Dual Language Education: A Promising 50–50 Model

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Abstract

Dual language education programs have become extremely popular. Although these programs share common characteristics, they vary in several respects. Programs use different languages and include students with varying characteristics. For instance, many of these programs include students with fluent English proficiency and those with limited English proficiency; students identified with learning disabilities and those who are gifted; and students who are economically advantaged and those who are disadvantaged. Two basic dual language program models are the 90–10 and 50–50 models. This article describes a unique 50–50 model that divides language of instruction by content area as well as by time. The model has been successfully implemented in regions with high concentrations of Latino students. It does not require a 50–50 balance of native English speakers and native Spanish speakers. In addition to describing the model, the authors report results of standardized tests, administered in English, that indicate that students in schools following this model are achieving high levels of academic proficiency in reading and mathematics.

Introduction

Two-way immersion education is a dynamic form of education that holds great promise for developing high levels of academic achievement, bilingualism and biliteracy, and cross-cultural awareness among participating students. (Howard & Christian, 2002, p. 1)

Enrichment 90–10 and 50–50 one-way and two-way developmental bilingual education (DBE) programs (or dual language, bilingual

> immersion) are the only programs we have found to date that assist students to fully reach the 50th percentile in both the [first language] and [second language] in all subjects and to maintain that level of high achievement, or reach even higher levels through the end of schooling. (Thomas & Collier, 2002, p. 7)

Statements like those quoted above come from a variety of sources and reflect the growing interest in and support for a type of bilingual education in which all students develop full proficiency in their first language and high levels of proficiency in a second language. Although this type of program has been given different labels, in this article we use the term *dual language education programs*.

Researchers in literacy, bilingualism, and second language acquisition; teachers; teacher educators; and policymakers have taken an interest in these programs because they promote success for both language-majority and language-minority students. English language learners (ELLs) who have failed in various types of English as a Second Language and transitional bilingual education programs have made phenomenal gains in dual language programs (Lindholm-Leary, 2001; Thomas & Collier, 2002). In addition, native English speakers in these programs, despite learning through two languages, excel in their native English, scoring higher than peers studying only in English (Lindholm-Leary).

Dual language programs are based on an orientation toward language that Ruíz (1984) has termed *language as resource*. Ruíz contrasts this orientation with earlier approaches that viewed language as a problem and then viewed language as a right. Ruíz points out that regarding language as a resource serves as a better orientation for language planning for several reasons:

> It can have a direct impact on enhancing the language status of subordinate languages; it can help to ease tensions between majority and minority communities; it can serve as a more consistent way of viewing the role of non-English languages in U.S. society; and it highlights the importance of cooperative language planning. (pp. 25–26)

Dual language programs have raised the status and importance of languages other than English in many communities across the United States. In some communities they have eased tensions between groups who speak different languages. The programs have helped build crosscultural school communities and crosscultural friendships among students and parents, relationships that probably would not have developed without the programs. Dual language programs raise the status of languages other than English because as native English-speaking children become bilingual, parents and students alike see the value of knowing more than one language. Finally, as

community leaders, school board members, school administrators, and teachers work together to design and implement dual language programs, cooperation among groups enriches all parties (Freeman, Freeman, & Mercuri, 2005).

Dual language programs are not new in this country. The Spanish–English Coral Way program in Florida and the French–English Ecole Bilinguë in Massachusetts were implemented in the 1960s. However, the interest in dual language education has increased dramatically in the last 15 years (Howard & Christian, 2002). In the spring of 2004, the Center for Applied Linguistics (CAL) listed 283 dual language programs in 24 states, including 100 programs in California (the list can be found at http://www.cal.org/twi/directory/). It is extremely difficult to keep track of the number of dual language programs, in part because of their rapid growth. In addition, the CAL listing is a low estimate because the programs self-report. If programs do not register with CAL, then they are not listed on the CAL Web site. Data from other sources indicate that Texas has over 194 programs (Texas Two-Way/Dual Language Consortium, n.d.). California and Texas have more programs than any others, and the total for these two states exceeds the CAL estimate for all the other states.

Commonalities and Variations Among Dual Language Programs

Although dual language programs vary widely in design and implementation, they all share certain characteristics. Students in the programs usually include some native English speakers and native speakers of another language. These two groups of students study together most of the day. In their classes, students learn language through academic content instruction in both languages. A central goal is that all students become proficient in using two languages for communication and learning. In addition, in this era of high-stakes testing, researchers have shown that on standardized tests given in English, both groups of students do as well as or better than students learning only in English (Lindholm-Leary, 2001; Thomas & Collier, 2002).

Although dual language programs share certain characteristics and are based on the same orientation, they vary in several ways: (a) They are called by different names, (b) They involve different languages, and (c) They involve different student populations. In addition, there are different program models, and these models are implemented in a variety of ways. For instance, two-way programs are dual language programs in which two language groups learn through two languages, while one-way programs are those in which only one language group learns through two languages.

Despite similar characteristics among the dual language programs, and widespread agreement about the success of these programs, there is not the same agreement about what the programs should be called (Cloud, Genesse,

& Hamayan, 2000; Crawford, 2004; Soltero, 2004): *dual language education*, *two-way bilingual education*, *two-way immersion*, *dual immersion*, and *enriched education* are terms used by various scholars.

We have chosen to use the general term *dual language education programs* because this label captures the essential component, which is the development by all students of full conversational and academic proficiency in both languages through the use of these languages for instruction.

There is also variation in the languages included in the programs. Dual language programs have been implemented in the United States for native English speakers and speakers of Spanish, Cantonese, Korean, French, Portuguese, Haitian–Creole, Tagalog, Arabic, and Japanese. Districts have also considered implementing programs in Hmong and Vietnamese (Freeman, Freeman, & Mercuri, 2005). The database of dual language programs on the CAL Web site (the database can be found at http://www.cal.org/twi/directory/tables.html) shows that new programs are added frequently, and the list of languages other than English continues to expand. This database provides a profile of dual language schools, including information such as contact information, languages of instruction, type of student population, how languages are separated for instruction, maturity of program, and parental involvement. In the overwhelming majority of dual language programs, Spanish is the language used along with English.

Dual language programs also vary in terms of student characteristics. In two-way dual language education programs, about half the students are native English speakers, and about half are native speakers of the language other than English that is featured in the program. In these programs, though, there can be considerable variation in the ethnicity of the native English speakers. Native English speakers may include Anglos, African Americans, and members of other ethnic groups. Often, the students come from different social and economic backgrounds. In one-way dual language programs, all the students are of the same language and ethnic group but differ in their language proficiency. For example, in south Texas, almost all the students are Latinos. However, some are English dominant, some are Spanish dominant, and some are more balanced bilinguals.

Dual language programs also vary in how time is allocated for instruction in each language. The two basic models, the 90–10 model and the 50–50 model, vary in how they divide the time each language is used for instruction. In the 90–10 model, the language other than English is used 90% of the time in early grades, and a gradually increasing proportion of instruction is done in English until sixth grade, when both languages are used equally in instruction. Many schools have adopted this model, placing an early emphasis on the language other than English to help compensate for the dominant power of English outside the school context.

One variation within the 90–10 model involves literacy instruction. In most 90–10 programs, all students learn to read and write in the language other than English. However, in some programs, all students receive initial literacy instruction in their native language, and the rest of the day is divided with 90% of the instructional time in the language other than English and 10% in English. In other words, in these programs, the 10% in English focuses on initial English literacy or English language arts, while the remaining 90% is spent on developing the language other than English through remaining content areas.

In the 50–50 model, students learn in each language about half the time throughout the program. In many programs, all students learn to read in their primary language and then add the second language. Time for the two languages may be divided in various ways—half day and half day, alternate day, or even alternate week. This model is often used in areas with limited numbers of bilingual teachers. Teachers can team teach, and the bilingual teacher can provide the language other than English to one group in the morning and the other group in the afternoon (or on alternate days or weeks). This maximizes faculty language resources.

As this brief review indicates, despite the common characteristics among dual language programs, considerable variation exists in the languages used for instruction, the student population, and the time each language is used. Schools planning to implement a dual language program should choose the model that fits their student population and also is responsive to community perceptions and needs.

Potential Problems with Dual Language Programs

Although research supports the implementation of dual language programs, and many examples of successful programs can be found, certain potential problems still exist. No program for ELLs is a panacea. Effective programs must be well implemented and provided with adequate administrative, faculty, and resource support. There is always the danger that critics of bilingual education will seize on data from poorly conceived or implemented programs and use program results as ammunition in their ongoing battle against any form of bilingual education.

In addition, even proponents of bilingual education have pointed out that dual language programs may be designed to serve primarily the native English speakers who enroll in them. One reason that dual language programs have become popular is that they attract Anglo parents who want their children to become bilingual. Native English speakers do very well in these programs, and as Valdés (1997) has pointed out, if the programs succeed in developing these native English speakers into fully proficient bilinguals, the programs may serve to take away the one advantage that ELLs have traditionally had:

the distinction of achieving a high level of bilingualism. Ironically, ELLs have struggled for years to participate in programs that promote high levels of bilingualism, but they have not been able to due to English immersion (or submersion) and English-only goals imposed upon them by the mainstream. Now, with dual language education, native English speakers are enjoying what many ELLs tried for so long, in vain, to attain.

An even more subtle potential problem is that in some cases, dual language programs may not be established unless a sufficient number of native English speakers, usually at least one third of the students, are available to enroll. As a result, ELLs may be denied the opportunity to participate in a program model developed to serve their needs.

The solution to these potential problems is to ensure that programs are well implemented, that the model fits the social context, and that establishment of the program is not dependent on the presence of a certain number of native English speakers. In this article we present a model for dual language education designed for areas with high numbers of ELLs. We first describe the features of the model. Then we report test score data from schools where the model has been implemented. These scores show high levels of academic achievement for the students in these schools.

The Gómez and Gómez Model of Dual Language Education

L. Gómez and R. Gómez (Gómez, 2000) have developed a model for dual language education that is especially well suited for areas with high numbers of ELLs. The model, which is called the "50–50 Content Model," was developed originally for schools in the Rio Grande Valley, a 100-mile area on the southern tip of Texas along the U.S.–Mexico border. The area is predominantly Mexican American, and districts serve a significant number of ELLs. According to the state's regional service center, as of October 2002, 95% of students across all districts were Hispanic, 82% were economically disadvantaged, and approximately 41% were classified as limited English proficient.

In schools where the model has been implemented, almost all the students are Latinos. Some are English dominant, some are Spanish dominant, and many are bilingual to some degree. There is not a clear distinction between native English speakers and native Spanish speakers in a borderland region like this. Students begin with a full-day prekindergarten program and then move into a full-day kindergarten.

Figure 1 depicts the 50–50 Content Model developed by Gómez and Gómez (Gómez, 2000). It is a unique schoolwide 50–50 model that supports the academic and linguistic development of first language and second language learners across elementary grade levels. The model was developed and implemented in 1996 and revised in 1999 based on initial results of campus implementation.

Grade level	Heterogeneous instructional grouping	Separation of languages for content-area instruction	First language and second language computer support	Ins
Prekinder-garten	[Except language arts] Content-area instruction and Bilingual Learning Center activity conducted in bilingual pairs and groups	* Language arts in student's native language * Mathematics (English) * Social studies and science (Spanish) * Physical education, sustained silent reading (S.S.R.), music, computer lab, and library (language of the day—alternate in English and Spanish) * Learning Centers in English and Spanish	Initial computer literacy (English–Spanish)	Bilingu and/or Second (ESL) Teache (recom
Kinder-garten	[Except language arts] Content-area instruction and Bilingual Learning Center activity conducted in bilingual pairs and groups	* Language arts in student's native language * Mathematics (English) * Social studies and science (Spanish) * Physical education, S.S.R., music, computer lab, and library (language of the day—alternate in English and Spanish) * Learning Centers in English and Spanish	Support of linguistic and cognitive development via respective language of instruction	Bilingu and/or Teache (recom

Figure 1. Overview of the 50–50 Content Model developed by Gómez and Gómez (Gómez, 2000).

Grade level	Heterogeneous instructional grouping	Separation of languages for content-area instruction	First language and second language computer support	Instr
First grade	Content-area instruction and Bilingual Learning Center activity conducted in bilingual pairs and groups	* Language arts and mathematics (English) * Language arts, social studies, and science (Spanish) * Physical education, S.S.R., music, computer lab, and library (language of the day—alternate in English and Spanish) * Learning Centers in English and Spanish	Support of linguistic and cognitive development via respective language of instruction	Bilingual and/or c Teacher (recomm
Second–Fifth grades	Content-area instruction, enrichment activities, and Resource Centers in bilingual pairs and groups	* Language arts and mathematics (English) * Language arts, social studies, and science (Spanish) * Physical education, S.S.R., music, computer lab, and library (language of the day—alternate in English and Spanish) * Learning Centers in English and Spanish	*Specialized content-area vocabulary enrichment* English: social studies and science Spanish: mathematics	Bilingual and/or E

Figure 1, cont. Overview of the 50–50 Content Model developed by Gómez and Gómez (Gómez, 2000).

The 50–50 Content Model is unique in that: (a) It divides languages by subject rather than time; (b) It provides instruction in each subject area, except for language arts, in only one of the two languages; (c) It calls for activities that support the second language learner in the respective subject areas; (d) It promotes the development of content biliteracy by the end of fifth grade; (e) It requires the use of Bilingual Learning Centers from prekindergarten to first grade and promotes the use of project-based discovery learning through Bilingual Resource Centers beginning in second grade; and (f) The language for morning announcements, morning activities, storytelling, music, computer lab, physical education, and library time alternates each day. The language that is used is called the language of the day.

In all the schools in which the model has been implemented, the second language is Spanish, so we will refer to Spanish in the description of the model.

Key Features of the Model

50–50 by Subject Rather Than Time

In many 50–50 models, the language of instruction alternates regularly: each half day; each day; or each week. A problem with this alternation is that it makes it difficult for teachers to plan a consistent lesson sequence. If a teacher introduces a unit on Monday in English and then moves to Spanish on Tuesday, the teacher may re-teach the same lesson in the second language rather than extending it. Even if the teacher does build on the previous lesson, he or she may have difficulty locating and organizing resources in two languages that fit together well. These problems are avoided in the 50–50 Content Model, since each content area is taught consistently in one language, so there can be more continuity in lessons that extend over several days.

Subject-Area Instruction in a Respective Language

Unlike many dual language models, this program design does not call for instruction in each subject area in both languages. Instead, it requires that all learners, regardless of language background, learn certain subjects only in the minority language (the language other than English, e.g., Spanish) and other subjects only in the majority language (English). The philosophy underlying the model is that children can indeed learn subject matter effectively in either their primary language or second language, given the use of appropriate instructional strategies and other activities that support, in particular, the second language learner in the respective subject area (Freeman, Freeman, & Mercuri, 2005). As Cummins (2000) has argued, content learned in one language transfers to another language. As a result, in this model, students

study each academic content-area subject, except for language arts, in just one language and then transfer the knowledge and skills gained to the other language.

The underlying premise for subject-area instruction in only one language is the need for consistency of vocabulary and conceptual development of that subject in the same language. Using one language for each subject area allows teachers to develop conceptual and linguistic connections. This applies to both first language and second language learners, assuming the subject matter is made comprehensible through sheltered instruction strategies. Consistent teaching of a subject in one language also helps ensure that there is no translation or clarification in the primary language during any subject-area instruction.

The model design calls for mathematics instruction in English-only for all learners. Math was selected as the subject to be taught in English to support the language-minority child, who has traditionally been considered the more disadvantaged of the two participants. Mathematics was selected to be delivered in English-only for the following reasons: (a) Mathematics books have more limited (English-language) text than science or social studies texts; (b) Mathematics is generally a more hands-on subject, with numerous manipulatives available; (c) Mathematics is more universal, and its content cuts across languages; and (d) Generally speaking, Spanish-speaking parents can usually better assist their children in mathematics than in other subject areas due to the strong math education traditionally found in Latin American countries.

Similarly, science and social studies, which require more extensive reading, were selected to be delivered in Spanish-only in order to ensure a strong minority-language curriculum, which would support ELLs and help compensate for the strong societal dominance of the English language. The model is designed to increase the chance of all learners achieving full content literacy in both languages, but particularly in the minority language, by the end of fifth grade.

Although this model separates language of instruction for content areas by subject rather than time, students receive about 50% of their instruction in each language. Language arts is taught in both languages. The time usually allotted for mathematics is equal to the time for science and social studies combined. And the language for all other activities alternates daily. As a result, the model is 50–50 in both content area and time.

Bilingual Pairs, Conceptual Refinement, and Vocabulary Enrichment

A central component of the model is bilingual grouping. Even in areas such as south Texas, where almost all the students are Latinos, some students are more dominant in English and others are more dominant in Spanish. Learners are grouped in bilingual pairs or bilingual groups for all subject-area instruction

and for participation in Bilingual Learning Centers, Bilingual Resource Centers, and other activities. The pairing changes regularly, usually on a weekly basis. Throughout the instructional day, learners dominant in English are paired or grouped with learners dominant in Spanish.

Freeman and Freeman (2001) describe a supportive second language environment as one in which students are motivated and encouraged to collaborate and use different modes of learning. Bilingual grouping facilitates comprehension of subject area by the second language learner, who receives linguistic and academic support from his or her partner, who speaks the language as a primary language. For instance, during mathematics instruction, English-dominant learners support Spanish-dominant learners since mathematics is learned in English. During science and social studies, Spanish-dominant learners support English-dominant learners since science and social studies are taught in Spanish. Similarly, during other instructional activities, students work together in bilingual pairs.

Conceptual Refinement that Supports the Second Language Learner and Promotes Content Biliteracy

In this model, the central goal of a subject-area lesson is conceptual learning, while the secondary goal is linguistic development. For instance, a lesson in science is designed primarily to help students develop academic concepts. However, it is also intended to promote language development (in this case, Spanish) in the process of learning that concept. Both these goals can be more readily achieved by students studying in their primary language. Therefore, students learning subject matter in their second language require additional support for at least the first 3 years.

The activity that supports the comprehension of subject matter by second language learners is described as conceptual refinement (see the last column of Figure 1). During conceptual refinement, second language learners of math, science, or social studies are homogeneously grouped and provided reinforcement immediately following the end of each lesson for about 15–20 minutes. Conceptual refinement is conducted in the same language of instruction as the original lesson, using different examples and working with the second language learners as a smaller group. For instance, first-grade English-dominant students learning science in the second language (Spanish) are homogeneously grouped for conceptual refinement given in Spanish immediately following the science lesson in order to clarify or reinforce the lesson or concept just taught. Conceptual refinement provides additional opportunities for students to understand subject-area concepts they studied in their second language.

In addition to conceptual refinement, all students receive vocabulary enrichment lessons. During these lessons, the focus is on language rather than conceptual development. The enrichment lessons introduce specialized

academic language in the students' primary language for concepts studied in their second language. For example, second grade specialized science vocabulary, which was taught in Spanish, is introduced in English to English-dominant speakers during third grade. These enrichment activities are conducted twice a week for approximately 30 minutes. They are contextualized activities, not simply lists of vocabulary items. These activities are typically literature based or in the form of games. The vocabulary enrichment activities are designed to help students transfer knowledge already learned in their second language to their primary language. These enrichment lessons also help ensure that students who study a subject in one language can perform well on a test in that subject in either language.

The Development of Content Biliteracy

The 50–50 Content Model is both comprehensive and detailed, with a number of activities that take into account the academic and linguistic developmental growth of children who are developing their first language and adding a second language. Students develop literacy in their native language while developing academic proficiency in their second language through subject-area instruction.

Learners receive language arts in their native language in prekindergarten through kindergarten. In addition, they receive language arts in the second language from first to fifth grade. For English-dominant students, mathematics also supports their primary-language development from prekindergarten to fifth grade; similarly, for Spanish-dominant learners, science and social studies support their primary-language development.

There is a major change in the model as students move from first grade to second grade (indicated with a thick black line on Figure 1), based on the need for addressing the greater academic demands of the upper grades and the ongoing biliteracy development of all learners. By second grade, most students have become sufficiently bilingual that the need for second language instructional support is less critical. In most of the schools where the model has been implemented, children have had a full-day prekindergarten and a full-day kindergarten class. In schools where students start in kindergarten, the model could be adjusted, and the shift could take place at the end of second grade.

Of course, students still require instruction that is meaningful and contextually supported. However, students are now bilingual, are more confident, and more readily follow directions and content-area instruction in the second language. At this point, the model suggests that greater emphasis be placed on challenging students to use their second language, because they now have the capacity to do so. Several key components mentioned earlier, such as conceptual refinement and vocabulary enrichment, are designed to support the full development of content-area biliteracy.

For example, conceptual refinement promotes content biliteracy in math, science, and social studies for all learners in both languages. Since mathematics, science, and social studies are learned in only one language, the goal beginning in second grade is to develop content biliteracy in those subject areas by the end of fifth grade. By second grade, the goal is that most students have developed sufficient fluency in both languages to understand directions and subject-area instruction in either language.

Bilingual Learning Centers and Bilingual Resource Centers

Bilingual Learning Centers and Bilingual Resource Centers are interactive subject-based learning areas with activities that support first language and second language learners. Bilingual Learning Centers are employed from prekindergarten to first grade, while Bilingual Resource Centers are used from second to fifth grade. The goal of Bilingual Learning Centers is to engage students working in bilingual pairs in self-directed learning activities for a minimum of 30 minutes per day. Bilingual Learning Centers play an important role in the dual language model. The use of learning centers accomplishes three major objectives: (a) They facilitate opportunities for students to use their first and second languages in natural, meaningful contexts; (b) They allow for negotiation of subject-area meaning between learners; and (c) They provide students opportunities to engage in self-paced independent learning with minimal guidance from the teacher.

Both Bilingual Learning Centers and Bilingual Resource Centers contain activities and materials available in English and Spanish. This does not imply that all activities should be available or translated in both languages, but simply that students working together in bilingual pairs will have opportunities to select activities to complete together in either language. Bilingual Learning Center activities should be meaningful and task oriented, giving the pairs an opportunity to produce a finished product. They are aligned to the theme the class is studying and usually serve as previews or extensions of the content objectives related to the theme. Bilingual pairs select their centers on a weekly basis and travel through them throughout each week. The number and types of centers vary from one classroom to another.

Bilingual Resource Centers serve as subject-specific reference areas for bilingual pairs or groups to use in cooperative-learning, project-based activities. Bilingual Resource Centers in second through fifth grade play a very different role than Bilingual Learning Centers because they are to be used exclusively with lessons during subject-area instruction. Beginning in the second grade, the model calls for a greater emphasis on project-based discovery learning for all content-based instruction. Bilingual Resource Centers are simply a grouping of instructional resources available to the teacher in the different subject areas: mathematics, science, social studies, and language arts.

Language of the Day

All school and classroom activities not specifically designated a specific language of instruction adhere to what is called the language of the day, which alternates daily. The central purposes for this component are to: (a) promote bilingualism across the campus and in all uses of language by all school staff, and (b) develop vocabulary in both languages, but primarily in the learner's second language. The language of the day applies to all language used in school by all students and staff other than during mathematics, science, social studies, and language arts instruction.

Activities such as morning announcements, Pledge of Allegiance, daily news, daily calendar activities, physical education, storytelling, library visit, sustained silent reading, music, lunch breaks, water breaks, and end-of-the-day cleanup are conducted in the language of the day. The language of the day is used campus-wide. This component validates both languages and helps students develop both conversational and academic language.

The language of the day is an important part of the 50–50 Content Model. In south Texas, where the model was developed, most administrators, faculty, and staff are bilingual. Teachers hang a sign outside their classroom door indicating the language of the day. Visitors adhere to the language of the day as much as possible. Naturally, if a parent or community member who comes to the school is not proficient in that language, administrators and faculty will use the other language to communicate. Even though this is an important component, we recognize that in some contexts, not enough bilingual faculty or staff are available to implement this feature.

Efficacy of the 50–50 Content Model

The 50–50 Content Model described here is currently being implemented at over 45 campuses in the states of Texas and Washington. Preliminary data from state-mandated standardized tests indicate that the model has been effective in promoting the academic achievement of students who have been in the program.

October 2002 data from two districts that we studied in Texas show that 99% of students are Hispanic, 91% are economically disadvantaged, and approximately 35% are identified as limited English proficient. The data were collected through reviewing students' records, including reported standardized assessment scores by the state of Texas. The participating schools in this study had student populations that mirrored the district demographics in the Rio Grande Valley region of south Texas. There were a total of five schools and over 240 students across the two school districts that participated in this study. All the Latino students in the data are identified as Mexican American.

Prior to program implementation, participating teachers and administrators from these campuses received the same professional development regarding the components of the 50–50 Content Model and specific instructional strategies consistent with dual language schools. This training continued every year for the teachers at the next grade level as the dual language student cohort progressed to the next grade. In addition, classroom evaluation visits were conducted at each school over the course of the year in which the program was implemented to ensure fidelity of implementation. An observation instrument developed by the training consultants depicting the specific model components for effective classroom environment and instructional practices was used for all classroom evaluation visits. This instrument was used by school personnel to compare the classroom environment and instructional practices with the training received. The results of these reviews were not considered as part of this study.

District A implemented the model at three elementary campuses in 2000. The dual language program was launched in prekindergarten, kindergarten, and first-grade classes that year. The students who began the program in kindergarten took standardized tests for third graders in 2003. These students did not have the full benefit of the program since they started in kindergarten rather than prekindergarten. Even though the scores for these students are strong, we expect continued improvement in scores as students who have had the full program took the test in the spring of 2004.

The state of Texas standardized assessment in reading and mathematics is the Texas Assessment of Knowledge and Skills (TAKS). The TAKS is available in English and Spanish for Grades 3–6 and in English-only Grades 7–12. The Texas Education Agency began the development of the TAKS test in 2001, with the first implementation in Spring 2003. The TAKS was developed by thousands of Texas educators across all levels serving on various committees with the Texas Education Agency. These statewide committees reviewed, recommended, and developed items based on the state-mandated curriculum for each subject and grade level (see http://www.tea.state.tx.us/student.assessment/taks). The following results are based on student assessment in Spring 2003. Successful performance on the TAKS is determined by the number of items students answer correctly. The passing score for third-grade reading was set at 56% correct (20 of 36 items).

Figure 2 shows the results of the third-grade reading TAKS for participating English- and Spanish-dominant students at all three schools in District A. Of 117 Spanish-dominant students tested, 103 (88%) met the standard. Of 56 English-dominant students tested, 51 (91%) met the standard. For all 173 students tested, 154 (89%) met the third-grade reading standard. School administrators reported that the third-grade results in math and reading showed significant improvement from prior years. However, it was not possible to compare these results to previous years' third-grade reading and math

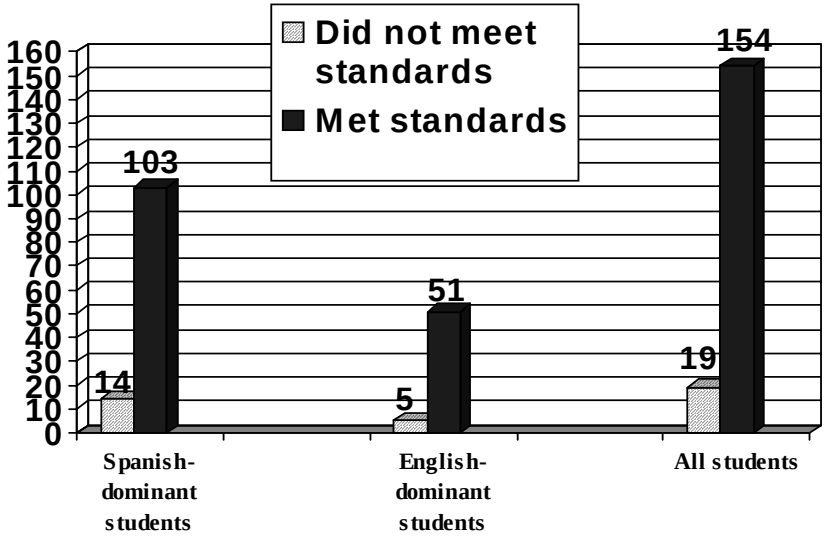

Figure 2. District A third-grade Texas Assessment of Knowledge and Skills reading results.

Note. Due to absences, not all students completed both (reading and math) tests in this study.

results because Texas changed from the previous state test, Texas Assessment of Academic Skills, to the TAKS in the spring of 2003. However, these results are strong. In addition, anecdotal evidence suggests that TAKS is a more difficult test than the previous test. According to Achieve, Inc. (2002), in its review of the transition from the Texas Assessment of Academic Skills to TAKS, the new TAKS test must assess students' analytical and reasoning skills, not just basic skills. Furthermore, students tend to score lower on a test the first time it is given because school personnel have less information to help students prepare for the test.

Figure 3 shows the results on the third-grade mathematics TAKS for participating English- and Spanish-dominant students at all three schools in District A. For math, the pass rate was 53% (21 of 40 items). Most English- and Spanish-dominant students were successful on the third-grade standardized mathematics test. Of 103 Spanish-dominant students tested, 89 (86%) met the standard. Of 56 English-dominant students tested, 53 (95%) met the standard. For all 159 students tested, 142 (89%) met the state third-grade mathematics standard. Although a large number of students were tested in English, some students were in Spanish. This breakdown was not available upon collection of the data. It is notable that Spanish-dominant students passed at such a

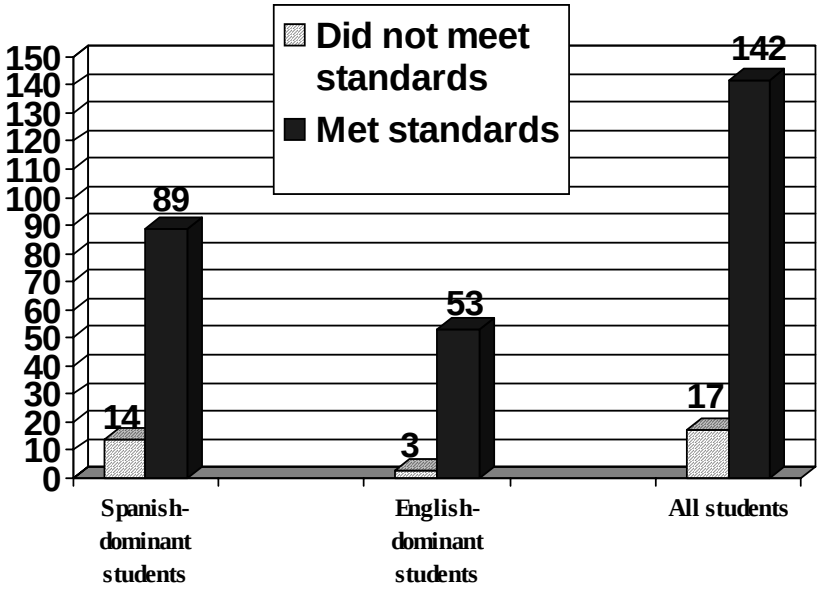

Figure 3. District A third-grade Texas Assessment of Knowledge and Skills math results.

Note. Due to absences, not all students completed both (reading and math) tests in this study.

high rate, even though all instruction in math had been given in English. The high pass rate demonstrates the value of comprehensible second language content teaching with the addition of the specialized vocabulary enrichment activities.

District B implemented the model at two elementary campuses in 1997. The following fifth-grade data reflect student participation in this model for a minimum of 3 to 6 years. Due to high student mobility and district rezoning, only 50% of the students in this study had been in the program for 5 years (starting in kindergarten) or 6 years (starting in prekindergarten) at the time of the testing reported on here. Nevertheless, the results are strong. As depicted in Figure 4, 61 (90%) of the 68 participating fifth-grade students from both campuses met the reading standard, and 66 (90%) of the 73 students met the mathematics standard for the same TAKS test administered in Spring 2003. We would also note that 14% met the reading standard and 18% met the math standard with high scores that qualified them for commendation. All the students in this district took the test in English. It was not possible to disaggregate the data for Spanish or English dominance on these tests. However, by fifth grade, students should have developed high levels of bilingualism.

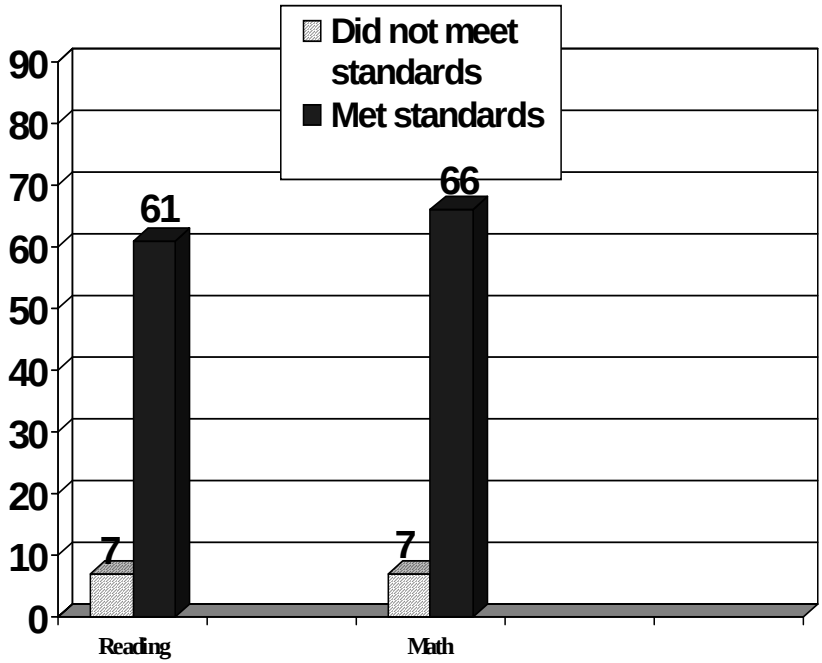

Figure 4. District B fifth-grade Texas Assessment of Knowledge and Skills reading and math results.

Note. The difference between the total student numbers for the two tests was due to absences.

Conclusion

In this article we have described a unique 50–50 model of dual language education. It is a whole-school or whole-district model, rather than a strand within the school, and it is an appropriate model for dual language education in areas with high numbers of ELLs. The model divides language use by content area as well as by time. Students study language arts in two languages, mathematics in English, and science and social studies in Spanish. The model also has a number of additional features, including the use of bilingual pairs; conceptual refinement and vocabulary enrichment activities; Bilingual Learning Centers and Resource Centers; and the language of the day. It is a complex model that takes time to fully implement.

The model has been implemented in areas with large numbers of Latino children. In some schools, the percentage of native English speakers is much lower than 50%, but the programs have worked well based on third- and fifth-grade standardized assessments in reading and mathematics. One school that

was formerly underachieving has received commendations from the state. The test results from two districts suggest that this model shows promise for promoting academic achievement and content biliteracy for all students.

However, additional research is needed. The TAKS tests provide only a snapshot of student performance. Meeting the TAKS standard only requires a student to answer a few more than half the questions correctly. The available results are mainly for the tests taken in English. To ensure that the model is promoting biliteracy and content-area knowledge in two languages, Spanish test results need to be analyzed.

Further studies would provide a more in-depth picture of student performance. Studies could include classroom observations and interviews with students, teachers, and parents. Researchers could also examine students' reading ability using running records or miscue analysis. Writing samples would show evidence of students' developing proficiency. Science and social studies projects could be examined to determine how well students can present subject-matter knowledge. In all these areas, data could be collected in both languages to assess how well the program is meeting its goal of promoting content-area knowledge and high levels of biliteracy.

Despite the need for further study, it is an encouraging sign that students in schools where the model has been implemented seem to be developing the knowledge and skills they need to succeed in school and society.

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