
The Astounding Effectiveness of Dual Language Education for All

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Abstract

Our longitudinal research findings from one-way and two-way dual language enrichment models of schooling demonstrate the substantial power of this program for enhancing student outcomes and fully closing the achievement gap in second language (L2). Effect sizes for dual language are very large compared to other programs for English learners (ELLs). Dual language schooling also can transform the experience of teachers, administrators, and parents into an inclusive and supportive school community for all. Our research findings of the past 18 years are summarized here, with focus on ELLs' outcomes in one-way and two-way, 50:50 and 90:10, dual language models, including heritage language programs for students of bilingual and bicultural ancestry who are more proficient in English than in their heritage language.

Key Concepts

This is not just a research report, this is a wakeup call to the field of bilingual education, written for both researchers and practitioners. We use the word *astounding* in the title because we have been truly amazed at the elevated student outcomes resulting from participation in dual language programs. Each data set is like a mystery because you never know how it's all going to turn out when you start organizing a school district's data files for analyses. But, after almost two decades of program evaluation research that we have conducted in 23 large and small school districts from 15 different states, representing all regions of the U.S. in urban, suburban, and rural contexts, we continue to be astonished at the power of this school reform model.

The Pertinent Distinction: Enrichment vs. Remediation

Enrichment dual language schooling closes the academic achievement gap in L2 and in first language (L1) students initially below grade level, and for all categories of students participating in this program. This is the only program for English learners that fully closes the gap; in contrast, remedial models only partially close the gap. Once students leave a special remedial program and join the curricular mainstream, we find that, at best, they make one year's

progress each school year (just as typical native English speakers do), thus maintaining but not further closing the gap. Often, the gap widens again as students move into the cognitive challenge of the secondary years where former ELLs begin to make less than one year's progress per year. We classify all of the following as remedial programs: intensive English classes (such as those proposed in the English-only referenda in California, Arizona, and Massachusetts), English as a second language (ESL) pullout, ESL content/sheltered instruction (when taught as a program with no primary language support), structured English immersion, and transitional bilingual education. These remedial programs may provide ELLs with very important support for one to four years. But, we have found that even four years is not enough time to fully close the gap. Furthermore, if students are isolated from the curricular mainstream for many years, they are likely to lose ground to those in the instructional mainstream, who are constantly pushing ahead. To catch up to their peers, students below grade level must make more than one year's progress every year to eventually close the gap.

In contrast to remedial programs that offer "watered down" instruction in a "special" curriculum focused on one small step at a time, dual language enrichment models are the curricular mainstream taught through two languages. Teachers in these bilingual classes create the cognitive challenge through thematic units of the core academic curriculum, focused on real-world problem solving that stimulate students to make more than one year's progress every year, in both languages. With no translation and no repeated lessons in the other language, separation of the two languages is a key component of this model. Peer teaching and teachers using cooperative learning strategies to capitalize on this effect serve as an important stimulus for the cognitive challenge. Both one-way and two-way enrichment bilingual programs have this power.

Differences in One-way and Two-way Dual Language Education

One-way

We define *one-way* programs as demographic contexts where only one language group is being schooled through their two languages. For example, along the U.S.-Mexican border, many school districts enroll students mainly of Hispanic-American heritage. Some students are proficient in English, having lost their heritage language. Others are very proficient in Spanish and just beginning to learn English. Whatever mix of English and Spanish proficiency is present among the student population, an enrichment dual language program brings these students together to teach each other the curriculum through their two heritage languages. Similar sociolinguistic situations are present along the U.S.-Canadian border for students of Franco-American heritage. Other examples of demographic contexts for one-way dual language programs can be found among American-Indian schools working on native language revitalization, as well as in urban linguistic enclaves where very few native English speakers enroll in inner city schools.

Implementers of one-way programs must make their curricular decisions to meet the needs of their student population, so the resulting program design can be quite different from that of a two-way program. But, the basic principles are the same—a minimum of six years of bilingual instruction (with eight years preferable for full gap closure in L2 when there are no English-speaking peers enrolled in the bilingual classes), separation of the two languages of

instruction, focus on the core academic curriculum rather than a watered-down version, high cognitive demand of grade-level lessons, and collaborative learning in engaging and challenging academic content across the curriculum.

Two-way

Two-way programs have the demographics to invite native-English-speaking students to join their bilingual and ELL peers in an integrated bilingual classroom. Two-way classes can and should include all students who wish to enroll, including those who have lost their heritage language and speak only English. These bilingual classes do not need to enroll exactly 50% of each linguistic group to be classified as two-way, but it helps the process of L2 acquisition to have an approximate balance of students of each language background. For our data analyses, we have chosen a ratio of 70:30 as the minimum balance required to have enough L2 peers in a class to stimulate the natural second language acquisition process.

In addition to enhanced second language acquisition, two-way bilingual classes resolve some of the persistent sociocultural concerns that have resulted from segregated transitional bilingual classes. Often, negative perceptions have developed with classmates assuming that those students assigned to the transitional bilingual classes were those with “problems,” resulting in social distance or discrimination and prejudice expressed toward linguistically and culturally diverse students enrolled in bilingual classes. Two-way bilingual classes taught by sensitive teachers can lead to a context where students from each language group learn to respect their fellow students as valued partners in the learning process with much knowledge to teach each other.

Our Research Methodology

For researchers to replicate our work, we have written two publications available on the Internet that define our research methodology. Because of the limitations of space in this short journal article, we refer readers to these two publications to study the details of our approaches to research design. The first publication (Thomas & Collier, 1997a) provides an overview of some major issues for researchers conducting school program effectiveness studies, including common misconceptions. Section III and Appendix A of this publication are especially pertinent. This first publication was written mainly for school policy makers and provides an overview of our findings to date from many program evaluations that we conducted with individual school districts in several regions of the U.S.

The second publication (Thomas & Collier, 2002) gives a more detailed picture of the complete process that we go through in designing each study with each school district. This includes an overview of the research design in Section II, details of data collection and analyses for each individual study in the findings sections for each district, and appendices that provide sample data structure and a data collection instrument that we developed. We have also made considerable efforts to disseminate our five-stage research design through papers presented at several annual meetings of the American Educational Research Association (AERA), in sessions sponsored by Division H (School Evaluation and Program Development) that were designed to create an interactive dialogue with other researchers focused on evaluation of school programs and interested in replicating our research methodology.

Overall, the methodology of the field of program evaluation provides us with the foundation for our choices in research design. For us, appropriate program evaluation methods

provide all of the rigor of traditional quantitative research, plus the necessary qualitative sensitivity to program nuances, implementation, and evolution that traditional research typically lacks. Our large sample sizes also allow us to better assess true program effect sizes than small sample, focused studies. Since 1985, we have been analyzing many long-term databases collected by school districts in all regions of the U.S. To date, we have collected the largest set of quantitative databases gathered for research in the field of bilingual/ESL education, with over 2 million student records analyzed (one student record includes all the school district records for one student collected during one school year). Quantitative data collected from each school system includes data stored on magnetic media in machine-readable files from their registration centers, student information system databases, and testing databases, as well as data from other specialized offices that work with linguistically and culturally diverse students. In each school district site we also collect qualitative data, including source documents across many years; detailed interviews with central office administrators, school board members, principals, teachers, and community members; and, school visits and classroom observations.

The goal of our research is to analyze the great variety of education services provided for linguistically and culturally diverse students in U.S. public schools and the resulting academic achievement of these students as measured by all the tests given to them by the school district in both L1 (when available) and in English (which is for most of these students their L2). Our participating school districts work with us as collaborative research partners, and the results of the data analyses inform and influence their practices. Overall, this research provides guidance for school districts to make policy decisions that are data-driven regarding the design, implementation, evaluation, and reform of the education of linguistically and culturally diverse students. This article is focused on our research findings from many of these program evaluations, illustrating the patterns of the data findings in one-way and two-way dual language programs. We focus on these two enrichment program types in this article because we have found that they result in the highest student outcomes in the long term when following students throughout their elementary school years and continuing to follow them throughout their secondary years when possible. When we report on student outcomes, our longitudinal research is focused on gap closure rather than primarily on pre-post gains without a context. The following section explains the difference between our type of analyses and the requirements of the current federal legislation.

Gap Closure Research and the No Child Left Behind Act of 2001

In the current environment of high-stakes testing with consequences for schools that fail to meet the expressed goals, gap-closure research can help to clarify how students are doing as a measure of school program effectiveness. Two aspects of the 2001 federal legislation connect closely to the research that we have conducted for the past 18 years. First, we applaud the focus on achievement gap closure rather than group gains as the measure of success. Second, we have, for many years, encouraged the school districts with whom we work to collect data that can be disaggregated into meaningful student groups with adequate yearly progress goals for all groups. To illustrate these two concepts, if achievement gap closure for ELLs were taken seriously as a more appropriate measure of program effects, the English-only press releases stating that ELLs in California have made great gains would not be published in the popular media since they do not provide the contextual information of gains made by native-English speakers during the same period. The real picture is that ELL gains have been insufficient to lessen the gap. In fact, gap closure analyses of ELLs in California receiving English-only

instruction reveal that when their gains are compared to native-English speakers' gains, the gap has actually remained the same or widened since Proposition 227 was approved by voters in 1998 (Parrish, Linqianti, Merickel, Quick, Laird, & Esra, 2002; Thompson, DiCerbo, Mahoney, & MacSwan, 2002). Later in this article, we will illustrate this finding with our own data analyses comparing ELLs' achievement in Houston, Texas, with ELLs' achievement in California.

So, the federal legislation appropriately focuses on two meaningful concepts—gap closure and disaggregation. But, the focus in the current legislation on cross-sectional, rather than longitudinal analyses of student outcomes, is misguided and inappropriate. We firmly believe that the best way to conduct methodologically appropriate research on gap closure, with disaggregated groups, is to conduct longitudinal research on the same students across time, rather than cross-sectional high-stakes comparisons of schools that compare one group of students in a given grade to a completely different group in the same grade the following year. Following the same students over a long period of time (longitudinal research), leads to clear findings on gap closure and program effectiveness. This is especially true in high-stake decisions (e.g. school sanctions) that may be inaccurately made when two different groups of students are compared over time.

Another serious problem with the current federal legislation is the assumption (based not on research, but on political expediency) that ELLs should be on grade level in English in three years. In every study conducted, we have consistently found that it takes a six to eight years, for ELLs to reach grade level in L2, and only one-way and two-way enrichment dual language programs have closed the gap in this length of time. No other program has closed more than half of the achievement gap in the long term. This means that while ELLs are working on closing the gap by making more than one year's progress in their L2 with every year of school, they should be tested on grade level in their L1. Requiring grade-level curricular testing in students' L1 provides an important measure that students are keeping up with cognitively challenging grade-level work while closing the gap in English. Once ELLs learners have reached full parity with native-English speakers, a curricular test in English should yield just as valid and reliable a score as it does for native-English speakers. But, while ELLs learners are still closing the gap, a test score in English will under estimate their true achievement.

For the U.S., L1 testing in languages other than Spanish is probably not feasible, but excellent tests are available in Spanish, the language of 75% of the language-minority students in the U.S. Since Spanish speakers are the majority among ELLs and one of the groups least well served by U.S. schools (as measured by high school completion), quality teaching and testing in Spanish can be a crucial step towards closing the achievement gap in English. The results of data analyses of student outcomes in dual language programs demonstrate this very powerfully.

Student Outcomes

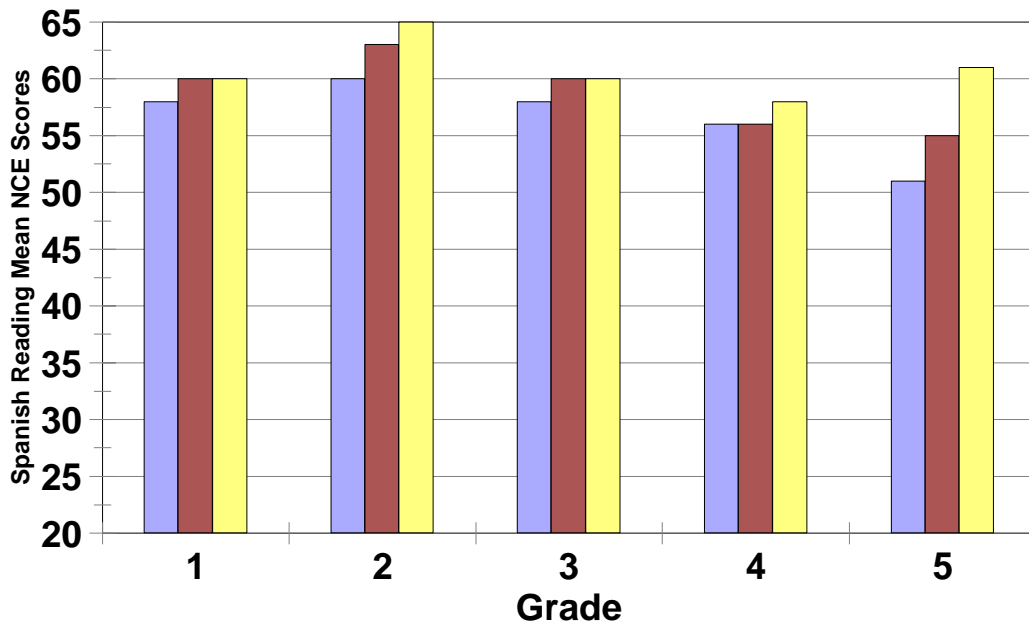
Houston Independent School District, Texas

Our largest school district research site is Houston Independent School District, with over 210,000 students, 54% of whom are Hispanic, 33% African-American, 10% Euro-American, and 75% of the total student enrollment on free or reduced lunch. More details about this urban school district are provided in our national research report, in the second findings chapter (Thomas & Collier, 2002). In 1996, the Houston ISD Multilingual Programs Department chose to gradually implement the 90:10 dual language program that they had developed as a

model for all Houston ISD schools that were teaching the curriculum through Spanish and English. Since all elementary schools in Houston are required by Texas state law to offer a bilingual program for ELLs whose home language is spoken by 20 or more students in a single grade, transitional classes with certified bilingual teachers were already in place for Spanish speakers across all schools. With the initial success of two-way bilingual classes implemented in two elementary schools, then Superintendent Rod Paige and the Houston school board approved the expansion of one-way and two-way dual language schools throughout the school district.

As of 2002, 56 one-way (labeled developmental bilingual in Houston) and two-way (labeled bilingual immersion) dual language programs have been implemented, for grades K-8th. Because some schools were not yet ready to implement dual language, the Houston multilingual staff approved 90:10 as the model for transitional classes as well as dual language classes for consistency as students move from school to school. This was an unusual and creative decision. The 90:10 model provides intensive instruction in the minority language, in this case Spanish, for pre-kindergarten, kindergarten, and 1st grade gradually increasing academic time in English to 50% of the instructional time by 5th grade. Reading is taught first in Spanish, with formal English language arts introduced in second grade. Student outcomes in this program have been very high, in both Spanish and English, on the difficult national norm-referenced tests—the Stanford 9 and Aprenda 2 (see Thomas & Collier, 2002). Examples from some of our analyses are provided in the following Figures 1 and 2, illustrating cross-sectional Spanish and English reading outcomes for 1st–5th grades. For our next research report, we are working on longitudinal analyses of student achievement data from Houston ISD for grades 1st–8th.

Figure 1
Houston ISD ELL Achievement by Program On the 2000 Aprenda 2 in Spanish Reading



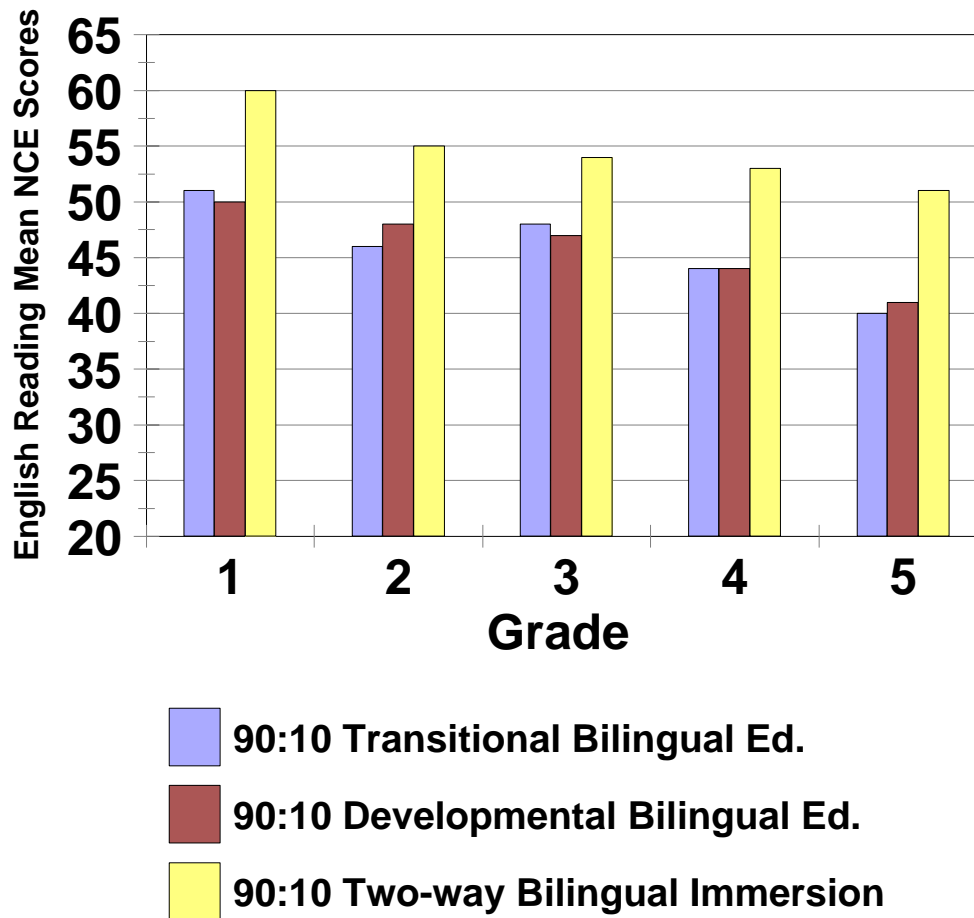
- 90:10 Transitional Bilingual Ed**
- 90:10 Developmental Bilingual Ed**
- 90:10 Two-way Bilingual Immersion**

Total ELLs in 90:10 Transitional Bilingual Education	N=6240
Total ELLs in 90:10 Developmental Bilingual Education	N=5642
Total ELLs in 90:10 Two-way Bilingual Immersion	N=1574

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Figure 2

Houston ISD ELL Achievement by Program On the 2000 Stanford 9 in English Reading



Total ELLs in 90:10 Transitional Bilingual Education	N= 9314
Total ELLs in 90:10 Developmental Bilingual Education	N= 7391
Total ELLs in 90:10 Two-way Bilingual Immersion	N= 2158

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In these analyses, comparison schools were carefully matched to be similar in terms of neighborhood and percentage of students of low socioeconomic background served. As can be seen in the figures, native-Spanish speakers (initially classified as beginning ESL students) in the two-way dual language (bilingual immersion) schools were at or above grade level in both English and Spanish in 1st – 5th grades. In English achievement, at all grade levels, ELLs in the two-way classes outscored ELLs in the other two bilingual program types by 7 Normal Curve

Equivalents (NCEs) or more, a very statistically significant difference. In this 90:10 model, these ELLs across all three programs performed astoundingly high in Spanish achievement, well above grade level at the 55th to 65th NCE (60th to 76th percentile) for Grades 1-5, with only the transitional students down to the 51st NCE by fifth grade (and their Spanish instruction was being phased out at this grade). This high achievement in Spanish significantly influenced their high achievement in English, in comparison to what we have seen in other school districts implementing little or no primary language support.

English learners attending one-way dual language (developmental bilingual) by fifth grade were achieving at the 55th NCE (60th percentile) in Spanish, higher achievement than in transitional 90:10 bilingual classes, and the 41st NCE (34th percentile) in English, about the same as their counterparts in transitional 90:10 classes. But their higher performance in Spanish and their continuing academic work in both languages in the middle school years, we predict, will lead to grade-level achievement in English by eighth grade, as we have seen in findings from other school districts. Houston's transitional bilingual classes are phased out in the secondary years, so that students from transitional elementary feeder schools move into all-English instruction at middle school level, before they have completely closed the gap in English. We would predict from our analyses from other school districts that this will lead to somewhat lower achievement in English than that of graduates of the one-way and two-way dual language programs. The long-term goal of the school district is to gradually transform all transitional bilingual classes to enrichment dual language.

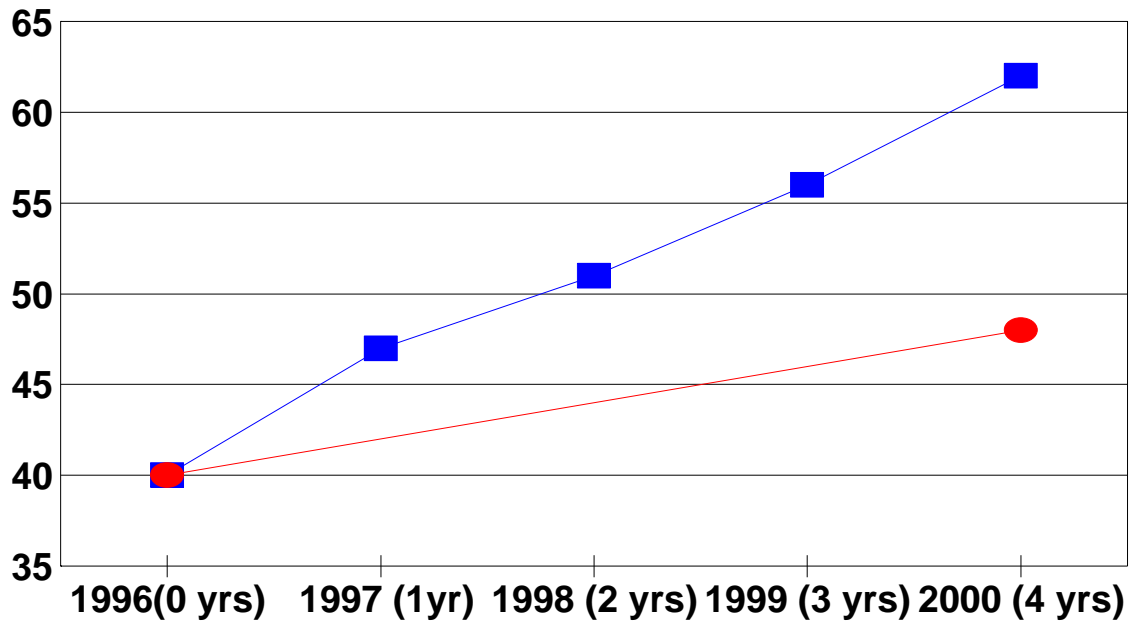
Heritage Language Programs in Maine

Another example of student outcomes in dual language programs from our recent research (Thomas & Collier, 2002) is the experience of two rural school districts in northern Maine, located on the border with Canada, very close to both French-speaking and English-speaking Canadian provinces. Over 90 percent of the students in these two school districts are of Franco-American/Acadian heritage. Their grandparents still speak French, but their parents were reprimanded for using French in school and they came to view their regional variety of French as a street language not worthy of academic use. Given the economic downturn of the region with few jobs opening for young adults, some of the school board members proposed that they try a bilingual immersion program to develop the students' lost heritage language. Their ultimate goal was to keep some of their young people in the region, for economic revitalization, by developing businesses operated in both French and English.

Approximately half of the parents chose for their children to be schooled in this 50:50 dual language program, with equal instructional time for the two languages, for Grades K-12. The other half of the students chose to remain in all-English instruction. Both groups were of similar background, socio-economically and ethno-linguistically. As can be seen in our longitudinal findings in Figure 3, the bilingually schooled students benefited enormously from their schooling in two languages. After four years of the dual language program, former English learners who were achieving at the 40th NCE (31st percentile) before the program started had reached the 62nd NCE (72nd percentile) in English reading on the Terra Nova, well above grade level.

Figure 3

Northern Maine ELL Achievement by Program On the Terra Nova in English Reading



■ Former ELLs in Bilingual Immersion

● Former ELLs in English Mainstream

Total Former ELLs in 50:50 Bilingual Immersion N=101

Total Former ELLs in English Mainstream N=59

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The heritage language, French, has been in strong decline in this region over the past half-century. Yet those families who have chosen for their children to be schooled in both French and English are experiencing dramatic renewal of their heritage language at no cost to their children's English achievement. The high academic achievement of the bilingually schooled children is an added benefit that has amazed the parents. The community goal with this bilingual program is to produce more student graduates who are academically proficient in both languages of the community, for economic revitalization of the region. There are many parallels between this situation and that of school districts serving Spanish speakers in the

southwest U.S.

Longitudinal Comparisons of Program Effectiveness for English Learners

These two examples from Texas and Maine are among the many fascinating results that continue to astound us in our ongoing analyses. Our six-lined Figure illustrating our longitudinal findings when comparing the effectiveness of six program types for English learners (Figure 6 in Thomas & Collier, 1997a, available on the Internet) continues to be confirmed as we place the results from each succeeding data set from each program evaluation that we conduct into the overall picture of program effectiveness. This six-lined Figure examines the longitudinal K-12 picture of student achievement on norm-referenced tests in English reading across the curriculum. All lines in the Figure represent English learners who started their schooling in the U.S. with no proficiency in English, who were enrolled in a special program for English learners during their elementary school years and who stayed in the same school district throughout their schooling, allowing us to follow their progress over time.

Both one-way and two-way bilingual programs lead to grade-level and above-grade-level achievement in second language, the only programs that fully close the gap. Groups of English learners attending one-way bilingual classes typically reach grade level achievement in second language by 7th or 8th grade, scoring slightly above grade level through the remainder of their schooling. With the stimulus of native-English-speaking peers in two-way bilingual classes, groups of English learners typically reach grade level achievement in second language by 5th or 6th grade, reaching an average of the 61st NCE or the 70th percentile by the eleventh grade.

This is truly astounding achievement when you consider that this is higher achievement than that of native-English speakers being schooled through their own language, and who have all the advantages of nonstop cognitive and academic development and sociocultural support. Native-English speakers' language and identity is not threatened, because English is the power and status language and they know it, so they have a huge advantage in confidence that they can make it in school, from a sociocultural perspective. Yet English learners can outpace native-English speakers year after year until they reach grade level in their second language, when they are schooled in a high quality enrichment program that teaches the curriculum through their primary language and through English.

Outcomes of Dual Language for Teachers, Administrators, and Parents

The astounding effectiveness of dual language education extends beyond student outcomes, influencing the school experience of all participants. As the program develops and matures, teachers, administrators, and parents in formal and informal interviews all express an awareness that they are part of something very special. Most adults connected to the program begin to view it as a school reform, where school is perceived positively by the whole school community. The respect and nurturing of the multiple cultural heritages and the two main languages present in the school lead to friendships that cross social class and language boundaries. Teachers express excitement, once they have made it through the initial years of planning and implementing an enrichment dual language model, that they love teaching now and would never leave their jobs. They feel they have lots of support, once the staff development and teacher planning time is in place for this innovation. Teachers can see the difference in their students' responsiveness and engagement in lessons. Behavior problems lessen because students feel valued and respected as equal partners in the learning process.

Administrators of dual language schools talk about the enormous amount of planning time needed and the complications of what they are doing. But they add that they absolutely love their jobs and are fully committed to making dual language work for the whole community. Those who serve as principals of whole-school models of dual language tend to stay in their positions for many years, stating that it has changed their life and makes work a great joy. Principals agree that the first years of implementation are not easy, but the end results are worth the hard work. A principal's commitment to and vision of this reform requires great sensitivity to culturally and linguistically diverse communities and the willingness to stick with the decision to implement a full enrichment model that enhances the achievement of all student groups.

Parents of both language groups tend to participate much more actively in the school, because they feel welcomed, valued, and respected, and included in school decision-making. Often teachers and administrators of dual language schools create after-school activities that welcome family members into lifelong learning partnerships for all ages. Examples of flourishing parent-school partnerships in dual language schools are provided in our federal research report, especially in the findings from Maine and Oregon (Thomas & Collier, 2002).

Factors Affecting Gap Closure in Dual Language Programs

While dual language programs are astoundingly successful, in comparison to other bilingual/ESL programs developed for English learners, variations in program design and the tests chosen to measure gap closure can produce different results in program effectiveness. Here are some issues that program designers and researchers/evaluators might consider during the planning stages of implementing a new program. These issues also apply to existing dual language programs that want to improve their particular model. All programs, including dual language schools in existence for a long time, are a work in progress, as educators respond to the varying needs of their students.

Test Difficulty

The average and range of item difficulty on a test vary from one measure to another. Easier tests measure an unrealistically small gap. If your state test has set levels of mastery for each grade level that are lower than average, the lower standards are easier to attain, and the test will indicate an artificially small gap between those who have mastered the curriculum and those who have not. But when students reach the end of high school and their expectation is to continue in a four-year university, they must reach a cutoff score on the admissions test, which is usually a more difficult nationally normed test such as the SAT. Students who have only been tested on the easier tests will feel that they have been misled by their schools when the gates to higher education are closed for them. For this reason, we recommend that school districts use a norm-referenced measure at least once in the secondary school years, testing across the curriculum. This gives students an indicator of how they are performing in relation to students across the country, as they move toward graduation and eventual competition with students from other school districts and states in their adult roles of work and in higher education.

English learners just beginning acquisition of the English language should be tested in their primary language and not in English on a norm-referenced curricular test, while they are acquiring basic academic English. (In a dual language program, the primary language testing

continues throughout the program.) After two years of English acquisition, we find that groups of English learners generally test at around the 8th to 12th percentile (20th to 25th NCE) on a norm-referenced test in English reading across the curriculum. This can be considered their baseline score. Then we follow their progress across time, to see that they are closing the gap in their second language, making more than one year's progress with each additional year of school, until they reach grade level (50th NCE or percentile).

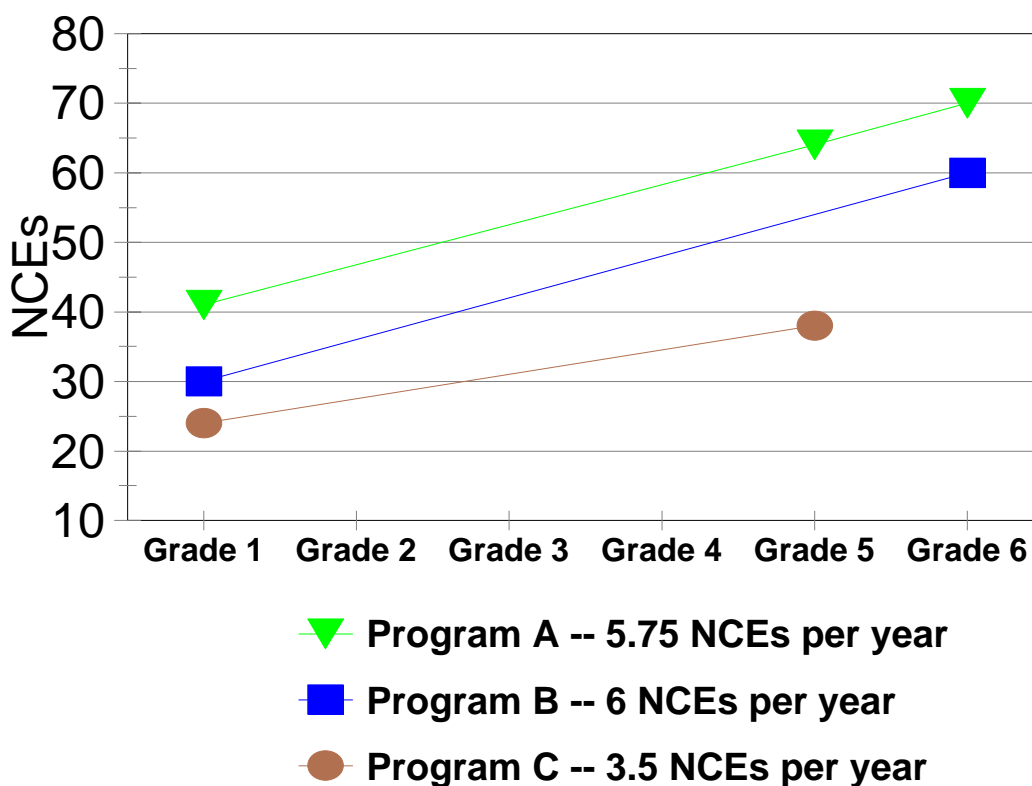
Program Implementation

How the program is implemented can influence the rate at which English learners close the gap. Important principles of dual language include a minimum of six years of bilingual instruction with English learners not segregated, a focus on the core academic curriculum rather than a watered-down version, high-quality language arts instruction in both languages and integrated into thematic units, separation of the two languages with no translation or repeated lessons in the other language, use of the non-English language at least 50 percent of the instructional time and as much as 90 percent in the early grades, and use of collaborative and interactive teaching strategies. How faithful teachers are to these principles can strongly influence the success of the program, and the principal is a key player in making the model happen as planned. Thus a crucial component of this school reform is an active and committed principal who hires qualified teachers and plans collaboratively with staff, providing for ongoing staff development and planning time. The principal also helps to create community partnerships and oversees program implementation and the ongoing evaluation of the program, including student performance on tests.

The quality of and fidelity to these implementation characteristics can lead to significant differences in student achievement. For example, we charted the progress of three dual language programs from first through sixth grade, measuring student performance in English reading across the curriculum each year, as shown in Figure 4. Two programs closed the gap at the rate of 6 NCEs per year, while one program closed the gap at the rate of 3.5 NCEs per year. While all of this is outstanding progress, it will take the students making 3.5 NCE gains an extra 2-3 years to reach grade level achievement in second language. *The difference in the lower-achieving dual language program is that the English learners were separated from the native-English speakers for a two-hour English language arts block.* Year after year, in this program, the English learners went down the hall to their ESL teacher for two hours during the English language arts time, rather than the two groups being instructed together. While the difference between these two conditions is small in a given year, its cumulative effect is quite significant over several years.

Figure 4

Variations in Rate of Annual Gain Among Selected Dual Language Schools



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Type of Dual Language Program

We have now analyzed enough data from four major variations of dual language to illustrate the annual expected gain for each. These four variations are one-way 90:10, one-way

50:50, two-way 90:10, and two-way 50:50. In Figure 5, we have included the annual gain expected in NCEs for each dual language variation on the norm-referenced test in English, the annual effect size, and the percentage of the academic achievement gap in second language that has been closed by the end of fifth grade, for English learners who had no proficiency in English when they began the dual language program in kindergarten. As can be seen in the Figure, two-way 90:10 programs reach the highest levels of achievement in the shortest amount of time, and one-way 50:50 programs need continuation of the program throughout the middle school years to completely close the achievement gap in English. All four dual language program variations reach much higher achievement levels than transitional bilingual programs, because primary language grade-level schooling is continued for more years in dual language programs, and this is the key to accelerated growth in English, in the long term.

Figure 5

Achievement Gap Closure For English Learners in Dual Language Programs—What Can We Expect?

Program Type	Annual Gap Closure	Annual Effect Size	% of Gap Closed by Grade 5
One-way 90:10	3 - 5 NCEs	0.14 - 0.24*	70% - 100% +
One-way 50:50	3 NCEs	0.14	70%
Two-way 90:10	4 - 6 NCEs	0.19 - .29*	95%- 100% +
Two-way 50:50	3.5 - 5 NCEs	0.14 - 0.24*	70% - 100% +

* = meaningful and significant annual effect

Notes:

(1) Using norm referenced tests – a difficult test measures the true gap size, an easier test underestimates the gap

(2) ELLs started at grade K with no exposure to English

(3) Achievement gap = 1.2 national standard deviations

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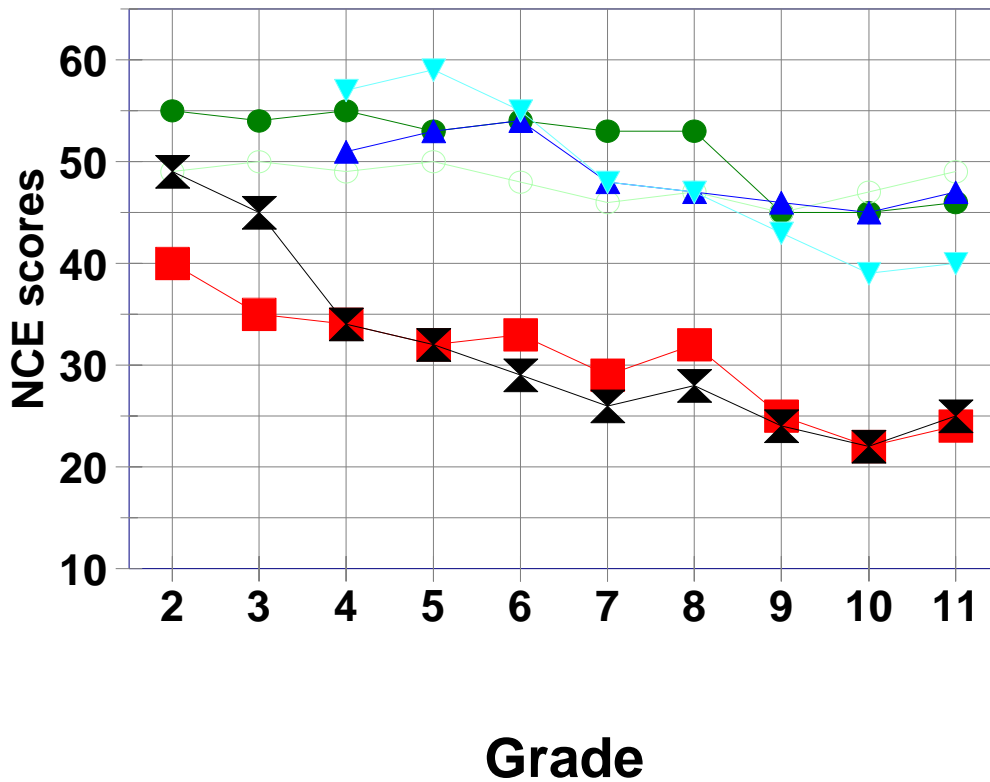
Is the English-only Mainstream More Effective than Dual Language Mainstream Classes?

We have the best answer to this question from our data analyses from Houston ISD. Since Houston is a huge school district, there are many students in every program type. The research division of Houston ISD was able to identify 1,599 students who entered Houston

schools as beginning ESL students, but their parents refused special services for their children. Against the counsel of the Houston educators, these parents preferred to place their children in the English mainstream with no bilingual or ESL support. In our federal report (Thomas & Collier, 2002) the results of this decision are graphically illustrated in Figure C-1. While these students were on grade level in second grade when they first took the Stanford 9, with each succeeding grade as the curriculum gets cognitively more complex, this group was doing less and less well. By 11th grade, those remaining in school were scoring at the 25th NCE (12th percentile) but the majority of this group did not complete high school.

We took these results and compared the Houston Stanford 9 results to California's Stanford 9 results, as seen here in Figure 6. After more than 12 months of intensive ESL classes under Proposition 227, we found that ESL students' achievement was remarkably similar to the Houston "refusers." *In other words, in its effect on English learners' achievement, California's Proposition 227 is virtually the same as no special program at all.* Other English learners in both Texas and California who received some type of special services, either transitional bilingual education or content ESL and/or dual language, are coming closer to closing or have closed the achievement gap, with enough years of schooling. We strongly recommend that parents who refuse bilingual/ESL services for their children should be informed that their children's long-term academic achievement will probably be much lower as a result. While the curricular mainstream may appear to speed their children's acquisition of basic English, it does not lead to long-term academic success in English.

Figure 6
California 2001 and Texas 1999 Stanford 9 Total Reading



● CA EO+FEP ■ CA ELL>12mo ○ TX NESs
 ▲ TX TBE grads ▼ TX ESL grads ✕ TX Refusers

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The Next Steps

Dual language models of schooling are spreading rapidly as more and more principals hear about this school reform. In many states—especially in Texas, New Mexico, New York, California, Washington, Illinois, and the Washington, D.C. metropolitan area—dual language is expanding to many new schools. Websites that provide locations of dual language schools and their characteristics and contact information include: www.cal.org/twi; www.texastwoway.org; www.duallanguagenm.org; and www.cde.ca.gov/el/twoway/directory.html. Other websites that provide extensive publications and research reports on dual language include www.crede.ucsc.edu and www.ncela.gwu.edu. For lack of space in this article, we have not provided a literature synthesis, but we have written many research syntheses that report on our research findings and those of many other researchers that have contributed to the foundation

and knowledge base for dual language schooling (Collier, 1989, 1992a, 1992b, 1995a, 1995b, 1995c; Collier & Thomas, 1989, 1999a, 1999b, 1999c, 2002, in press; Thomas, 1992; Thomas & Collier, 1997a, 1997b, 1999, 2002, 2003, in press; Thomas, Collier & Abbott, 1993). The following sources are also full of citations on both research findings and implementation strategies in dual language education (*Bilingual Research Journal*, Spring, 2002; Calderon & Minaya-Rowe, 2003; Cloud, Genesee & Hamayan, 2000; Freeman, 1998; Howard & Christian, 2002; Lindholm-Leary, 2000, 2001; Montone & Loeb, 2000; *NABE News*, July/August, 2003).

A next major step for researchers to take is to produce the next generation of bilingual education researchers who will conduct program evaluation research, to refine what particular forms of dual language programs are most effective. As more and more dual language schools develop, many variations in implementation are evolving. Evolution of the model may lead to even higher achievement, but researchers may also identify less effective forms of implementation. This is an exciting time for researchers to join with educators in collaborative efforts for meaningful school reform.

For example, Professor Leo Gomez at the University of Texas-Pan American has over the past decade forged a collaborative research relationship with dual language schools in South Texas that are implementing a promising form of dual language education in one-way demographic contexts along the U.S.-Mexican border. Professor Kathryn Lindholm-Leary at San Jose State University in California has conducted the largest number of longitudinal studies on student achievement in two-way dual language schools in California. Pauline Dow in Canutillo ISD, Texas, has initiated a whole-school-district model of one-way dual language schooling with a comprehensive system for data collection and long-term evaluation of the program as it evolves.

Annual conferences focusing on dual language education are spreading to many states. Two-way CABE was the first in 1993, with others following California's example in New Mexico, Texas (with several annual regional two-way dual language conferences), New York, Illinois, Connecticut, and the state of Washington. These conferences are important for bilingual educators to focus on this enrichment model, for planning implementation strategies, staff development, networking, parent advocacy, and reports on the research.

Clearly dual language education is a school reform whose time has come. It is a school model that even the English-only advocates endorse, because it is an inclusive model for all students, and all student groups benefit from participating. The research results are promising, but our work as researchers has just begun. Let's get the next generation of researchers working on longitudinal analyses and analyzing all the details of this school reform. We may be astounded at dual language's impact on our own lives as educators and researchers, since we are all, together, lifelong learners.

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