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Effective Bilingual Education: From Theory to Academic Achievement in a Two-Way Bilingual Program

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Abstract

Program evaluation can be used to shift the debate on effective schools for bilingual students from an ideological impasse to a data-driven and research-based discussion. Using the example of the Barbieri Two-Way Bilingual Education Program in Framingham, Massachusetts, this article links theoretical understandings about bilingualism and second language acquisition to program design and implementation, and subsequently to academic outcomes. Disaggregated academic achievement data in English and Spanish show that the Barbieri program meets its academic and linguistic goals for both target groups by fifth grade. Reflections on these academic achievement patterns, in turn, have prompted changes in the program to further increase its effectiveness.

Introduction

The debate on effective programs for language minority students has emphasized the dichotomy between bilingual versus English-only approaches. This debate has been fueled by summative program evaluations which focus solely on deciding whether bilingual education is superior to an English-only approach. Typically, the debate has focused on program labels rather than on (the quality of) program implementation, and on language choice rather than on other explanatory variables for academic success (Paulston, 1978). Such “advocacy-based” program evaluations (August & Hakuta, 1997) have not succeeded in providing policy makers and school leaders with information that can effectively support their efforts to improve the schooling of language minority students. August & Hakuta (1997) therefore call for “theory-based” program evaluations, which are “grounded in a theory of learning a second language and its relationship to student achievement” (p. 156). Such theory-based evaluations can better inform decision-making as they contextualize programs and achievement patterns within a consistent theoretical framework.

The purpose of this article is to consider the role of program evaluation and program improvement in the context of a two-way bilingual education program in Massachusetts. After describing the context of the program, this article documents how theoretical insights have been translated into key program decisions at the school and classroom level. It then explores the question of whether the program meets its academic goals by presenting English and Spanish achievement data. The final discussion focuses on how program evaluation data have guided changes in the program to improve its effectiveness for all students.

What are TWBE Programs?

In a Two-Way Bilingual Education (TWBE) program, a balanced group of native majority language speakers and native minority language speakers are integrated for instruction, and subject matter is conducted in the minority and the majority languages with the goal of developing high levels of bilingualism for all students in the program. Most TWBE programs are implemented at the elementary level with Spanish as the minority language. There are different program designs, but the models most commonly implemented are the 90/10 and 50/50 TWBE approaches. In a 90/10 model, native and non-native speakers of English students receive literacy development in the minority language until third grade when English literacy is introduced. Students in a 50/50 model receive their literacy instruction simultaneously in both languages (Christian, 1997; Christian et al., 1997; Lindholm-Leary, 2001).

The theoretical framework for TWBE programs consists of three components (for more extensive overviews, see Christian, 1997; Lindholm, 1991; Lindholm-Leary, 2001; Valdes, 1997). First, it considers theories of bilingualism for minority students, which emphasize the importance of both strong native language literacy skills for learning a second language and high levels of proficiency in two languages in additive bilingual settings (Cummins, 1981; Thomas & Collier, 1997). Second, it looks at successful instructional practices of teaching a foreign language to language majority students, in particular the Canadian early immersion programs (Genesee, 1986, 1987). Finally, it builds on theories that regard language learning as a sociocultural phenomenon in which student interactions are central to the learning process (Wong Fillmore, 1991). Specifically, native/non-native speaker interactions have been emphasized for successful second language learning (Long, 1983; Pica, 1994; Ellis, 2000) and for developing positive cross-cultural relationships (Cohen, 1994; Slavin, 1985).

A TWBE program aims to create an additive bilingual environment where native speakers of the target language are used as models for second language learners. Native English speakers learn the minority language as their second language and language minority students have the opportunity to maintain

their native language while learning English as their second language. The programs are designed to promote interactions among students from different cultural and linguistic backgrounds.

Background

The TWBE program discussed in this article is located at the Barbieri School in Framingham, Massachusetts. In this district, more than 25% of the students speak a language other than English at home and 37% of the elementary school population receives free or reduced lunch. Seventeen percent of the 8,800 preK-12 student population is enrolled in a bilingual or English as a Second Language (ESL) program. The largest language groups are Spanish and Brazilian Portuguese speakers.

School Characteristics

The Barbieri School is a K–5 school with 560 students. In addition to the two-way bilingual program and the standard curriculum program, the school houses a special education strand for developmentally delayed students. About 45% of the students receive free or reduced lunch and almost one-third of the school is of Hispanic origin. The two-way program currently enrolls 128 English speakers and 130 native Spanish speakers. Of these students, 18 are students with special needs (12 Spanish speakers and six English speakers), and 13% of the TWBE students receive Title I services (primarily Hispanic students). The school is the primary location where the native English speakers and the Hispanic students come together and integrate for social and academic purposes.

Program Rationale and Goals

The Barbieri two-way bilingual program has been in existence for 10 years. It was developed in response to the social segregation of bilingual program students in the school and to halt the trend of white middle class parents removing students from the school's district ("white flight"). A program with a kindergarten and a first grade was proposed in 1990 as a strand within the school after two years of planning and professional development. A Title VII grant supported the program for the first five years and the school system has fully supported the program with local funds since 1995. The district added one grade level each year and the first cohort of students is now in 11th grade at the high school. At the middle school, students take language arts and social studies in Spanish. English language arts, math, and science are taken in English standard curriculum classes. Students continue their Spanish language development at high school with a TWBE Spanish Language and Literature class. All other classes are standard curriculum classes where the TWBE students are fully integrated with non-TWBE students.

The Framingham elementary program strives to achieve the following academic, linguistic, and sociocultural goals. Students are expected to:

1. Progress in all academic areas in accordance with the standards set by the curriculum of the Framingham Public Schools and the Massachusetts state Curriculum Frameworks.
2. Develop grade-level appropriate language proficiency in English and Spanish by the end of fifth grade.
3. Develop positive cross-cultural relationships and a respect and understanding for one's own culture and that of others.

Eligibility for Participation

Parents who are interested in the program attend an orientation. To keep a balanced student population, the Barbieri TWBE program enrolls 22 English speakers and 22 native Spanish speakers in kindergarten each year. Whenever there are more applicants than available slots, students are assigned by lottery. Few students are added after kindergarten due to a lack of adequate language proficiency levels in either Spanish or English. Interested parents sign a "memorandum of understanding" when they register their child, which emphasizes a long-term commitment to the program.

The oral Language Assessment Scale in English and Spanish for five 6-year-old students determines program participation for non-native speakers of English (Duncan & DeAvila, 1986). The preLAS oral scores oral fluency on a scale that has five levels, Level 5 being a fluent English/Spanish speaker. Spanish-speaking students will be eligible for enrollment on the Spanish side of the TWBE if their score in Spanish is higher than their score in English (Spanish dominant). For students who have low scores in either or both languages (e.g., Level 2 in Spanish and Level 2 in English), additional information is obtained from the parents regarding language goals and language use. If, based on this interview, Spanish is a resource for the student outside of school and the parent(s) support bilingualism as a goal for their child, the student will be recommended for a bilingual program and hence is eligible for the Spanish side of the two-way program. Non-native speakers of English are eligible for the English side only if they are considered fluent based on the preLAS (i.e., high Level 4 or a Level 5). There are no additional criteria for native English speakers.

Staffing

In 1999, 12 out of the 14 teachers were bilingual and held a bilingual certificate. Four of the seven Spanish teachers were native Spanish speakers and more than half of the teachers had been with the program from the beginning. This has provided the program with continuity and stability during its developing years. Additionally, the school has recruited native Spanish

speakers to provide support services, such as a bilingual special educator, a bilingual social worker, a bilingual guidance counselor, and a bilingual school psychologist. Title I and reading recovery services are available in Spanish and English.

Design and Rationale

The Barbieri TWBE program design is best described as a “differentiated” TWBE program. Table 1 shows the program design for each grade level for the Spanish speakers and the English speakers, and how each language is used for the different subjects (students’ native language, L1; or the second language, L2). Whenever the figure indicates L1/L2, it means that 50% of the subject is taught in L1 and 50% is taught in L2. Shaded areas are the times that students from both language backgrounds are integrated for instruction. Unshaded areas represent times that students are grouped by language group.

In a TWBE program, teachers and administrators have to make key decisions about the language of initial literacy instruction, curriculum content, and the amount of student integration. The choices that the Barbieri TWBE program has made in these areas and the rationale for these choices are outlined next.

Table 1

Program Design for the Barbieri TWBE Program for Spanish Speakers and English Speakers (2000–2001)

Native Spanish Speakers						
	Grade Level					
Subject	K	1	2	3	4	5
L1 Literacy	L1	L1	L1	L1	L1	L1
						L1
L2 Literacy	-	-		L2	L2	L2
Math	L1	L1	L1	L1/L2	L1/L2	L1/L2
Science	L1	L1/L2	L1/L2	L1/L2	L1/L2	L1/L2
Social Studies						
ESL	-	ESL	ESL	ESL	ESL	-
Specials	L2	L2	L2	L2	L2	L2
Native English Speakers						
	Grade Level					
Subject	K	1	2	3	4	5
L1 Literacy	L1	L1	L1	L1	L1	L1
L2 Literacy	-	-		L2	L2	L2
						L2
Math	L1	L1	L1	L1/L2	L1/L2	L1/L2
Science	L2	L1/L2	L1/L2	L1/L2	L1/L2	L1/L2
Social Studies						
SSL	SSL	SSL	SSL	SSL	SSL	*Teacher
Specials	L1	L1	L1	L1	L1	L1

Initial Literacy Development

As mentioned above, most TWBE programs either immerse their students in the minority language for literacy development (90/10 models) or students develop literacy in both languages simultaneously (50/50 models). The Barbieri TWBE program differs from these approaches by offering initial literacy development in the native language for both language groups (see Table 1). Barbieri English-speaking students are not immersed in Spanish for initial literacy development.

A strong belief in developing native language literacy first informed the decision for L1 initial literacy for all students. Teachers were also concerned about watering down the Spanish literacy component for the Spanish speakers if all the students were integrated and felt that this approach was most compatible with the needs of the community. Currently, another concern is that the student body of the two-way bilingual program is changing and is becoming more diverse on the English side, ethnically and socioeconomically. One factor in this development was the adoption of a desegregation plan and limited choice plan in Framingham. As a result, the TWBE program now enrolls students from the entire district, not only from a select, middle class part of the Barbieri School district.

This increased diversity in student population distinguishes the Barbieri English speakers from those in Canadian immersion programs and warrants a different approach. The latter typically enroll English-speaking students from higher socio-economic backgrounds and with above average intelligence. The majority of the immersion research is based on this population (Cummins & Swain, 1986; Genesee, 1976) and little is known about students who come from less privileged backgrounds, especially on a long-term basis (Johnson & Swain, 1997; Holobow, Genesee, & Lambert, 1991). Moreover, according to Olsen (1983), students identified by teachers as having “language learning” problems often exit the program. It cannot be assumed therefore that the positive results from Canadian early immersion programs hold for different student populations.

Another factor is the effect of third language immersion on students for whom English is not the first language. Though studies are scarce, some studies indicate that third language learners may not achieve as well in early immersion programs, especially when the two home languages are used extensively at home and when students are not fluent in English when entering school (Hurd, 1993; Rolstadt, 1997).

In other words, assumptions about school readiness, exposure to literacy events at home, English proficiency, or parental involvement, which are tacitly assumed in the Canadian immersion programs, cannot be as readily made for the English TWBE population at the Barbieri school. An increased number of English-dominant Hispanic students have entered the Barbieri program, and several other students speak a language other than English at home. In

addition, research on emergent literacy has pointed to the importance of oral skills as the basis for literacy development (National Research Council, 1998). These factors have motivated an approach that, for each student, builds on the language that s/he is most fluent in upon entry in the program.

Language Distribution, Curriculum, and Instruction

In terms of percentage of instruction in L1 and L2, Table 1 shows that in kindergarten the native Spanish speakers receive all instruction in Spanish except for specials (music, art, and physical education) and the native English speakers receive about 40% of their instruction in Spanish. In this way, Spanish instruction is reinforced for both groups. The emphasis on literacy and math reduces the amount of time spent in the second language in grades 1 and 2 to around 30% for each group. As of third grade, all students receive 50% of their instruction in their native language and 50% in their second language.

Teachers do not switch languages while teaching. Concurrent translation has always been discouraged in bilingual programs to avoid students tuning out, to provide effective language modeling, and to protect the status of Spanish in the bilingual classroom (Legaretta, 1977; Irujo, 1998). Instead, the focus is on providing comprehensible input in the second language by using specific sheltered language strategies (Short, 1994). All teachers teach only in one language, except the kindergarten and fifth-grade teachers on the English side, who serve as dual language models.

The TWBE program follows the curriculum expectations as outlined for each grade level for the Framingham school district. For social studies and science, the teachers divide the units for the grade level and do not repeat units taught in one language in the other language. The selection of each unit is primarily based on the availability of materials in Spanish. They are taught as thematic units, integrating language and content goals and using sheltered content strategies (Snow, Met, & Genesee, 1989; Met, 1994). Math is taught in both languages as of third grade (the school uses Chicago Everyday Math which comes with Spanish materials).

The same holds true for the language arts curriculum. The Barbieri school was involved in a Literacy Collaborative with Lesley College for four years (Fall 1996 through Spring 2000), focusing on K–2 effective literacy practices using a balanced literacy framework. The school has continued implementing this framework and has extended it to grades 3–5. All teachers have organized their classrooms around this framework, providing systematic opportunities for read alouds, shared reading, guided reading, independent reading, interactive writing, shared writing, writer's workshop, and independent writing. A guided reading library, using leveled literature books, has been established for English and Spanish.

English as a Second Language (ESL) and Spanish as a Second Language (SSL) services are offered to all students for each grade level by a separate ESL and SSL teacher, primarily on a pull-out basis. The ESL/SSL teacher focuses

on oral language proficiency in the early grades, introduces formal literacy instruction in second grade, and supports the development of reading and writing skills in the upper grades. The ESL and SSL classes are taught as content-based language classes where authentic literature is used extensively. The ESL/SSL teachers use the same approach to literacy as the TWBE bilingual classroom teachers and use the guided reading library in a similar fashion.

Student Integration

TWBE programs naturally provide an integrated setting for minority and majority language students, and most TWBE programs integrate their students for all subject areas as of kindergarten (Christian et al., 1997; Cazabon, Lambert, & Hall, 1993). Such complete integration is not the case for the Barbieri TWBE students (see Table 1). Instead, integrated instruction starts with social studies/science and the special areas (music, art, physical education) and gradually increases over time as math and language arts are added. This decision was made after weighing the potential advantages and disadvantages of integrated settings for Spanish language proficiency and the identity development of the Spanish speakers.

The continued grouping of the students by L1 for language arts was first of all prompted by a concern for the quality of Spanish instruction during integrated instruction. In particular in the lower grades, teachers have to make significant instructional adaptations for limited Spanish proficient English speakers to provide them with access to curriculum content. Valdes (1997) asks, "how [does] using the language in an even slightly distorted fashion influence the language development of children who are native speakers of that language?" (p. 416)

Research suggests that these adaptations may result in qualitatively inferior input for native speakers of Spanish. Studies in the Canadian immersion programs found that the language input from teachers tended to be limited in terms of the full range of a particular linguistic feature as well as vocabulary development where teachers pay little attention to semantic feature analysis, multiple meanings, or word study, even in the upper grades (Swain, 1996). More direct evidence comes from an in-depth case study of the Washington, DC-based Oyster School TWBE program by Rebecca Freeman (1998). Observing identical routines in a kindergarten and a sixth-grade classroom in Spanish and English, she found that teachers emphasized academic skill building more in English than in Spanish because of the native English speakers' second language abilities. Her description of the kindergarten opening routine is telling. Referring to the information provided on the board ("Today is _____," "We have ____ girls," etc.), she notes:

In the English activity, the format includes full sentences on each line. In the Spanish activity, only the first line is a complete sentence; the other lines include only nouns and articles. We see here a first example of skills discrepancies between English and Spanish with more skills required in English. (Freeman, 1998, p. 198)

These examples illustrate that the expectations and quality of language input are easily lowered for the Spanish speakers in a native/non-native speaker integrated setting. To ensure high expectations for the native Spanish speakers, the Barbieri TWBE program therefore chose to keep students grouped by language background for language arts.

A second reason for continued grouping by language group in language arts is the trend that interactions between native and non-native speakers during Spanish instruction tend to be in English and not in Spanish (De Jong, 1996). Pierce (2000), in a study of third-grade native/non-native pairs, indicates that the native Spanish-speaking students found communication simply more efficient in English. Almost all the interactions between the native/non-native speaker pairs during Spanish math time were in English. Such findings imply that the integrated setting does not necessarily support the extended use of Spanish to negotiate and develop academic language for the native Spanish speakers. It also indicates the challenge of creating a Spanish language use environment for the English speakers.

Thirdly, the separation of the two groups is done to meet the divergent linguistic needs of the two student populations. For instance, teachers have found that the native English speakers need formal grammar instruction in Spanish to solidify structures to which they have been exposed since kindergarten. The Spanish speakers, on the other hand, need to build advanced vocabulary and literacy skills. The fifth-grade teachers therefore separate students for two hours a week for Spanish language arts; the native English speakers receive SSL with a focus on grammar in context, and the native Spanish speakers work with challenging literature. As Schauber (1995) observed, such grouping “allows the teacher to be more flexible in delivering the course content and in attending to the students” (p. 492). She adds a final benefit of grouping by language. In her study she found that such grouping appeared “to motivate the students and augment their performance. Increased attention to the students has also improved their feelings of self-worth and validation” (Schauber, 1995, p. 492). This latter finding is consistent with other studies in which second language learners showed increased participation when they found themselves with other non-native speakers as opposed to being with native English speakers (Faltis, 1993; Flanigan, 1988; Varonis & Gass, 1985).

In short, integrated settings are important for second language development and for developing positive relationships among students. Some caution is warranted, however, regarding the potential impact that the integrated settings may have on Spanish language development for the native Spanish speakers. Being in a setting where the latter are grouped by language may be more effective in developing high levels of academic language proficiency in Spanish. This, in turn, will affect the development of academic skills in their second language, English (Cummins, 1981). Furthermore, teachers identified distinctly different linguistic needs, which can best be met when students are

grouped by language. The Barbieri program design therefore tries to take advantage of the benefits of both integrated and non-integrated settings for first and second language learning.

Achievement Patterns

The previous section illustrated how the Barbieri program has translated theoretical insights about learning a second language and bilingualism into practice in the context of a TWBE program. The program incorporates solid L1 literacy instruction, consistent exposure to teacher and student models in the target (second) language, and student integration for academic learning. The next question is whether this approach translates into expected performance levels for both groups of students. This section explores the achievement patterns for the TWBE students. The focus of the analysis is on standardized tests and on the state-mandated test. Since 1994, the school has administered the Stanford Achievement Test for English and the Aprenda Test for Spanish achievement to third, fifth, and seventh graders on an annual basis. Since 1998, the fifth-grade students have also taken a state-mandated test, the Massachusetts Comprehensive Assessment Systems (MCAS). This test assesses English language arts, mathematics, and science, based on the state's curriculum frameworks.

In order to provide an accurate picture of achievement patterns for TWBE programs, it is necessary to present disaggregated data for each target population. For instance, Rhodes, Christian, and Barfield (1997) note that “[w]hen comparing native and non-native English speakers on the ITBS [Iowa Test of Basic Skills], the native speakers overall scored higher in all seven academic areas” (p. 277). To get a true picture of the effectiveness of a TWBE program for all its students, achievement data should be presented separately for each language group.

It is also important to point out that the evaluation question explored below is not whether the TWBE program produces better results than other approaches within the district. Instead, the focus is on whether the Barbieri program design and implementation, given its context and population, results in the expected academic outcomes for all the students in the program. This focus has been chosen for two reasons. First, it is difficult to establish an appropriate comparison group for each language and maintain enough students to make valid comparisons over time. Second, it creates a false dichotomy between TWBE approaches and other approaches. The goal should be to provide all students who have been identified as limited English proficient in a school district with access to a program that demonstrates positive academic achievement. There are various ways to obtain this goal, TWBE being only one of them (Brisk, 1998). Finally, the results presented below should be interpreted with care due to the small sample sizes.

Student Performance in Spanish and English by Fifth Grade

One of the goals of the Barbieri TWBE program is that students will demonstrate academic achievement at grade level in both languages by the end of fifth grade. To see whether this is the case, TWBE student scores are compared to the national norm on the Stanford Achievement Test (English) and the Aprenda Test (Spanish). Grade level performance is reflected in a score of 50 NCE (National Curve Equivalency scores) (NCE). The achievement data for Spanish is presented in Table 2 and for English in Table 3. The scores reported are for all students, including students with special needs.

Table 2 shows that both groups of students perform above grade level by fifth grade in Spanish reading and mathematics. This means that the Spanish speakers are able to maintain their native language and English speakers develop their Spanish to appropriate levels as measured by the Aprenda.

Table 2

Spanish Achievement Patterns for Grade 5 Spanish Speakers and English Speakers in Average NCE Scores

Spanish Speakers-Grade 5 <i>Spanish Achievement</i>	1995 n = 18	1996 n = 14	1997 n = 18	1998 n = 12	1999 n = 18	2000* n = 14
Aprenda Total Reading	48	81	73	61	--	71
Aprenda Total Math	42	83	72	81	73	--
English Speakers-Grade 5 <i>Spanish Achievement</i>	1995 n = 11	1996 n = 13	1997 n = 17	1998 n = 15	1999 n = 20	2000* n = 25
Aprenda Total Reading	36	64	61	58	--	59
Aprenda Total Math	49	89	90	88	90	--

*These groups took the Aprenda, Second Edition.

English achievement patterns are presented in Table 3. Examination of the data shows that the native English speakers consistently score well above the 50th NCE in English reading and mathematics. The Spanish speakers score well above the average in English mathematics, except for the 1995 cohort. In English reading (vocabulary and reading comprehension), they are approaching the norm but are still just below grade level.

Table 3

English Achievement Patterns for Grade 5 Spanish Speakers and English Speakers in Average NCE Scores

Spanish Speakers-Grade 5 <i>English Achievement</i>	1995 n = 18	1996 n = 14	1997 n = 18	1998 n = 13	1999 n = 18	2000 n = 14
Stanford Total Reading	38	39	43	42	--	38
Stanford Total Math	43	73	71	66	57	--
English Speakers-Grade 5 <i>English Achievement</i>	1995 n = 11	1996 n = 13	1997 n = 17	1998 n = 15	1999 n = 20	2000 n = 25
Stanford Total Reading	53	69	77	74	--	65
Stanford Total Math	56	85	87	87	81	--

In conclusion, based on the fifth-grade scores on the Stanford and the Aprenda tests, the Barbieri TWBE program meets its academic goals in mathematics for both groups in both languages. For reading, English speakers show grade level performance in both languages. Spanish speakers perform above grade level in Spanish and approach the average grade level norm in English.

Student Performance on the MCAS (Grade 4)

The MCAS is a norm-referenced assessment, which aims to measure the content and skills outlined in the Massachusetts Curriculum Content Frameworks. It uses open response as well as multiple-choice questions, and includes a writing sample for language arts. Table 3 summarizes the average scaled scores on the MCAS for the two-way students and compares them to those of the district and the state. The scores of the English speakers are compared to the scores of students in standard curriculum, and the scores of the Spanish speakers are compared to the scores of students classified as Limited English Proficient (LEP). The latter group is defined as students who are receiving specialized bilingual and/or ESL services. On the MCAS, a scaled score of 220 and higher is considered a passing score; a score of 240 and higher is considered proficient. In Table 4, students with special needs have been excluded from the average scores.

Table 4 shows that the TWBE English speakers do well on the MCAS, scoring above the state average and consistent with all students in standard curriculum classes in the entire district. The TWBE Spanish speakers score well above the state and district average when compared to other LEP students. Their average scores are well above the passing score of 220 and increase

over time. It is also worth pointing out that none of the Spanish speakers failed the science test in 1999, and only one student failed it in 2000. Two students (out of 15 in 1999, and out of 19 in 2000) failed the language arts and math test. Although these are positive results, the Spanish speakers' scores are still below that of native English speakers in the state and in the district.

Table 4
Average Scaled Score on the Fourth Grade Massachusetts Comprehensive Assessment Systems (MCAS) for 1998-2000

Language Arts									
	Barbieri Two-Way			District			State		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
English Speakers	241	247	236	236	236	245	233	234	234
Spanish Speakers	225	226	228	222	222	223	221	222	221
Mathematics									
	Barbieri Two-Way			District			State		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
English Speakers	248	255	240	242	241	240	236	237	238
Spanish Speakers	223	230	228	222	218	221	221	218	220
Science and Technology									
	Barbieri Two-Way			District			State		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
English Speakers	246	257	245	243	247	245	240	242	244
Spanish Speakers	227	235	232	222	224	225	221	220	223

Using Data for Program Change

The Barbieri program evaluation data have been used to inform and support program changes. An example of the latter is the change in the language of instruction for math in fifth grade. This took place in 1997 when the decision was made to teach math in English and Spanish and to group students heterogeneously. Until that time, math had been taught only in English and students were grouped by ability. Although there were questions about the effect that this decision would have, the consistency in the English math achievement data for all students alleviated these concerns. Both languages now have equal status at the fifth grade level and students continue to perform well in math.

The data have also supported the basic principles underlying the program design, as most of the program's language and academic goals are being met. At the same time, the data have also drawn explicit attention to the continuing achievement gap between the native Spanish speakers and the English speakers in the program. As noted above, native Spanish speakers do not yet obtain grade level performance in English reading by fifth grade. These differential achievement patterns have initiated a critical examination of various assumptions within the program's design, including:

1. L1 Component: Do native Spanish speakers develop appropriate levels of academic Spanish language proficiency?
2. L1-L2 Relationship: Does the transfer from L1 literacy skills to L2 literacy skills occur for all students? What literacy skills transfer? How can we explicitly support this transfer?
3. L2 Component: Do we provide Spanish speakers with appropriate and sufficient L2 instruction?

The first question supported a re-consideration of the integrated language arts classes, as discussed above. It also stimulated a critical look at the Spanish as a Second Language component of the program; after all, higher Spanish proficiency levels for the native English speakers will support higher expectations and qualitatively better language input for the native Spanish speakers. The second question has prompted a discussion on how to better assess students in both languages and how to make effective connections between the two languages during instruction. For instance, this year the fourth-grade teachers have coordinated their language arts curriculum in such a way that skills taught in one language are reinforced and extended in the other language. One of the consequences of the third question was a more flexible use of the English as a Second Language (ESL) services. The ESL teacher works only with grades 2–4 this year because there was need for targeted instruction in small group settings (see Table 1). She may work with different grades next year, depending on the Spanish speakers' second language needs.

In short, the Barbieri TWBE program uses achievement data to reflect on practices and how these practices relate to theory and outcomes. The three

questions listed above become a means for teachers to reflect on their own classroom practices but also on the program as a whole. Keeping expectations and goals constant, teachers develop differentiated and theory-based approaches that can effectively meet the range of the linguistic and academic needs in the program.

Conclusion

This study presents an example of how theories of bilingualism and second language acquisition translate into effective practices. The Barbieri TWBE program operates in a context that values bilingualism and benefits from longevity and stability, well-trained and certified teaching and support staff, clear curriculum guidelines, and explicit academic, linguistic, and sociocultural goals. It provides initial L1 literacy development for all students, teaches 50% of the curriculum in L1 and 50% in L2 as of third grade, and selectively integrates native and non-native speakers of the target language. Academic achievement patterns show that this design is effective for both groups of students. On the Aprenda Spanish Achievement Test, both groups score at or above grade level in Spanish by fifth grade. On the Stanford English Achievement Test and the state MCAS test, the English speakers keep up with or outperform their grade-level peers. The Spanish speakers do well on the Stanford Achievement Test in Mathematics and clearly outperform other LEP students on the MCAS. They are, however, performing slightly below grade level on the Stanford English reading by the end of fifth grade.

The Barbieri approach to TWBE is dynamic and not static as illustrated by the flexible implementation of the model depending on student needs. Teachers use data to reflect on the effectiveness of their practices and have particularly focused on the quality of L1 literacy instruction for the Spanish speakers, the transfer of language skills from L1 to L2, and the effectiveness of the second language component.

The purpose of this program evaluation is not to prove that the TWBE program is better than other programs. Instead, the more productive question is whether the chosen approach, given its context and population, results in the expected academic outcomes for all the students in the program. Such an approach enables educators to move away from a focus on “models” toward a focus on theory-based educational approaches that have demonstrated their effectiveness.

Using the example of an effective elementary two-way bilingual education program, this study illustrates the strength of connecting theory with decisions about program design and the implementation and importance of linking these practices with actual academic outcomes. Theoretical principles must be confirmed by practices that demonstrate achievement. Such “theory-based” program designs and evaluations will support educators and policy makers in their efforts to provide access to quality education to bilingual students.

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Endnotes

¹ It is worth noting that the school system started a second TWBE program in another school, which is currently in its third year of implementation (K-2). Barbieri School also provides Spanish as a world language for grades K-3 to students in the standard curriculum classes. These developments demonstrate the district's support for bilingualism for all students.

² The school has experienced more changes in the past two years (1999-2001) primarily due to personal factors in teachers' lives.

³ This is possible because both kindergarten teachers are bilingual.

⁴ The 1998-1999 is an exception due to changes in the district-wide testing program; in this year only the math subtest was taken.

⁵ This is important to consider because the students will enter a standard curriculum classroom in 6th grade. Spanish speakers must therefore be prepared to function effectively in that type of classroom.

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