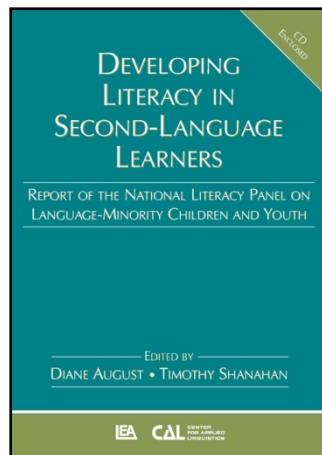


Report of the NLP: Language of Instruction Studies



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Background

- For many years, discussion of effective instruction for Language Minority children has revolved around the question of whether and how children's first language should be used in an instructional program
- Language of instruction has been a pre-occupying force in the education of language minority children
- Surprisingly, most of the discussion has been theoretical and review oriented with limited empirical work

Background (cont)

- Prior attempts to review the literature have used varying methods and selection criteria. These include
 1. Baker & de Kanter (1981); Rossell & Baker (1996)^a
 2. Willig (1985)^b; Greene (1997)^b; Slavin & Cheung (2004)^c; Rolstad, Mahoney, & Glass (2005)^b
 - ^a*Vote Counting*
 - ^b*Meta-analytic*
 - ^c*Best Evidence Synthesis*

Background (cont)

- Although prior reviews have reached different conclusions, they are not as far apart as one might imagine given the heat of the debate
 1. On the one hand, some reviews have found no advantage when L1 is used in instruction
 2. Other reviews, in contrast, have found advantages for the use of L1, but these have generally been in the small to moderate range ($d = +.2$ to $+.3$)
 3. All reviews concur that the empirical studies in this area are lacking in various respects

Background (cont)

- Problems most often cited with the empirical studies:
 1. Design (inadequate control groups and length of follow-up; contamination; selection effects)
 2. Analysis (failure to control for pre-treatment differences; failure to account for nesting)
 3. Reporting (inadequate program descriptions; failure to provide information for computation of effect sizes)
 4. Retrospective nature of many studies and over-reliance on data collected for other purposes

Background (cont)

- At the heart of the debate lies the distinction between Bilingual and Monolingual Programs.
 1. Bilingual Education (use of L1)
 - draws on theories of child language development
 - emphasizes the role of language in cognition and educational attainment
 - transfer of skills across languages
 - hypothesizes that children learn new concepts more efficiently and with greater depth in L1, which in turn gives them a stronger foundation for future learning
 - learning in L1 can take place as children acquire L2

Background (cont)

- Several Variants of BE have been proposed and studied
 1. Transitional
 2. Developmental
 3. Dual Language
 4. Heritage Language

Background (cont)

2. Monolingual (English-Only) instruction

- Theoretical underpinning is again child language development and the biological prepotency of the brain to acquire language
- Acquisition and mastery of language can be accelerated through immersion due to increased time on task and increased exposure
- Forced reliance on L2 increases its usage, i.e., creates increased practice which accelerates language learning

Background (cont)

- English Only Programs
 1. Students are taught in English from the beginning
 2. Occasional translations or explanations in L1 may be given to support learning, but instruction is EO
 3. Separate ESL classes may be included
 4. Efforts may be used to scaffold instruction
 5. EL learners may or may not be in classrooms with native English speakers

Searching the Literature

- We systematically searched electronic databases for studies that compared some use of the native language in instruction with English-only instruction. We did not restrict the type of BE model.
- In addition, we attempted to obtain every study included in the reviews conducted by Willig (1985), Rossell and Baker (1996), Greene (1997), and Slavin and Cheung (2004).
- However, to be included in the current review, a study had to meet specific criteria.

Criteria for Study Selection

- A study had to address: “What impact does the use of primary language in instruction have on the L2 literacy learning of language minority children”?
 1. The subjects were language-minority students in elementary or secondary schools in English-speaking countries.
 2. Studies of children learning a foreign language were not included.
 3. Studies of instruction in heritage languages were included, if they met our other criteria (e.g., Morgan, 1971).

Criteria for Study Selection

4. Studies included at least a 6-month span between the onset of instruction and assessment of impacts
5. The study had to provide a basis for deriving expected outcomes in English literacy under both BE and EO instruction models
 - i.e., a suitable Control group was included and at least one measure of English literacy
 - L1 instruction was not used in Control classrooms
 - Case studies and descriptive studies were eliminated on this basis

Criteria for Study Selection (cont)

6. Inclusion criteria for experimental and quasi-experimental studies were the same as in the overall report
- Random assignment, pre-testing, or other matching criteria were used before the treatments began.
 - Pretreatment covariates could be measures of skills related to the outcomes.
 - No studies were excluded on the basis of level of pretreatment differences.
 - Studies prior to 1980, tech reports, and dissertations were included to be consistent with prior reviews in this area.

Criteria for Study Selection (cont)

7. To be included in the meta-analysis, the study had to report sufficient information to compute a measure of effect size for acquisition of English literacy
 - At least one measure of English reading was reported
 - Means and standard deviations were reported, or statistics were reported for which known formulae exist for converting to a measure of effect size

Criteria for Study Selection (cont)

- We reviewed in narrative form some studies that did not allow the computation of effect sizes due to failed reporting, if they otherwise met criteria for inclusion
- We also reviewed in narrative form studies of French immersion. These were excluded in the meta-analysis because they dealt with a fundamentally different population than the EL learners of primary interest.
- These two sets of studies are ignored in this presentation.

Methods

1. Once studies had been selected because they were relevant, two individuals independently reviewed them for consistency against our set of standards.
2. Following these procedures, we arrived at a final set of 20 studies that diverged somewhat from those of previous reviews.

Selected Studies

- 20 = Total Studies Reviewed (96 were identified)
 - 16 = Studies with Language Minority Students (14 Elementary and 2 Secondary; 15 in Meta-Analysis)
 - 5 = Studies with Language Minority Students used random assignment
- 26 = Total number of independent study samples in meta-analysis (Total N = 4,567; BE = 2,665; EO = 1,902)
- 71 = Total number of effect sizes on English literacy outcomes (Study samples by measures)

Studies with Language Minority Students

- *ELEMENTARY STUDENTS*

- *Alvarez, 1975;*
- *Campeau et al., 1975;*
- *Cohen, Fathman, & Merino, 1976;*
- *Danoff, et al., 1978;*
- *de la Garza & Medina, 1985;*
- *Doebler & Mardis, 1980–1981;*
- *Huzar, 1973;*
- *Lampman, 1973;*
- *Maldonado, 1977;*
- *Maldonado, 1994;*
- *Plante, 1976;*
- *Ramírez et al., 1991;*
- *Saldade, Mishra, & Medina, 1985;*
- *Valladolid, 1991*

- *SECONDARY STUDENTS*

- *Covey, 1973;*
- *Kaufman, 1968*

Measures employed in Studies

- California Achievement Test
- California Test of Basic Skills
- CTBS - Form S, level B
- CTBS - Form S, level C
- Durrell/Sullivan
- Inter-American Reading Test
- Iowa Test of Basic Skills
- Metropolitan Achievement Test
- Primary Acquisition of Language Test
- Stanford Achievement Test
- Stanford Diagnostic Reading Test
- Science Research Associates
- TerraNova Reading
- Woodcock-Johnson
- Wide Range Achievement Test
- Metropolitan Readiness Test
- Test of Basic Experience
- Unspecified

Methods (cont)

3. Included studies were coded with respect to study characteristics and treatment effects.
4. Codes and statistics for all studies included in meta-analyses were confirmed by an independent reviewer.
5. A data table was constructed in Excel and used to construct effect sizes based on Cohen's *d*.

Methods (cont)

$$d = \left(\frac{\bar{X}_{L1} - \bar{X}_{EO}}{\hat{\sigma}} \right)$$

where

$$\hat{\sigma} = \sqrt{\frac{\hat{S}_{L1}^2 + \hat{S}_{EO}^2}{n_{L1} + n_{EO} - 2}}$$

Problems in the computation of d

1. In a few instances we made assumptions to be able to estimate the effect size when information was lacking.
 - We assumed that the pretest and posttest standard deviations were equivalent (posttest s.d. not given)
 - We assumed that the treatment and control standard deviations were the same when only one of the two was reported. This is consistent with the assumption used when both groups were reported.
 - In two cases we estimated the standard deviations from other studies that had used the same outcome measure at the same grades.

More Problems

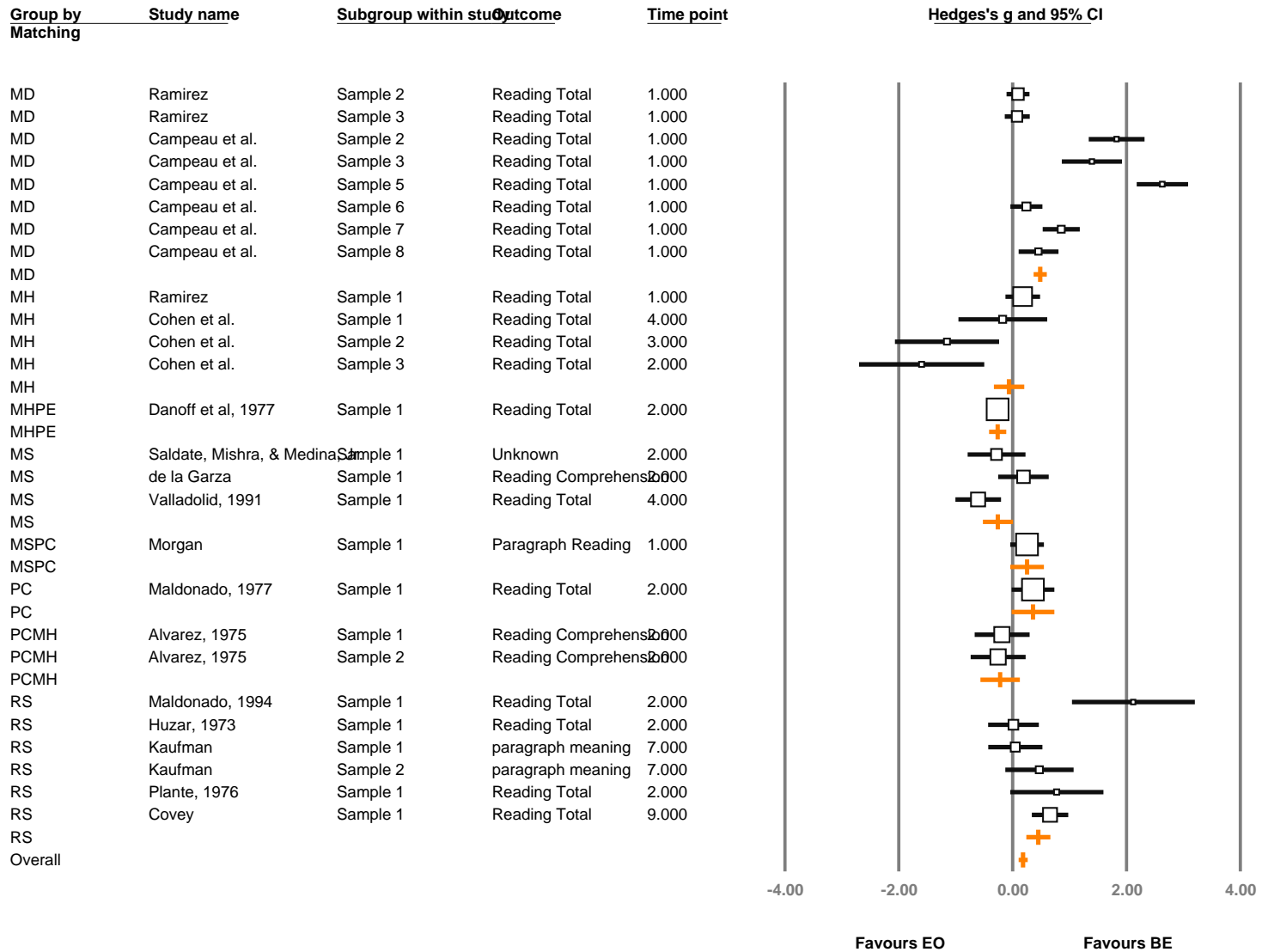
- None of the studies reviewed addressed the issue of non-independence of students who are nested inside instructional units.
- Thus, standard errors and confidence intervals around effect sizes for individual studies should be assumed to be too small.
- The extent of underestimation will vary across studies to an unknown degree.
- Consequently, we advise against interpreting the statistical significance of individual studies.

Steps to compute the average effect size

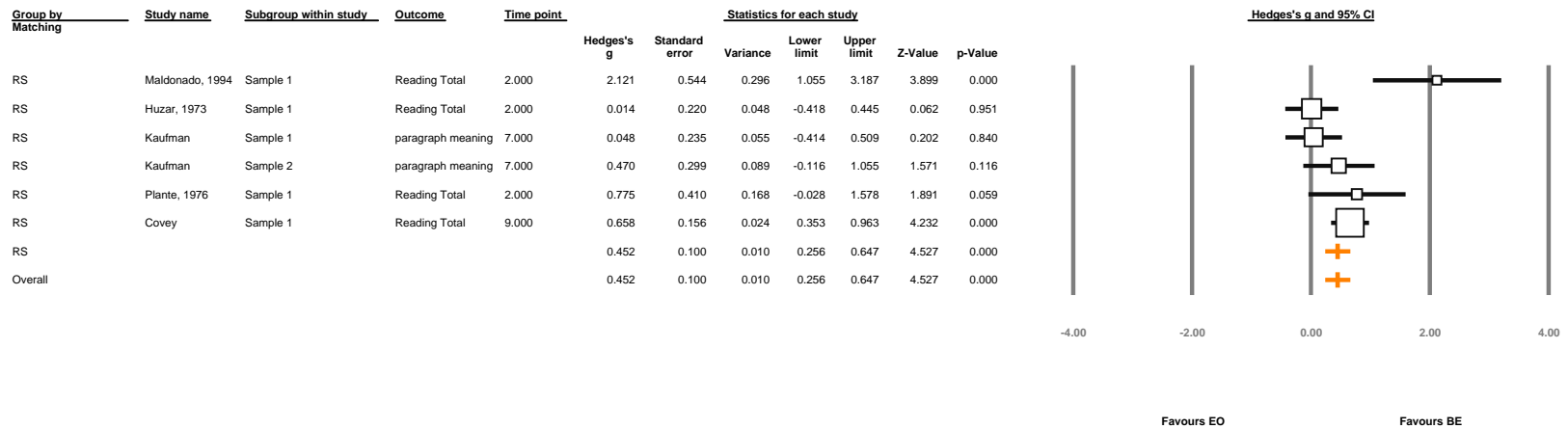
1. We treated each study sample as the unit of analysis. Thus, the 15 studies yielded 71 effect sizes across 26 samples.
2. We averaged across different reading outcomes and grades within the same study sample to derive a weighted average for that study sample.
3. We then corrected the computed d for small-sample bias by converting them to Hedges's g^u
4. Each effect size was then weighted by the inverse of its variance, which varies by n_{L1} , n_{EO} , and g^u .

Table of Average Effect Sizes

RCT	Study Name	Subgroup within Study	Statistics for Each Study						
			Hedges's g^U	Standard Error	Variance	Lower Limit	Upper Limit	Z-Value	p-Value
Yes	Huzar, 1973	Sample 1	0.0136	0.2201	0.0485	-0.4178	0.4451	0.0619	.9506
Yes	Kaufman, 1968	Sample 1	0.0477	0.2355	0.0555	-0.4139	0.5092	0.2025	.8396
Yes	Kaufman, 1968	Sample 2	0.4696	0.2989	0.0893	-0.1161	1.0554	1.5714	.1161
Yes	Covey, 1973	Sample 1	0.6583	0.1555	0.0242	0.3534	0.9631	4.2323	.0000
Yes	Plante, 1976	Sample 1	0.7750	0.4097	0.1679	-0.0281	1.5780	1.8915	.0586
Yes	Maldonado, 1994	Sample 1	2.1212	0.5440	0.2959	1.0550	3.1874	3.8992	.0001
	Cohen et al., 1976	Sample 3	-1.5981	0.5539	0.3068	-2.6838	-0.5125	-2.8851	.0039
	Cohen et al., 1976	Sample 2	-1.1518	0.4591	0.2108	-2.0516	-0.2519	-2.5087	.0121
	Valladolid, 1991	Sample 1	-0.6052	0.1968	0.0387	-0.9909	-0.2196	-3.0758	.0021
	Saldate et al. , 1985	Sample 1	-0.2829	0.2521	0.0636	-0.7770	0.2112	-1.1223	.2617
	Danoff et al., 1978	Sample 1	-0.2621	0.0690	0.0048	-0.3974	-0.1269	-3.7992	.0001
	Alvarez, 1975	Sample 2	-0.2541	0.2389	0.0571	-0.7224	0.2142	-1.0634	.2876
	Alvarez, 1975	Sample 1	-0.1863	0.2390	0.0571	-0.6548	0.2822	-0.7795	.4357
	Cohen et al., 1976	Sample 1	-0.1741	0.3904	0.1524	-0.9392	0.5911	-0.4459	.6557
	Ramírez et al., 1991	Sample 3	0.0796	0.1049	0.0110	-0.1259	0.2852	0.7591	.4478
	Ramírez et al., 1991	Sample 2	0.0947	0.0954	0.0091	-0.0923	0.2817	0.9930	.3207
	Ramírez et al., 1991	Sample 1	0.1774	0.1484	0.0220	-0.1135	0.4684	1.1953	.2320
	de la Garza, 1985	Sample 1	0.1910	0.2194	0.0482	-0.2391	0.6211	0.8703	.3841
	Campeau et al., 1975	Sample 6	0.2420	0.1357	0.0184	-0.0239	0.5080	1.7837	.0745
	Morgan, 1971	Sample 1	0.2541	0.1441	0.0208	-0.0283	0.5365	1.7635	.0778
	Maldonado, 1977	Sample 1	0.3580	0.1845	0.0340	-0.0036	0.7195	1.9404	.0523
	Campeau et al., 1975	Sample 8	0.4553	0.1716	0.0294	0.1191	0.7916	2.6540	.0080
	Campeau et al., 1975	Sample 7	0.8540	0.1585	0.0251	0.5434	1.1646	5.3889	.0000
	Campeau et al., 1975	Sample 3	1.3929	0.2628	0.0691	0.8778	1.9080	5.2999	.0000
	Campeau et al.,1975	Sample 2	1.8279	0.2426	0.0589	1.3523	2.3034	7.5340	.0000
	Campeau et al., 1975	Sample 5	2.6311	0.2230	0.0497	2.1941	3.0681	11.8001	.0000



Forest Plot and Statistics for Randomized Studies



Analysis of Randomized Studies

Statistics for Average Effect Sizes

		Statistics for Average Effect Size							
Model	Studies Included	Hedges's g^u	Standard Error	Variance	Lower Limit	Upper Limit	Z-Value	p-Value	
Fixed	All studies	0.1835	0.0329	0.0011	0.1191	0.2479	5.5838	.0000	
Random	All studies	0.3251	0.1271	0.0162	0.0760	0.5743	2.5575	.0105	
Fixed	RCTs	0.4515	0.0997	0.0099	0.2560	0.6470	4.5273	.0000	
Random	RCTs	0.5380	0.2140	0.0458	0.1185	0.9574	2.5136	.0119	
Fixed	RCTs except Maldonado, 1994	0.3934	0.1014	0.0103	0.1946	0.5923	3.8782	.0001	
Random	RCTs except Maldonado, 1994	0.3650	0.1638	0.0268	0.0440	0.6859	2.2287	.0258	

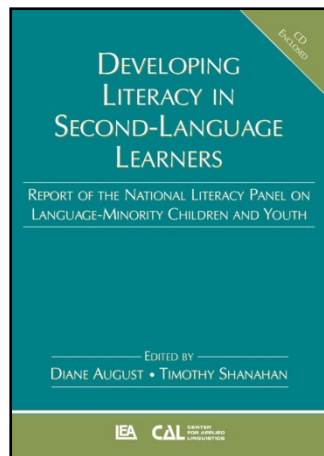
Summary and Recommendations

- From the analyses conducted, it seems safe to conclude that BE has a positive effect on children's literacy in English.
- The magnitude of this effect is small to moderate in size, but is apparent both in the complete collection of studies, and in the subset of studies that involved random assignment.
- There is substantial variability in the magnitude of the effect size across different studies, and within subsets of studies, including the subset of randomized studies.

Summary and Recommendations

4. We have not attempted to conduct a comprehensive analysis of potential moderator variables – e.g., grade, reading outcome, time since program onset. These are important issues that the study data base is hard pressed to address due to the number of studies.
5. The study analyses do not address whether either approach is achieving desirable results with children.

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Overview

- Part IV of the Panel Report--Instructional Approaches and Professional Development
 - Language of Instruction (David Francis)
 - Effective Literacy Teaching
 - Components of Literacy
 - More complex approaches
 - Qualitative Studies of Classroom and School Practices
 - Literacy Instruction for Language-minority Children in Special Education Settings
 - Teacher Beliefs and Professional Development
- Based on research findings develop some guidelines for effective practice

Inclusion Criteria

- Children ages 3-18
- Children from homes where a non-English language was spoken
- Articles appeared in peer-reviewed journals
- Articles had to report research—that is they had to report some systematic analysis of data; no think-pieces, reports of personal experiences or opinion pieces were included as data, only as background
- For the most part, studies reviewed in this presentation include the experimental and quasi-experimental studies focused on effective literacy instruction (a subset of studies included Part IV of the panel report)
- Published between 1980 and 2002; however, this review also includes studies that appeared between 2003-2006 that met same inclusion criteria

1. Effective Instruction for language-minority children emphasizes essential components of literacy

- Explicit instruction in key aspects of literacy – phonemic awareness, phonics, oral reading fluency, vocabulary, reading comprehension, and writing – provides clear learning benefits for students.
- Far fewer studies than located by the NRP
 - Phonemic awareness and phonics (7 NLP versus 52 on PA and 38 on phonics for the NRP; 6 focus on children prek-3)
 - Fluency (4 NLP versus 16 for the NRP; 4 focus on children prek-3);
 - Vocabulary (4 NLP versus 45 for the NRP; 3 focus on children prek-3)
 - Comprehension (1 NLP versus 205 for NRP; 0 focus on children prek-3)
 - Writing (3 NLP versus 0 in NLP; 0 focus on children prek-3)

2. Effective instruction for language-minority students is similar to effective instruction for English-proficient students

- The need to focus on the same components does not necessarily imply exactly the same instructional approaches will be equally effective with both groups.
- However, analysis of research suggests that, indeed, many of the instructional approaches that have been successful with native-English speakers are effective with English learners, too.
 - Students with learning difficulties were provided with supplementary instruction (Gunn studies; Vaughn et al. 2006)
 - Students worked on leveled materials at their own pace and had to reach criterion before they moved on (De la Colina, 2001; Cohen et al. 1980)

3. Effective literacy curriculum and instruction for English learners must be adjusted to meet their needs.

- While instructional approaches that have worked with native English speakers can be a good place to start, using these procedures with no adjustment despite the very real differences that often exist between first- and second-language learners is less effective.
 - Evidence for this is the lower effect sizes for the same interventions used with language-minority students
- The reason that common instructional procedures would be effective with English learners too is probably due to the fact that students are very similar no matter what their language background (similar in perceptual skills, memory capacity, ability to learn, etc.), so the roles of modeling, explanation, and practice in instruction probably do not differ very much from one group to another.

3. Effective literacy curriculum and instruction for English learners must be adjusted to meet their needs (cont.)

- However, as similar as learning mechanisms and capacities are, the role of background experience and prior knowledge in comprehension and learning have been well documented, so the differences that exist in the language and background experiences of English learners must be reflected in the instruction designed for them.

3. Effective literacy curriculum and instruction for English learners must be adjusted to meet their needs (cont.)

Some adjustments include:

- Strategic use of the first language (e.g. modified reciprocal teaching method was used in which Chinese and English were used on alternate days; vocabulary definitions in students' first language; helping students build on cognate knowledge)
- Enhanced instructional delivery routines (e.g. in 6 of the phonics studies, students were in small groups where instruction could be more individualized and interactive.)
- Adjustments for differences in knowledge (e.g. instruction in minimal pairs such as *ch/sh* and *b/v*)
- More scaffolding (e.g. instructional conversations around text; use of visuals—both print and picture)

4. Effective literacy instruction for English learners is comprehensive and multi-dimensional.

- Literacy instruction needs to be thorough and complete; that is to say, it should provide adequate instructional attention to all of the skills and knowledge that must be learned
 - Encouraging reading and writing (6)
 - Reading to children (3)
 - Tutoring and remediation (2)
 - Success for All (3)
 - Instructional Conversations (3)
 - Other interventions (6)

4. Effective literacy instruction for English learners is comprehensive and multi-dimensional (cont).

- For example, in a study that was part of a series of related efforts, an extensive array of improvements to literacy and language arts lessons were explored (Saunders, 1999).
 - Study examined the literacy learning of language minority students in Grades 2 to 5 who were participating in a Spanish transitional bilingual program.
 - Instructional approach included the following instructional components: literature logs, instructional conversations, writing as a process, direct teaching of comprehension strategies, assigned independent reading, dictation, lessons in written conventions, English-language development through literature, pleasure reading, teacher read-alouds, and interactive journals.

5. Effective literacy instruction for English learners develops oral proficiency

- It seems clear that in order to provide maximum benefit to language minority students, instruction must do more than develop a complex array of basic literacy skills; it must also develop oral English proficiency along with basic reading skills.
- Oral English proficiency is strongly related to text-level skills such as reading comprehension and writing and these are the skills that English-language learners struggle with most
- Examples include providing oral language activities intended to clarify specific concepts in the basal readers (Perez, 1981); grouping second language learners with fluent English speakers in peer response and conferencing groups and thus providing rich opportunities for students to interact with native English speakers (Carlo et al., 2004); providing additional time after school to read books in English with adult support, as needed (Tudor & Hafiz, 1989)

6. Effective literacy instruction for English learners is differentiated.

- English learners are a heterogeneous group (e.g., age of arrival in a new country, educational history, socioeconomic status, cognitive capacity, English proficiency, reading ability, interests, etc.), and instruction, if it is to be maximally effective, has to be differentiated to address their diverse learning needs.
- Teaching that provides a variety of reading activities and resources matched to students' levels of second language proficiency, domain knowledge (though maintaining high expectations), and special needs can all benefit these students, as can increased amounts or intensity of instruction
- Examples include developing the decoding skills of older recent immigrants (Swanson, 2005); supplemental reading instruction for ELLs with learning difficulties (Gunn studies); individualized mastery learning (Cohen & Rodriguez, 1980)

7. Effective literacy instruction for English Learners requires well-prepared teachers.

- Teacher knowledge and skills, the value of supporting teacher development, and the need for teacher support systems that are intensive, elaborate, and enduring have been documented as important.
 - For example, in the KEEP program (Au & Carroll, 1997), there was intensive mentoring by the KEEP consultants; each consultant worked with only one to three project teachers and observed and mentored in classrooms twice a week over the course of two years

8. Effective literacy instruction for English learners is respectful of the home language.

- Five quantitative syntheses show that compared to immersing children in English, teaching them to read in their native language as well as English produces superior results in English reading achievement (Francis, Lesaux, & August, 2006; Rolstad, Mahoney, and Glass, 2005; Slavin and Cheung, 2004; Greene, 1997; Willig, 1985).

8. Effective literacy instruction for English learners is respectful of the home language (cont).

- Studies indicate that bilingualism itself does not interfere with academic achievement in either language (Yeung, Marsh, & Suliman, 2000) and has other probable benefits including cognitive flexibility (Nagy, Berninger, & Abbott, 2006; Galambos & Hakuta, 1988; Bialysotck, 2001) and improved family cohesion and self-esteem (Portes and Hao, 2002; Von Dorp , 2001).

Additional Information

- Center for Applied Linguistics www.cal.org
 - National Literacy Panel
 - Acquiring Literacy in English
 - Center for Research on the Educational Achievement and Teaching of English Language Learners (CREATE)
 - Optimizing Outcomes for English Language Learners: Project SALL
 - Testing and Assessment: Diagnostic Assessment of Reading Comprehension (DARC)
- References
 - August, D. & Shanahan, T. (2006). *Developing literacy in second-language learners*. Mahway, NJ: Lawrence Erlbaum Associates
 - August, D. & Shanahan, T. (2008). *Developing Reading and Writing in Second-language Learners*. NY, NY: Routledge in conjunction with the International Reading Association and the Center for Applied Linguistics

APPENDIX



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Comparisons of word reading and decoding skills of LM and monolingual students

Study	Weighted Mean Difference	Number of Second-Language Students	Number of First-Language Students
Abu-Rabia & Siegel, 2002	.05	56	65
Chiappe, Siegel, & Wade-Woolley, 2002	-.09	131	727
Chiappe, Siegel, & Gottardo, 2002	.05	59	540
Chiappe & Siegel, 1999	-.22	38	51
D'Angiulli, Siegel, & Serra 2001	-.79*	81	210
Da Fontoura & Siegel, 1995	-.12	37	106
Geva, Yaghoub-Zadeh, & Schuster, 2000	-.02	248	100
Limbos & Geva, 2001	-.04	258	124
Verhoeven, 2000	.05	331	1812
Wade-Woolley & Siegel, 1997	.23	40	33
Total	-.09	1,279	3,768

Comparison of spelling skills of LM and monolingual students

Study	Mean Weighted Effect Size	Number of Language Minority Participants	Number of Monolingual Participants
Chiappe, Siegel, & Gottardo, 2002	0.25	59	540
Abu-Rabia & Siegel, 2002	-0.66	56	65
Chiappe, Siegel, & Wade-Woolley, 2002	0.25	131	727
Da Fontoura & Siegel, 1995	-0.68*	37	106
D'Angiulli, Siegel, & Serra, 2001	-1.45*	45	64
Limbos & Geva, 2001	-0.04	258	124
Tompkins, 1999	-0.07	40	40
Verhoeven, 2000	0.15	331	1812
Wade-Woolley & Siegel, 1997	0.39	40	33
Total	-.13	1,022	3,447