCH
1:30	Models of implementation
2:00	Developing thematic units: Planning for language and content objectives
4:00	Wrap-up

Wednesday

9:30	Developing integrated lesson/unit plans
11:00	*Drop Everything and Read! (DEAR):* Sustained silent reading
11:30	Developing integrated lessons, continued

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12:30	LUNCH
1:30	School teams: Developing action plans Whole group - what the training staff will do, in class collaborations, school team meetings Small group - plan for own school
2:30	Whole group - Share action plans
3:15	Evaluation and next steps
4:00	Adjourn

Training of Trainers Program

Because the language minority student population is growing so rapidly and because school resources for in-service training are limited, more and more school systems are establishing professional training of trainers programs. Through these programs, school systems develop their own "in-house" trainers. In general, a small number of teachers are trained initially. Then, in small groups at a time, they train other teachers in their schools. Some of these other teachers may also become trainers.

The following list represents many of the topics that may be covered in a training of trainers program which will prepare participants to provide professional development for teachers who work with linguistically diverse students (Grognet, 1991). The topics in this list provide not only information about the integration of language and content, but also significant background information for trainers to know about LEP students' cultures and the language acquisition process. Because trainers will become resources for the teachers in their districts, it is important for them to have a basic knowledge of these topics which are frequently raised by content teachers.

Cross-cultural Communication
- Culture and Values
- Culture and Behavior

Culture and Communication Styles

Second Language Acquisition

Curriculum and Materials
- Integrated Language and Content Instruction
- Models of Implementation
- Whole Language Approach
- Materials Adaptation

Instructional Strategies and Techniques
- Elementary v. Secondary
- ESL and Bilingual Education
- Content Areas
- Learning Styles

Testing and Student Evaluation
- Tests
- Informal Assessment

Program Evaluation

When a school district sets up a training of trainers program, it should make a commitment to on-going training for both the trainers and the teachers. Trainers need to keep abreast of changes in educational practices and policies and also need to learn about new materials and curricula that may be available. Therefore, school districts should anticipate the need for future professional development of the trainers. The trainers, then, will need subsequent opportunities to share their new knowledge with the district teachers.

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9 Resources

Private Sector

American Association for the Advancement of Science (AAAS)
1333 H Street, NW, Washington, DC 20005, 202-326-6666
This membership organization is involved with policy issues concerning the improvement of science education in our schools and society. It supports educational programs to increase minority achievement in science and publishes a newsletter and journals.

Association for Supervision and Curriculum Development (ASCD)
1250 N. Pitt Street, Alexandria, VA 22314, 703-549-9110
This membership organization sponsors conferences and publishes an educational magazine, newsletters, books, and training videotapes.

Association for Supervision and Curriculum Development - Thinking Skills Network, c/o John Barell, Montclair State College, Upper Montclair, NJ 07042
A membership group, this network provides information and services and publishes a newsletter, *Cogitare*, on thinking skills.

Center for Applied Linguistics (CAL)
1118 22nd Street, NW, Washington, DC 20037, 202-429-9292
7069 S. Tamiami Trail, Suite B, Sarasota, FL 34231, 813-921-2183
This institution is involved in research, training and policymaking projects regarding the education of second and foreign language students. It frequently conducts training for content teachers with LEP students. It runs several clearinghouses: ERIC/CLL, NCLE, and, together with The George Washington University, NCBE.

Council for Exceptional Children (CEC), Office of Ethnic and Multicultural Concerns, 1920 Association Drive, Reston, VA 22091-1589, 703-620-3660

This group provides information on special education issues with language minority students.

Council of Chief State School Officers (CCSSO), Resource Center on Educational Equity, 379 Hall of the States, 400 N. Capitol Street, NW, Washington, DC 20001-1511, 202-393-8159

The resource center provides services designed to achieve equity in education for minorities, women and girls, and for the disabled, limited English proficient, and low-income students. It is responsible for managing and staffing a variety of CCSSO leadership initiatives to provide better educational services to "at-risk" children and youth.

Council on Interracial Books for Children
Racism and Sexism Resource Center, 1841 Broadway, Suite 608, New York, NY 10023, 212-757-5339

This group works to help children develop an openness to people with different backgrounds and beliefs. It reviews children's books, texts, and other materials, assists parents, teachers, librarians, and community leaders in providing a bias-free environment for children.

International Reading Association (IRA)
800 Barksdale Road, PO Box 8139, Newark, DE 19716, 302-731-1600

This membership organization holds conferences and publishes a newsletter and journals discussing literacy, whole language, and other aspects of teaching reading.

National Association of Bilingual Education (NABE)
Union Center Plaza, 810 First Street, NE, Third Floor, Washington, DC 20002-4205, 202-898-1829

This membership organization for educators, parents, and others interested in bilingual education sponsors an annual conference and publishes a newsletter and other materials.

National Association for Multicultural Education (NAME)
Office of the Dean, College of Education, Southern University, P.O. Box, Baton Rouge, LA 70613, 502-771-2290

This membership organization is concerned with issues of multicultural education for preschool through university. It holds an annual conference and publishes a newsletter and a journal.

National Committee for Citizens in Education
10840 Little Patuxent Parkway, Suite 301, Columbia, MD 21044-3199, 301-997-9300 or 202-596-5300

This group provides information to parents and citizens to facilitate their involvement in local schools. It has a parent/citizen bilingual (English or Spanish) toll-free help line (1-800-NETWORK) and a newsletter and other publications for parents. Technical assistance on school improvement and speakers are also available.

National Council for the Social Studies (NCSS)
3501 Newark Street, NW, Washington, DC 20016, 202-966-7840

This membership organization for social studies educators is involved in policy issues and effective teaching practices. It holds an annual convention and publishes a newsletter and journals for elementary, secondary and college educators, and researchers.

National Council of Teachers of English (NCTE)
1111 Kenyon Road, Urbana, IL 61801, 217-328-3870

This membership organization for English and language arts educators holds conferences and publishes several journals. One special interest section focuses on issues of whole language instruction.

National Council of Teachers of Mathematics (NCTM)
1900 Association Drive, Reston, VA 22091, 703-620-9840

This membership organization for mathematics educators is involved in policy issues and effective teaching practices. It holds an annual convention and publishes a newsletter and journals.

Network of Educators on Central America (NECA)
1118 22nd Street, NW, Washington, DC 20037, 202-667-2618

This group provides curricula and training on Central American topics. It offers speakers on cross-cultural issues and sponsors teacher trips to Central America.

National Science Teachers Association (NSTA)
1742 Connecticut Avenue, Washington, DC, 20009, 202-328-5800

This membership organization for science educators is involved in policy issues and effective teaching practices. It is currently redesigning the science curriculum for grades 6-12. It holds an annual convention and publishes *NSTA Reports*.

Stanford Program on International and Cross-Cultural Education (SPICE)
Littlefield Center, Room 14, 300 Lausen Street, Stanford University, Stanford, CA 94305-5013, 415-723-1114

This program has supplementary curriculum units with interdisciplinary topics and staff development programs on use of materials and cross-cultural education.

Teachers of English to Speakers of Other Languages (TESOL)
1600 Cameron Street, Suite 300, Alexandria, VA 22314, 703-836-0774

This membership organization holds an annual conference, publishes newsletters, journals, and other books, sponsors a job referral service, gets involved with policy decisions and acts as an umbrella for numerous special interest sections and regional and state affiliates.

Public Sector (Federally-funded programs)

OBEMLA (Office of Bilingual Education and Minority Languages Affairs), US Dept. of Education. 400 Maryland Avenue, SW, Washington, DC 20202, 202-732-5072.

OBEMLA provides information about funded Title VII and other special projects. It funds the regional Multifunctional Resource Centers (MRCs), two Evaluation Assistance Centers and the National Clearinghouse for Bilingual Education (NCBE) as well as programs in school districts and other projects. The following information is current as of 1991:

Multifunctional Resource Centers

New England Multifunctional Resource Center, Brown University
345 Blackstone Boulevard, Weld Building, Providence, RI 02906, 401-274-9548, FAX 401-863-3700

Hunter College and the Research Foundation of the City University of New York
695 Park Avenue , Room 924 West, New York, NY 10021, 212-772-4764, FAX 301-588-5947

Mid-Atlantic Multifunctional Resource Center, COMSIS
8737 Colesville Road, Suite 900, Silver Spring, MD 20910, 301-588-0584 or 800-228-6723

FAU-MRC, Florida Atlantic University, College of Education
College of Education MT17, 500 NW 20th Street, Boca Raton, FL 33431, 407-367-2301, FAX 407-367-2319

Midwest Bilingual Education MRC, InterAmerican Research Associates
2360 East Devon Avenue, Suite 3011, Des Plaines, IL 60018, 312-296-6070

Upper Great Lakes MRC, Wisconsin Center for Education Research, University of Wisconsin, Madison
1025 West Johnson Street, Madison, WI 53706, 608-263-4216, FAX 608-263-6448

Southwest Education Development Laboratory
211 East 7th Street, Austin, TX 78701, 512-476-6861, FAX 512-476-2286

University of Oklahoma, Division of Continuing Education and Public Affairs
555 Constitution Avenue, Norman OK 73037, 405-325-1731, FAX 405-325-1824

Interface Network, Inc.
4800 SW Griffith Drive, Suite 202, Beaverton, OR 97005, 503-644-5741, FAX 503-626-2305

Multifunctional Resource Center
AMR0208 Arizona State University, College of Education, Tempe, AZ 85287, 602-965-5688, FAX 602-965-2012

Multifunctional Resource Foundation, San Diego State University
6363 Alvarado Court, Suite 226, San Diego, CA 92120, 619-594-5193, FAX 619-594-4570

ARC Associates, Inc.
310 8th Street, Suite 220, Oakland, CA 94607, 415-834-9455, FAX 415-763-1490

Metropolitan University
Apartado 21150, Río Piedras, PR 00928, 809-766-1717, FAX 809-766-1763

ARC Associates, Inc.
1314 South King Street, Suite 1456, Honolulu, HI 96814, 808-536-4494, FAX 808-531-7802

University of Guam, Project BEAM
College of Education, UOG Station, Mangilao, GU 96913, 671-734-4113, FAX 671-734-3118

Interface Network, Inc.
3650 Lake Otis Parkway, Suite 102, Anchorage, AK 99508, 907-563-7787, FAX 907-563-8181

Evaluation Assistance Center-East

The George Washington University, School of Education and Human Development, Center for the Study of Education and Human Development, Washington, DC, 20052. 202-994-7117

Evaluation Assistant Center-West

College of Education, University of New Mexico, Albuquerque, NM 87131, 800-247-4268

National Clearinghouse for Bilingual Education (NCBE)

The George Washington University and Center for Applied Linguistics, 1118 22nd Street, NW, Washington, DC 20037, 800-321-NCBE or 202-467-0867

US Department of Education. 400 Maryland Avenue, SW, Washington, DC 20202, 202-732-1635

The US Department of Education funds ten regional *Desegregation Assistance Centers* to assist state and local educational agencies in implementing effective instructional programs for minority and female students.

Desegregation Assistance Centers

Mid-Atlantic Equity Center
American University, 5010 Wisconsin Avenue, NW, Suite 310, Washington, DC 20016, 202-885-8536

Programs for Education Opportunity
University of Michigan, 1005 School of Education Building, Ann Arbor, MI 48109-1259, 313-763-9910

Desegregation Assistance Center, Interface Network, Inc.
4800 SW Griffith Drive, Suite 202, Beaverton, OR 97005, 503-644-5741

Intercultural Development Research Association
5835 Callaghan Road, Suite 350, San Antonio, TX 78228, 512-684-8180

Mid-West Desegregation Assistance Center
Kansas State University, Bluemont Hall, Manhattan, KS 66506, 913-532-6408

Equity Assistance Center, New York University
32 Washington Place, Room 72, New York, NY 10003, 212-998-5110

Southwest Center for Education Equity, Southwest Regional Laboratory for Education Research and Development
4665 Lampson Avenue, Los Alamitos, CA 90720, 213-598-7661

Southeastern Desegregation Assistance Center, 8603 S. Dixie Highway, Suite 304, Miami, FL 33143, 305-699-0114

New England Center for Equity Assistance, The NETWORK
300 Brickstone Square, Andover, MA 01810, 508-470-1080

Mid-Continent Regional Education Laboratory, Equity Division
2550 S. Parker Road, Suite 500, Aurora, CO 80014, 303-337-9090

OERI (Office of Educational Research and Improvement), US Dept. of Education, 555 New Jersey Avenue, NW, Washington, DC 20208-5573, 202-219-1513 or 800-424-1616

OERI funds many research and information-based centers: ERIC Clearinghouses, National Research and Development Centers, and Regional Educational Laboratories. These centers are funded cyclically (e.g., every five years), so their sites change occasionally. For a complete

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list, OERI should be contacted directly, but the following may be of interest to educators with language minority students.

Regional Educational Laboratories

Research for Better Schools. 444 N. Third Street, Philadelphia, PA 19123

Appalachia Educational Laboratory, Inc. 1031 Quarrier Street, PO Box 1348, Charleston, WV 25325

Far West Laboratory for Educational Research and Development. 730 Harrison Street, San Francisco, CA 94107-1242

Mid-Continent Regional Educational Laboratory. 12500 East Iliff Ave., Suite 201, Aurora, CO 90014

North Central Regional Educational Laboratory. 1900 Spring Road, Suite 300, Oak Brook, IL 60521-1480

Northwest Regional Educational Laboratory. 101 SW Main Street, Suite 500, Portland, OR 97204

Pacific Region Educational Laboratory. 1164 Bishop Street, #1409, Honolulu, HI 96813

Regional Laboratory for Educational Improvement for the Northeast and Islands. The Network, 300 Brickstone Square, Suite 900, Andover, MA 01810

Southeastern Regional Vision for Education. School of Education, University of North Carolina, Greensboro, NC 27412-5001

Southwest Educational Development Laboratory. 211 E. 7th Street, Austin, TX 78701

ERIC Clearinghouses

ERIC Clearinghouse for Exceptional Children. 1920 Association Drive, Reston, VA 22091-1589, 703-620-3660

ERIC Clearinghouse for Languages and Linguistics. Center for Applied Linguistics, 1118 22nd Street, NW, Washington, DC 20037, 202-429-9292

ERIC Clearinghouse for Reading and Communication Skills. Indiana University, Smith Research Center, Suite 150, 2805 E. 10th Street, Bloomington, IN 47408-2698, 812-855-5847

ERIC Clearinghouse for Rural Education and Small Schools. Appalachia Educational Laboratory, 1031 Quarrier Street, PO Box 1348, Charleston, WV 25325-1348, 800-624-9120

ERIC Clearinghouse for Science, Mathematics and Environmental Education. Ohio State University, 1200 Chambers Road, Room. 310, Columbus, OH 43212-1792, 614-292-6717

ERIC Clearinghouse for Social Studies/Social Science Education. Indiana University, 2805 E. Tenth Street, Bloomington, IN 47408-2698, 812-855-3838

ERIC Clearinghouse for Urban Education. Teachers College, Columbia University, Main Hall, Room 300, Box 40, 525 West 120th Street, New York, NY 10027-9998, 212-678-3433

Research and Development Centers

Center for Research on the Context of Secondary School Teaching. Stanford University, School of Education, CERAS, Stanford, CA 94305

Center for Technology in Education. Bank Street College of Education, 610 W. 112th Street, New York, NY 10025

Center for the Learning and Teaching of Elementary School Subjects. Michigan State University, College of Education, East Lansing, MI 48824

Center on Assessment, Evaluation, and Testing. UCLA, Center for the Study of Evaluation, 145 Moore Hall, Los Angeles, CA 90024-1522

Center on Education, Finance and Productivity. USC School of Education, Waite Phillips Hall 901, Los Angeles, CA 90089-0031

Center on Education in the Inner Cities. Temple University, 13th Street and Cecil B. Moore Avenue, 933 Ritter Hall Annex, Philadelphia, PA 19122

Center on Education Policy and Student Learning. Eagleton Institute of Politics, Rutgers University, Wood Lawn Neilson Campus, Clifton Avenue, New Brunswick, NJ 08903-0270

Center on the Educational Quality of the Workforce. University of Pennsylvania, Institute for Research on Higher Education, 4200 Pine Street, Philadelphia, PA 19104-4090

Center on the Gifted and Talented. University of Connecticut-Storrs, Department of Educational Psychology, Storrs, CT 06269

Center on Literature Teaching and Learning. SUNY, Albany, School of Education, 1400 Washington Avenue, Albany, NY 12222

Center on Mathematics Teaching and Learning. University of Wisconsin-Madison, Center for Education Research, 1025 W. Johnson Street, Madison, WI 53706

Center on Postsecondary Learning, Teaching, and Assessment. Penn State University, Center for Study of Higher Education, University Park, PA 16802

Center on Science Teaching and Learning. Ohio State University, 249 Arps Hall, 1945 N. High Street, Columbus, OH 43210

Center on Student Learning. University of Pittsburgh, Learning Research and Development Center, 3939 O'Hara Street, Pittsburgh, PA 15260

Center on the Study of Organization and Restructuring of Schools. University of Wisconsin, Center for Educational Research, 1025 W. Johnson Street, Madison, WI 53706

National Center for Educational Leadership. Harvard University, Gutman Library, 6 Appian Way, Cambridge, MA 02138-3704

National Center for Research on Cultural Diversity and Second Language Learning. 399 Kerr Hall, University of California, Santa Cruz, CA 95064

National Center for Research on Effective Schooling for Disadvantaged Students. The Johns Hopkins University, 3505 N. Charles Street, Baltimore, MD 21218

National Center for Research on Teacher Learning. Michigan State University, College of Education, 116 Erickson Hall, East Lansing, MI 48824-1034

National Center for School Leadership. University of Illinois, Urbana-Champaign, College of Education, 1208 Springfield Ave., Urbana, IL 61801

National Center on Adult Literacy. University of Pennsylvania, Graduate School of Education, 3700 Walnut Street, Philadelphia, PA 19104-6216

National Center on Writing and Literacy. UC Berkeley, School of Education, 5513 Tolman Hall, Berkeley, CA 94720

National Research Center on Teacher Performance, Evaluation, and Education Accountability. Western Michigan University, 401 B. Ellsworth Hall, Kalamazoo, MI 4900

Reading Research and Education Center. University of Illinois, 174 Children's Research Center, 51 Gerty Drive, Champaign, Illinois 61820

Research Center on Families, Communities, and Children's Learning. Boston University, 605 Commonwealth Avenue, Boston, MA 02215

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