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Journal of Bilingual Education Research and Instruction

Editorial Introduction

The *Journal of Bilingual Education Research and Instruction* is committed to the exchange of educational data, studies, ideas, practices and information with researchers, practitioners, and policymakers in this public forum. It is published once a year and can be accessed by going to the TABE website homepage, TABE.org.

The current issue begins with an article by Debra A. Giambo, *Equity in Access to Gifted Education for Bilingual Students*. Using an autoethnographic case study of a seven year-old bilingual boy, she provides valuable information that may contribute to the reversal of a climate of exclusion of ELLs in gifted education programs. Next, Yune Tran provides us with insights on the need for well-equipped and trained teachers who have adequate preparation and pedagogical tools to fully meet diverse needs of a changing and growing student population--ELLs. In her article, *Science Savvy in the Classroom: One Teacher's Experience in Using Effective ESL Practices*, Tran provides readers with one teacher's perceptions of her preparedness and efficacy beliefs for teaching ELLs. Findings for Tran's case study reveal that this teacher's efficacy beliefs were influenced by professional development experiences that allowed her to successfully employ English-as-a-Second-Language (ESL) pedagogical methods in kindergarten science lessons. Nancy Compean-Garcia then reports on a study that investigated the impact of parental imprinting on the development of literacy skills for bilingual learners. She emphasizes the value of establishing a home literacy environment through social and cultural experiences. Using both qualitative and quantitative data, she concludes that it is of the utmost importance for schools to have in place a strong parental support system. Finally, in an article written in Spanish, Maria Arreguin-Anderson and Irasema González share some interesting insights concerning the home and the natural environment as a source of materials for learning centers in Science: *Los centros bilingües de aprendizaje de ciencias: Una perspectiva sociocultural*.

The issue concludes with a recently added section, "Research Briefs" that consists of short seminal pieces of research on Bilingual Education issues, research and concerns. Dr. Stephen Krashen, who conceptualized and proposed this section for inclusion in the Journal, contributes *The Case for Non-Targeted Comprehensible Input: The Net Hypothesis*. This manuscript represents our desire to continue to promote research-oriented briefs consistent with the emergent national emphasis of the *Journal of Bilingual Education Research and Instruction*.

The presentation of manuscripts in the *Journal of Bilingual Education Research and Instruction* would

not be possible without the dedicated professionals involved with the journal. Special thanks are due to all the members of the Editorial Review Board for their assistance in reviewing submitted manuscripts in a timely manner. Thanks are also due to the previous Associate Editor, Dr. Heriberto Godina, and the previous editorial assistant, Lorena Veleta, as well as to the present Editorial Assistant, Shivangi Sharma. In addition, thanks are due to the Departmental Webmaster, Guillermo Heinrichs and the Technology Implementation Manager, Gerardo Urquiza. This issue would not be possible without the individuals who submitted manuscripts for publication consideration and those who were successful in having their manuscripts accepted for publication—a 36% acceptance rate for this issue. This issue reflects a broad depth of expertise in quantitative, qualitative and theoretical methodology all focused on enhancing the quality of bilingual education for children in the classroom.

Finally, if you will be attending the forthcoming 2013 Texas Association for Bilingual Education annual conference in Houston, Texas, we would like to invite you to an *Information Session on TABE's Journal of Bilingual Education Research and Instruction* on Friday, October 11, 2013 from 2:45 -3:30 PM in Room Consort II. Members of the editorial team will be there to answer any questions about the submission and review process. We would also like to invite interested scholars and educators to join our editorial advisory board. As part of our continued membership and emerging bilingual education professionals, doctoral students are especially welcome to conduct review and to also submit articles for review for publication consideration. We're looking forward to seeing you there.

Dr. Josefina V. Tinajero, Editor

The University of Texas at El Paso



Equity in Access to Gifted Education for Bilingual Students: An Autoethnographic Case Study

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Abstract

Bilingual students often have inequitable access to gifted education programs in the United States. This situation can result from inaccurate and insufficient information among professionals who administer intelligence tests as well as those who make eligibility decisions and administer gifted education programs. The purpose of this paper is to provide information that may contribute to the reversal of this climate of exclusion. Information presented intertwines with an autoethnographic case study of a seven year-old bilingual boy on the following: (a) the intersection of psychological testing and linguistic factors that can lead to inequitable access to gifted education for bilingual students, (b) literature that supports appropriate and equitable access to gifted education for bilingual students, (c) federal laws, state regulations, and school district policies and procedures governing access and equal opportunity to gifted education for bilingual students, and (d) the need for reform.

Key Words: Gifted education, bilingual students, multilingual students, equitable access, intelligence testing, psychological testing

Equity in Access to Gifted Education for Bilingual Students:

An Autoethnographic Case Study

Estimates are that approximately 6% of the student population in the United States is academically gifted. Although data supporting this statistic are not collected by any federal agency or organization, this estimate dates back to the 1972 Marland Report to Congress, which estimated that 5 to 7% of the school population has high performance ability, thus in need of services that schools do not normally provide. However, the number of gifted and talented students may be higher if additional categories of giftedness, such as artistic talent (National Association for Gifted Children [NCLB], n.d.), are included. These categories are included in the Elementary and Secondary Education Act, which defines gifted individuals as students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities. (NCLB, 2002, p. 544, Title IX, Section 901 (22))

Although this definition is prevalent, the definition that is used by a given school district can affect the identification of minority students (Ford & Trotman, 2001) and can contribute to the underrepresentation of bilingual students in gifted education (Esquiedo & Arreguín-Anderson, 2012). Lara-Alecio & Irby (2000) asserted that the definition for giftedness should “be far more inclusive and far more adapted to a society defined by cultural and linguistic diversity” (p. 507).

Ezquierdo, Irby, & Lara-Alecio (2008) proposed a more inclusive definition, expanding on the work of Renzulli (1999), which includes three components: children who have the potential to develop above-average ability, task commitment, and creativity. The expanded and more inclusive definition includes socio-cultural linguistic characteristics as the aspect that surrounds and encompasses the

Renzulli traits (Esquierdo et al., 2008), thereby reflecting students' different realities and experiences (Esquierdo & Arreguín-Anderson, 2012)

What is the percentage of bilingual students¹ who are gifted? A logical deduction would be that the percentage of students who are bilingual and gifted would be the same as that of the general population, approximately 6%. This may be the case; however, there are no data to support this for bilingual students, who are linguistically diverse but are not limited in English proficiency (LEP). Although the Florida Department of Education (FLDOE) does not have available data for bilingual students, there are data available for gifted program enrollment based on race/ethnicity, which may be somewhat indicative of the enrollment discrepancy for bilingual students. The FLDOE data, for the county in our case study, show that 69% of the students enrolled in gifted programs were White, non-Hispanic students; 19% were Hispanic/Latino; and 5% were Black/African American, showing a large discrepancy in enrollment across racial/ethnic groups. Statewide, 55% of the students enrolled in gifted programs in the fall of 2011 were White, non-Hispanic; whereas, 27% were Hispanic/Latino, and 9%

¹ It should be noted that, the term *bilingual* here is used to refer to students who speak and use two or more languages regularly, often speaking a language other than English at home. These students are not usually classified as limited in their English proficiency (LEP), do not receive language services at school to remediate language deficiencies, and are more likely to be functionally fluent in two or more languages. However, due to the nature of using one language at home and another language at school, there may be discrepancies, often subtle but significant, between these bilingual students' use of English and their monolingual English-speaking peers, as well as discrepancies between the bilingual students' use of the home language and that of monolingual peers in the heritage country. More specifically, these students may not know how to form and use words and phrases commonly used by their monolingual peers.

were Black/African American. To put this into the context of the percentage of the school population, the 2006 data from the National Center for Educational Statistics indicates that the percentage of all Florida students in gifted education was almost five percent (4.7%), just below the estimation nationwide. Hispanic students were enrolled at a slightly lower percentage (4.4%); whereas, Black students, including students from Haiti, who are likely to be linguistically diverse, were enrolled in gifted programs at a much lower level (2%), and Asian/Pacific Islanders at a much higher percent (9.3%). Even though the data reveal discrepancies in enrollments across racial/ethnic groups in the state and do not indicate which of these students were bilingual, but not LEP, the data may be indicative of the underrepresentation of bilingual students, who are included within the groups specified in the enrollment data. In other words, the discrepancy in enrollment for bilingual students, who are not LEP, may be larger than the data indicates for enrollment based on race/ethnicity. Furthermore, recognition exists in the field that bilingual students were often underrepresented in gifted educational programs due, in part, to the exclusive use of intelligence tests in determining eligibility (Ascher, 1990; de Wet, 2005; Kogan, 2001; Naglieri, 2010; Ortiz, & Dynda, 2005; Pontón, 2001).

Reasons for the underrepresentation of bilingual students are varied. The purpose of this paper was to present reasons as to the underrepresentation of gifted bilingual students in the context of an autoethnographic case study, including factors such as psychological and linguistic testing; documents that support appropriate and equitable access to gifted education for bilingual students; and federal laws, state regulations, and school district policies and procedures governing gifted education access.

Case Study: An Introduction

Throughout this paper, the research and documentation regarding the effects of bilingualism in determining eligibility for gifted education are connected with an autoethnographic case study

involving my seven year-old son, Enrique², who was referred for gifted education testing by his first grade classroom teacher during the spring of his first grade.

Enrique's father is from the Dominican Republic and is fluent in academic Spanish and English; and his mother is a native English-speaker, who has acquired fluent Spanish. The family has spoken Spanish at home since Enrique was an infant and has used English rarely and only for specific purposes. For example, the family uses English at home when reading children's literature written in English; however, discussions or explanations about the literature are conducted in Spanish. Children's literature written in Spanish is frequently part of family reading. If English use is fundamental to discussions or homework, the family may also speak English with explanations in Spanish. Additionally, the family uses English in conversations when trying to include a non-Spanish-speaking friend or a family member on the mother's side.

Enrique is a very creative child, who has always been interested in language, letters, letter sounds, and learning. Since four months of age, Enrique has attended English-speaking day care centers and schools, although his parents would have chosen bilingual education if it had been available in their area. Enrique demonstrates strong bilingual skills and has many linguistic strengths; however, compared to his monolingual peers, he also manifests some surprising limitations in each language. For example, there are often words, phrases, and grammatical structures, in each language, which are further detailed below that he misuses or does not know, which one would expect a seven year-old to have facility. At the point of referral for gifted education testing, Enrique frequently reported to his parents his extreme dislike of school, despite his good grades and standardized test performances.

² *Note.* The participant's name has been changed in this paper.

The Intersection of Psychological Testing and Linguistic Factors for Bilingual Students:

Part I – Linguistic Diversity and Testing Considerations

The American Educational Research Association (AERA), the American Psychological Association (APA), and the National Council on Measurement in Education (NCME) jointly published the Standards for Educational and Psychological Testing (1999). The standards include various references, both explicitly within the text of the standards as well as within the supporting information, that refer to issues related to bilingual students and potential threats to validity of educational tests (Standards 1.3, 1.8, 1.24). Additionally, it is stated that special attention is needed when interpreting test scores of diverse students (Chapter 9, Standard 12.14). In addressing language dominance, it is stated that “it is important to consider language background in developing, selecting, and administering tests and interpreting test performance” (p. 91). Using test scores as the primary method of determining eligibility for gifted programs significantly disadvantages bilingual students (Ascher, 1990; Castellano, 2002; de Wet, 2005; Esquierdo et al., 2008; Gonzalez, 2002; Kogan, 2001; Lara-Alecio & Irby, 2000; Naglieri, 2010; Ortiz, & Dynda, 2005).

However, when school personnel either lack information or are unwilling to consider that linguistic differences can affect psychological testing results, the result is the exclusion of many bilingual students who might otherwise be appropriately placed in gifted education programs. The difficulties of defining and testing bilingual students are recognized in the literature (Esquierdo & Arreguín-Anderson, 2012; Esquierdo et al., 2008; Mestre & Royer, 1991; Ochoa, Powell, & Robles-Piña, 1996) with assertions that, within this group, the greatest margin of error in test results can be found (de Bernard, 1985; Gutierrez-Clellen, 1996; Lopez, 1988; Pérez-Arce & Puente, 1996; Sandoval & Duran, 1998; as cited in Pontón, 2001). Furthermore, different intelligence tests measure different constructs of intelligence and can result in inconsistent determinations as to diverse students being gifted (Naglieri, 2010; Silverman, n.d.).

Case Study: Testing for Intelligence

During the span from first to third grade, Enrique's experience illustrate the complexity of intelligence testing with bilingual students, including this last point above, that different intelligence tests can yield drastically differing results (Naglieri, 2010; Silverman, n.d.) and resulting educational decisions. Enrique was administered the Reynolds Intelligence Assessment Scales (RIAS; Reynolds & Kamphaus, 2003) as part of the process in determining eligibility for gifted education in April of the year of referral in first grade. Following testing, he reported to his mother there had been some test items that he knew how to answer in Spanish, but not in English, and so he did not respond to those items. Enrique scored at one and one-half standard deviations above the norm. Because the school district's policies and procedures for exceptional student education (SDP&P) indicate an intelligence test score two standard deviations above the norm to be one of the criteria that may indicate eligibility for gifted education, school district personnel determined that Enrique was ineligible for gifted education services without consideration of parental input. However, as discussed below, the eligibility decision, according to the SDP&P, must not be determined based solely on a test score. The SDP&P includes the recognition that basing an eligibility decision solely on a test score can result in inappropriate, exclusionary practices (Florida Department of Education, 2009-2010 –2011-2012); however the school district personnel were out of compliance with their state-approved SDP&P.

Because it is indicated in the SDP&P that a multidisciplinary team meeting is to be held following testing to determine eligibility for gifted education, and because the initial meeting participants could not be considered multidisciplinary³ and would not discuss the bilingual issue brought up by Enrique himself, the parents requested to have a subsequent meeting, as per the SDP&P.

³ The first meeting participants consisted of the school's state standardized testing coordinator, the gifted/computer teacher, and the parents. The only people at the meeting who knew Enrique were his parents.

Prior to the second meeting, school district personnel administered the nonverbal section of the Differential Ability Scales, 2nd edition (DAS-II; Elliott, 2008) without parental permission, and the results indicated average ability.

At the second meeting, despite the parents' verbal and written requests, school personnel refused to discuss additional information to consider the most appropriate educational setting for Enrique, as per the SDP&P, such as student self-report on language issues during testing, social and developmental history, or teacher or parental input. The school district personnel rejected information that can be significant for bilingual students and for school personnel making decisions about eligibility for gifted education services (AERA, APA, & NCME, 1999; Ascher, 1990; Bialystok, 2010; De Wet, 2005; Esquierdo et al., 2008; Florida Department of Education, 2009-2010–2011-2012; Kogan, 2001; National Council for Measurement in Education, 2004; Ortiz & Dynda, 2005; Reynolds & Kamphaus, 2003, 2005). Guidelines for school personnel when making inclusive and appropriate eligibility decisions for bilingual students are discussed in the following sections.

Subsequently in our case study, during the months following the meetings at the school, Enrique's father had a series of discussions with a school psychologist in a different district, who suggested that the most appropriate test for Enrique would have been the Universal Nonverbal Intelligence Test (UNIT; Bracken & McCallum, 1998), a nonverbal test that this professional felt measures intelligence effectively with bilingual students. The testing was completed privately by a certified school psychologist seven months after the DAS II (Elliott, 2008) test was administered by the school district, and Enrique scored at his lowest level yet (Table 1). The parents and Enrique all decided separately, at this point, to forego further testing. However, this is not the end of the story for Enrique and gifted education.

The Intersection of Psychological Testing and Linguistic Factors for Bilingual Students:

Part II – Norming Issues and Questions of Test Validity.

Adding to the difficulty of identification of bilingual gifted students are the issues of norming and test validity. Even though there are no intelligence tests that appropriately measure bilingual students' cognitive abilities while taking bilingualism and related abilities into account, the existing intelligence tests have not been normed on bilingual students, and such norming would be complicated by the many and varied factors to consider with a bilingual student (Cummins, 1984; Jensen, 1974, 1976; Ortiz & Dynda, 2005; Dr. Barbara Swicord, Executive Director, National Society for the Gifted and Talented, personal communication, May 18, 2010; Valdes & Figueroa, 1994, as cited in Ortiz & Dynda, 2005, p. 550).

There are currently some formal instruments that aim to appropriately screen and identify diverse students for gifted education: Hispanic Bilingual Gifted Screening Instrument (Irby & Lara-Alecio, 1996; as cited by Lara-Alecio & Irby, 2000; Esquierdo et al., 2008); Kranz Talent Identification Instrument (Kranz, 1994); Baldwin Matrix (Baldwin, 1977; as cited by Baldwin, 2004); Torrance Tests of Creative Thinking (Torrance, 1977). However, with school districts' continued reliance on intelligence test results to determine eligibility for gifted education (Baldwin, 2004; Castellano, 2002), the implementation of these instruments that could potentially help to turn around the exclusionary practices addressed herein may remain somewhat limited.

If a test is normed on monolingual students, and not on bilingual students, the validity of the test for bilingual students is questionable, and this calls for caution in interpreting the test scores. According to the Standards for Educational and Psychological Testing (AERA, APA, & NCME, 1999), when an examinee cannot be assumed to belong to the cultural or linguistic population upon which a test was standardized, then standardized administration procedures may not provide a comparable

administration for the test examinee. The RIAS Professional Manual (Reynolds & Kamphaus, 2003), for example, details normative data that include 2,438 people between 3 and 94 years of age, who resided in 41 states, and were matched to data from the U.S. Census of 2001 on the following categories: age, gender, geographic region, ethnicity, and years of education (Reynolds & Kamphaus, 2003). Thus, the RIAS was extensively normed but was not normed on students who were bilingual as separate from students who have limited English proficiency or are Hispanic or Haitian, for example (Reynolds & Kamphaus, 2003, 2005). This is one of many examples of psychometrically sound intelligence tests that were not normed on bilingual students.

The effect of cultural and linguistic differences on test performance is not the same as the effect of racial or ethnic differences. Therefore, a norm sample appropriate to bilingual students would have to somehow control for differences in culture and language as is done with age, race, and ethnicity, for example. Currently, there are no tests that have been normed in a manner appropriate to bilingual students (Cummins, 1984; Figueroa, 1990a; Samuda, Kong, Cummins, Pascual-Leone, & Lewis, 1991; Valdes & Figueroa, 1994; as cited in Ortiz & Dynda, 2005, p. 553).

In an effort to ameliorate the situation, many practitioners look to nonverbal tests to solve the linguistic dilemma. However, this may be unnecessary and inaccurate for bilingual students with at least intermediate levels of English proficiency. Furthermore, by choosing to use a nonverbal test, the practitioner is choosing to measure a more narrow range of intellectual abilities. Many nonverbal tests measure primarily visual processing (Flanagan, McGrew, & Ortiz, 2000; Flanagan & Ortiz, 2001; McGrew & Flanagan, 1998), and some measure fluid intelligence, short term memory, and processing speed. Overall, however, nonverbal tests measure a restricted range of intellectual abilities and, thus, provide a narrow measure of intelligence. Furthermore, the above referenced norming dilemma, that of including bilingual students as separate from students who are LEP and from race/ethnicity, is an issue

for nonverbal tests as well. Thus, for bilingual students, nonverbal tests do not solve the problem of validity in measuring intelligence (Ortiz & Dynda, 2005).

The Standards for Educational and Psychological Testing (AERA, APA, NCME, 1999) address the issue of score interpretation for examinees on whom the test was not normed (Standards 4.5, 4.7, 5.10). Specifically, the standards call into question the validity of score interpretations when the norming issue is not addressed. Reynolds & Kamphaus (2005), the authors of the RIAS, also advised that caution should be used in interpreting tests scores to reduce the chances of interpretations that cannot be supported. Furthermore, the Standards states, “Regardless of the qualities being assessed and types of data collection methods employed, assessment data used in making special education decisions are evaluated in terms of validity, reliability, and relevance to the specific needs of the students” (p. 144). Thus, when a bilingual student is assessed with an instrument that has not been normed on bilingual students, it cannot be assumed that the test score is comparable to other examinees (AERA, APA, & NCME, 1999; Reynolds & Kamphaus, 2005). To clarify, this issue of limitations in norming is not due to psychometric faults of the intelligence tests, as there is currently no mechanism to address these norming issues in test construction, but these issues are centered on factors affecting the comparability of bilingual students’ test performance to that of other examinees (Ortiz & Dynda, 2005).

Case Study: Bilingualism and English Language Development

Enrique’s parents have observed limitations in the richness of Enrique’s language in both English and Spanish. The following examples were noted by Enrique’s father and mother, who have been educators for 21 and 18 years, respectively. In addition, Enrique’s grandparents, retired educators

with a half a century of experience between them, have expressed concern for Enrique's limitations in English language development for some time.⁴

Some language samples that indicate Enrique's limitations in English, as compared to monolingual English-speaking peers, are as follows:

- “*Teacher* in church”: for *pastor*.
- “My tooth *got* out,” for “My tooth *came* out.”
- Enrique did not know the meaning of *immediately* in a book; whereas, his monolingual, English-speaking cousin said that was an easy one that meant “Do it right now!”
- “She throws the garbage on the *floor*” for *ground* outside.
- “Aunt Wendy is the *smallest*” for Aunt Wendy is the *youngest*.

Bialystok's (2010) research on the vocabulary and language development of bilingual children indicates that bilingual children have a smaller vocabulary in each of their languages than monolinguals do. Thus, bilingual children's language can show discrepancies in richness and interconnectedness, and this was true for children at every age between 3 and 10 years.

Enrique's bilingualism affected him at a basic level on the first intelligence test administered, in particular to the issues noted above. As noted earlier, following the administration of the RIAS (Reynolds & Kamphaus, 2003), he reported to his mother that there were a few test items for which he knew the answer in Spanish, but not in English, and so he did not respond to those items. The coordinator for psychological services in Enrique's school district acknowledged that bilingual students are underidentified for gifted education and that bilingualism may affect test scores, although to what

⁴ It should be noted that these concerns were not so grave as to make Enrique's parents consider an English-only household, as they are well aware of the benefits of bilingualism, which are too many to expound on here.

extent is not known (personal communication, May 25, 2010). Unfortunately, she was unwilling to use this insight to affect change in the school district's practices of determining eligibility for gifted education based solely on a test score, which was in opposition to the district's own SDP&P.

For bilinguals, both languages are active, even when they are using only one of them in monolingual contexts (Bialystok, 2007; Short, 2012). Thus, accessing mentally the lexicon involves cognitive competition between languages to make appropriate selections of words. Bilingual children develop this type of cognitive control earlier than monolinguals (Bialystok, 2007), and usually young children have not yet fully developed this executive control (Bialystok, 2010). Enrique, for example, can read in Spanish, can communicate proficiently with children and adults, and can switch between languages when appropriate, so he has at least some of the associated cognitive abilities and sees the world from a wider lens. He also may be more creative, as a result of his bilingualism (Kessler & Quinn, 1987, Ricciardelli, 1992, as cited in Robisbeaux & Banbury, 2002; Short, 2012). This, however, is not captured on existing intelligence tests relied upon by school districts. These cognitive abilities give Enrique some advantages over monolingual students (Bialystok, 2007; Robisbeaux & Banbury, 2002; Short, 2012). Although cognitive abilities are not captured on a test, they do provide additional support to the importance of considering supplementary information in addition to the intelligence test score when determining eligibility for gifted education.

Federal and State Laws Governing Special Education Access

There is currently no federal law that directly protects the rights of gifted children, although advocacy for potentially gifted bilingual students can be approached through Title VI of the Civil Rights Act, the Equal Education Opportunities Act of 1974, and the U.S. Constitution (Gabriel, Irby, & Lara-Alecio, 2007; Pérez-Gabriel, Lara-Alecio, & Irby, 2005). More specifically, (a) Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national origin when programs receive federal funds, which applies to school districts; (b) the Equal Education Opportunities Act of

1974 states that no one shall be denied equal opportunities for education on the basis of race, color, gender, or national origin, which affects bilingual students, who may not be as proficient as their monolingual peers in either language; and (c) the lack of data on bilingual students at both the state and federal level indicate the Equal Protection Clause of the Constitution of the United States (Gabriel et al., 2007; Pérez-Gabriel et al., 2005).

Current federal legislation addresses gifted education in a limited manner. The No Child Left Behind Act (2002) includes a definition as well that partially addresses gifted education. Even though gifted education is currently addressed under legislation in approximately 37 states, a mandate to serve gifted children is currently only in 26 states (National Association of Parents with Children in Special Education, n.d.). Although gifted education may be included under the same auspices as students with other exceptionalities (FLDOE, 2009-2010–2011-2012), the Individuals with Disabilities Education Act (United States Department of Education, 2004) does not cover gifted children. The Jacob Javits Gifted and Talented Student Education Act of 1988 addressed public school responsibility for gifted students and became part of the Elementary and Secondary Education Act (ESEA) and NCLB (2002); however, although its purposes include coordination of research, promoting effective programs, and supporting identification of underrepresented groups (i.e., economically disadvantaged, limited-English proficient, and disabled students), the act does not fund local programs (National Association for Gifted Children, 2008).

Florida Regulations and School District Policies and Procedures

The school district in the case study has a set of policies and procedures (SDP&P) that govern Exceptional Student Education (ESE), of which gifted education is a part, and was approved by the Florida Department of Education (FLDOE, 2009-2010–2011-2012). Diverse students' needs are partially addressed within the SDP&P. Within the General Policies and Procedures section, it is stated that “in conducting the evaluation, the school district does not use any single measure or assessment as

the sole criteria for determining eligibility or educational programming” (FLDOE, 2009-2010–2010-2011, Part I, Section H, Student Evaluations and Reevaluations, Procedures for Evaluation, 4a, p. 29).

Additionally, it is stated,

The school district ensures that assessments and other evaluation materials used to assess a student are selected and administered so as not to discriminate on a racial or cultural bias . . . [and] used for purposes for which the measures are reliable and valid” (FLDOE, 2009-2010 through 2010-2011, Part I, Section H (Student Evaluations and Reevaluations), Procedures for Evaluation, 4 a & b, p. 29).

The SDP&P also states,

Districts must use a variety of assessment tools and strategies to gather information, use technically sound instruments, and not use any single assessment tool as the sole criteria for determining eligibility. . . . Districts must ensure that the formal and informal evaluation methods used are . . . in the form likely to yield accurate information on what the child knows and can do [and are] used for the purposes for which the assessments are valid and reliable. (FLDOE, 2009-2010–2010-2011, Part I, Section J, Evaluation Instruments, Procedures, 2 & 3, p. 34)

The SDP&P clearly delineates a more inclusive nature of decision-making regarding eligibility for gifted education, specifically addressing that the eligibility decision should not be based solely on a single test score, that practices should not discriminate based on race or culture, and that measures should be used in a manner for which they are reliable and valid. This is clearly in line with what is supported by the AERA, APA, and NCME’s Standards for Educational and Psychological Testing (1999; Standard 11.20, Standard 13.7, p. 147) and the National Council on Measurement in Education

(2004). The discrepancy between the SDP&P requirements and the implementation of the SDP&P clearly became apparent in this case study.

Case Study: Application Discrepancies of the SDP&P

For a bilingual child, such as Enrique, the RIAS (Reynolds & Kamphaus, 2003) and other intelligence tests cannot meet the state's requirement to use a reliable and valid assessment, as is required in the school district's SDP&P (FLDOE, 2009-2010 –2010-2011), because the measures were not normed on bilingual students and cannot accurately assess the effect of bilingualism and related abilities (AERA, APA, & NCME, 1999; Dr. Swicord, personal communication; Reynolds & Kamphaus, 2003, 2005; Ortiz & Dynda, 2005). In spite of this, a reality faced by bilingual families is that, as in our case study, school district personnel often choose not to follow the school district's SDP&P in making decisions regarding eligibility for gifted education.

In Enrique's case, at two formal meetings, the school district's team refused to have a conversation that considered any information other than the test score. Along with the parents' formal request for the second meeting, a detailed explanation of the relevant pieces of information the parents wanted to discuss with the team was submitted (i.e., issues of bilingualism and test performance, Enrique's own report of testing/bilingualism issues, test validity and reliability, social and developmental history, and teacher and parent input). The refusal to consider this information was presented more forcefully at the second meeting, when the parents made another verbal request to have a discussion about information that would supplement the test score, as required by the SDP&P. This refusal was clearly out of compliance with the SDP&P and was promoted up to the district level coordinator at the meeting.

Case Study: Prologue

Before presenting the prologue to the case study, it is important to remember that Enrique's highest intelligence test score was a 123 (moderately above average) on the RIAS (Reynolds &

Kamphaus, 2003), and his lowest score was a 93 (average) on the UNIT (Bracken & McCallum, 1998). In the spring of Enrique's second grade, his teacher referred him for testing to determine eligibility for gifted education. Enrique and his parents were reluctant to begin the process again and discussed not signing the permission form, although they eventually did sign. The teacher checklist of gifted characteristics indicated a score of 141 out of 148, where a score of 75 is required. Enrique was again administered the RIAS (Reynolds & Kamphaus, 2003) in the fall of his third grade, and he scored at 138 (significantly above average, 132-141 range; verbal 144, nonverbal 122). He was determined to be eligible for full-time gifted education services, as the district's eligibility score is a 130 (i.e., two standard deviations above the norm). This prologue to the case study illustrates the issue that different intelligence tests measure different constructs of intelligence and inconsistently affect who is determined to be gifted according to the test score (Naglieri, 2010; Silverman, n.d.). It also illustrates the need for implementation of appropriate procedures for determining eligibility for gifted education.

The Need for Reform: Potential Solutions

Potential solutions gleaned from the literature in the field, in conjunction with the case study, involve the following:

1. There is an imperative need for the implementation of a more comprehensive and inclusive identification process to determine appropriate placement of bilingual students in gifted and talented programs (AERA, APA, & NAME, 1999; Ascher, 1990; de Wet, 2005; Irby & Lara-Alecio, 2001; Lara-Alecio & Irby, 2000; Ortiz & Dynda, 2005; Dr. Barbara Swicord, personal communication, Executive Director, National Society for the Gifted and Talented, May 18, 2010). This expanded process would include consideration of an expanded definition of gifted students, especially gifted bilingual students (Esquierdo et al., 2008), testing requirements and results, complementary information (e.g., social and developmental history and teacher and parent input), and empowerment of school personnel.

2. *Definition:* There is an imperative need to define giftedness in a manner in which a student's cultural, linguistic, and social uniqueness are considered (Esquierdo et al., 2008) to allow for appropriate identification of gifted bilingual students. When students are from a different cultural or linguistic background than their teachers, judgment about potential giftedness can be confused (Esquierdo et al., 2008; Kogan, 2001).
3. *Testing:* The identification process should not exclude the intelligence testing that is usually a part of the identification of gifted students. However, in consideration of the psychometric concerns raised regarding test scores and bilingual students (AERA, APA, & NAME, 1999; Ascher, 1990; Ortiz & Dynda, 2005; Reynolds & Kamphaus, 2005), the test score should be treated as potentially helpful, but not conclusive, information. Test scores could be used to include, rather than exclude, bilingual students (Dr. Barbara Swicord, personal communication, Executive Director, National Society for the Gifted and Talented, May 18, 2010; Kogan, 2001). A more responsive protocol would include the consideration of complementary information in addition to the test score, as stated above, as well as consideration of the differing nature of intelligence tests, measuring different constructs of intelligence and yielding inconsistent results (Naglieri, 2010; Silverman, n.d.). Lastly, the limitation of intelligence tests in measuring constructs of intelligence and not including creative, artistic, or leadership capacity, which are also part of the widely used definition of giftedness (NCLB, 2002, *Title IX, Section 901 (22), p. 544*), *should be considered as a limitation of the intelligence test score in the context of the whole child.*
4. *Complementary information:* Use of information from a variety of sources has potential to increase the number of appropriate placements of bilingual students in gifted education programs. As is required, but not implemented, in the school district in the case study, the consideration of social and developmental history collected from the parents along with teacher

input would be a good place to start. Additionally, language samples taken in a variety of situations can inform the decision-making team about the manner in which a student uses two or more languages to perform cognitive tasks (Ascher, 1990). Consideration of a bilingual student's associated cognitive benefits (Bialystok, 2007; Kessler & Quinn, 1987, Ricciardelli, 1992, as cited in Robisbeaux & Banbury, 2002; Short, 2012) should be a part of the conversation as well. Kogan (2001) asserted that the goal of assessment for gifted education is to use various complementary measures to find a variety of indicators of a student's potential that cannot be found with a single measure. Additionally, the use of portfolios and examination of classwork would help provide a broader picture of the student's abilities and more equity in identifying bilingual students for gifted education (de Wet, 2005).

5. *Empowering school personnel:* The empowerment of school personnel to make appropriate gifted education eligibility decisions for bilingual students involves extensive in-service on the issues raised herein and throughout the relevant literature (e.g., AERA, APA, & NCME, 1999; Ascher, 1990; Baldwin, 2004; Bialystok, 2010; Castellano, 2002; Cummins, 1984; de Wet, 2005; Esquierdo & Arreguín-Anderson, 2012; Ezquierdo et al., 2008; Ford, & Trotman, 2001; Gabriel et al.; Irby, & Lara-Alecio, 2001; Kogan, 2001; Lara-Alecio, & Irby, 2000; Naglieri, 2010; Ortiz, & Dynda, 2005; Pontón, (2001); Reynolds & Kamphaus, 2003, 2005; Robisbeaux, & Banbury, 2002; Short, 2012; Silverman, L. K., n.d.) regarding bilingual students and giftedness.
6. *Legislative action:* Underrepresentation of bilingual gifted students is “tantamount to a denial of equality in education under which liberty cannot thrive” (Pérez-Gabriel et al., 2005, p. 23). Thus, federal policy on gifted education could spur national reform that has the potential to address the underrepresentation of gifted bilingual students in gifted education programs on a more comprehensive and consistent basis (Gabriel et al., 2007; Irby, Lara-Alecio, 2002; Pérez-

Gabriel et al., 2005).

Implementation of these recommendations has potential to begin to address the underrepresentation of bilingual students in gifted education and to provide bilingual students more equitable access to such challenging programs. Although many of these items were addressed in the case study school district's SDP&P, school personnel were underinformed about the importance of adherence to the requirements in providing equitable access to gifted programs for bilingual students. The suggested reforms must be implemented at all levels and in all facets of the procedures for determining eligibility for gifted education to make a real and practical difference for potentially gifted and underidentified bilingual students.

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Science Savvy in the Classroom: One Teacher's Experience Using Effective ESL Practices

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Abstract

The changing and growing student population in the U.S. demands well-equipped and trained teachers who have adequate preparation and pedagogical tools to fully meet diverse needs. This study examined the perceptions of one teacher's preparedness and her efficacy beliefs for teaching English Language Learners. The teacher in the case was part of a larger study of over 144 teachers who participated in a mixed-method design. The following research questions were addressed: (a) What perceptions are held by in-service teachers about teaching practices for ELLs? (b) What is the relationship, if any, between teacher knowledge about teaching ELL students and the instructional practices employed by teachers when instructing ELL students? (c) How effective do in-service teachers feel teaching ELL students? (d) What factors influence teachers' perceptions of self-efficacy about teaching ELL students? Findings for this case study revealed that her efficacy beliefs were influenced by professional development experiences that allowed her to successfully employ English-as-a-Second-Language (ESL) pedagogical methods in a kindergarten science lesson.

Introduction

Each year, the United States draws more ethnically and linguistically diverse students who come from non-English speaking countries. The data for the latest 2010 National Center for Education Statistics estimate that 11.2 million English Language Learners (ELLs) reflect the overall student population in U.S. schools. Of this population, over 5 million ELLs struggle with academic difficulty in

schools. And because this population has increased by over 57% percent in the last 10 years, focus has been placed on the instructional needs of these students (Ballantyne, Sanderman, & Levy, 2008).

Given the current demographic shifts in student populations, it is likely that mainstream teachers will encounter at least one student in the classroom whose native language is not English. The challenge for these teachers is not only to teach academic content and raise academic achievement, but also to develop students' English proficiency while maintaining high expectations. The prevailing research suggests that teachers who are working with ELLs need preparation and expertise in instructional practices because they are critical components as to improving academic success (Gersten & Baker, 2000; Menken & Antunez, 2001). Moreover, when teachers have good preparation and specialized training with pedagogical tools through their credentialed programs and professional development experiences, they develop a higher sense of efficacy in working with ELLs (Tellez & Waxman, 2005).

Grant and Wong (2003) reported certain recommendations provided by the Center for Research on Education, Diversity, and Excellence (CREDE) that are essential in helping teachers establish good teaching practices to enhance ELLs' educational experiences and success. The five CREDE standards include *joint productivity*, *language development*, *making meaning for students by contextualizing teaching and curriculum*, *teaching complex thinking*, and *teaching through conversation*.

The first CREDE standard, *joint productivity*, involves teachers designing instruction that focuses on experts and novices working together to achieve a common product or goal. Additionally, teachers need to allow students multiple opportunities to talk about their work as it is completed. The second CREDE standard is *language development* through meaningful and purposeful conversations that promote listening, speaking, reading, and writing across the curriculum through the school day. The third CREDE standard is *making meaning for students by contextualizing teaching and curriculum* in the experiences and skills of students within their homes and communities. Teachers instruct

students to learn a new language through building a background and making connections with their prior experiences and what they have learned from their homes, community, and school. The fourth CREDE standard, *teaching complex thinking*, stresses the importance of developing higher order thinking skills and challenging activities for ELLs rather than repetition and rote memorization. The final CREDE standard, *teaching through conversation*, emphasizes instructional conversations where students have opportunities to share their ideas and dialogue about academic content with their peers.

Even though Grant and Wong (2003) emphasized that these standards provide a framework of possibilities for teacher education programs, the standards are not exhaustive nor can they ensure that ELLs' needs are sufficiently met. In-service teachers need high-quality professional development to strengthen their pedagogical skills while improving their cultural competence and attitudes to continually support ELLs (Antunez, 2002; Ballantyne et. al, 2008). Furthermore, these teachers need ongoing support to develop their understandings of the instructional practices necessary for both language and content learning to occur. In this way, teachers can become language-aware practitioners while working to refine their practice (Fortune & Tedick, 2008).

Given these recommendations, the purpose of this study was to extract how one teacher's ESL methodologies were utilized in teaching a kindergarten science lesson on fish vocabulary. The aim of this study was to discuss how professional development experiences influenced the perceptions and efficacy beliefs of this teacher in carrying out ESL practices for one science lesson.

Literature Review

The demographic shift in classrooms across U.S. schools demand educators who have the tools to implement culturally responsive classrooms and curricular practices (Gay, 2000; Ladson-Billings; 1995). When planning for instruction, it is essential that teachers take into account the diverse experiences and academic needs of a wide range of students. Teachers need to link classroom content to students' experiences; use knowledge about their social, cultural, and linguistic backgrounds; and

through active and direct approaches of teaching incorporate higher order thinking skills through modeling, explaining, writing, reviewing, and offering feedback (Gándara, 2002). Developing curricular practices that account for the understandings and perspectives of different groups while developing students' higher level thinking skills is crucial in content lessons (Banks, 2003).

Teaching methodologies for ELLs

Effective teachers of ELLs must draw on a broad range of knowledge to include special language-related knowledge and pedagogical competence since ELLs are learning English and content simultaneously. Grasping foundational second language acquisition principles is vital (deJong & Harper, 2005; Samway & McKeon, 2007) with conceptual understandings to include conversational language proficiency and academic language proficiency, which can be fundamentally different (Cummins, 1981; 2000). Second language learners need access to comprehensible input that is beyond their level of competence (Krashen, 1985; 2003); ELLs need opportunities for social interaction to foster their development in conversational and academic English (Gass, 1997; Vygotsky, 1978; Wong-Fillmore & Snow, 2005). ELLs who are proficient in their native language are more likely to achieve parity with native-English speaking peers than those who are less proficient in their native language (Cummins, 2000; Thomas & Collier, 2002). Safe, supportive classroom environments that reduce the affective filter are crucial in promoting ELLs' second language learning (Krashen, 2003; Verplaetse & Migliacci, 2008); and explicit instruction in linguistic form and function is important for second language development (Gass, 1997; Schleppergrell, 2004; Swain, 1995).

Supporting ELLs in mainstream classrooms also involves thoroughly embracing linguistic pedagogical practices and scaffolding techniques (Lucas, Villegas, & Freedson-Gonzalez, 2008). These practices involve accommodating to the diverse language needs of ELLs with wait time; enhanced vocabulary instruction; the use of visuals; and scaffolding techniques—all of which allow an integration of academic content with purposeful language instruction (Echevarria, Vogt, & Short, 2004;

Gibbons, 2002; Lucas et al., 2008; Wood, Bruner, & Ross, 1976). Moreover, Walqui (2008) emphasized that instructional adaptations with scaffolds support increased content comprehensibility for ELLs from a medium where teachers “amplify and enrich the linguistic and extralinguistic context” allowing learners to successfully obtain concepts and skills (Walqui, 2008. p. 107). For scaffolds to occur effectively, teachers must (a) pedagogically have expertise in familiarity with students’ linguistic and academic backgrounds; (b) have an understanding of the demands of the language that are conducive to the learning tasks that are expected; and (c) have acquired skills for using appropriate scaffolding so that ELLs can participate successfully in those tasks (Lucas et al., 2008). Teachers’ must also draw from a knowledge base to include (a) subject matter content knowledge, (b) pedagogical content knowledge, and (c) curricular knowledge. From this perspective, pedagogical content knowledge (PCK) is most critical because the interaction between content and pedagogy is where teachers learn to organize, represent, and adapt curriculum to serve the varied abilities and diverse interests of students (Grossman, 1990; Shulman, 1986, 1987).

Professional Development for Teachers of ELLs

High quality professional development that is ongoing and teacher-driven is necessary to improve the education of linguistically and diverse students (Tucker et al., 2005) and essential in promoting efficacious attitudes in teachers’ abilities (Ross & Bruce, 2007). Borko (2004) emphasized a professional development model that fosters teachers' rich pedagogical knowledge in the area that they teach, which is also critical for teacher learning. Highlighting the situative perspective, teacher learning occurs in an environment that is socially organized around activities with the following key features: the program, the teachers who are the learners, the facilitator who guides the teachers, and the context where the professional development occurs—all of which can vary depending on the needs of the learners (Hord, 2004). For new teachers, the focus should entail appropriate lesson planning aligned to state standards and taught within an *integrated professional culture* so shared learning and collegiality

can occur between novices and veterans (Darling-Hammond, 2000; Grossman & Thompson, 2004; Johnson & The Project on the Next Generation of Teachers, 2004).

Furthermore, authentic professional training for teachers of ELLs should be purposeful with clear guidelines and include diverse options to allow for (a) opportunities to talk about and (“do”) subject matter, (b) opportunities to talk about students and leaning; and (c) opportunities to talk about teaching (Wilson & Berne, 1999). These types of experiences enhance teacher capacity for more successful outcomes in teaching ELLs (Davison, 2006), resulting in environments where teacher talk, evaluate problems with the curriculum, describe issues, and find solutions to better serve students. Gandara, Maxwell-Jolly, and Driscoll (2005) found that professional development experiences that specifically supported teacher needs around second language methodologies and culturally responsive linguistic practices with hands-on instruction were particularly beneficial to bridge prior knowledge (Tellez & Waxman, 2005) to new content for ELLs. As such, they enabled teacher practices to continually be refined as they embraced a commitment to ongoing learning through professional development activities that hone their abilities and strengths with a collegial framework (Howard & Sugarman, 2007).

Teacher Perceptions and Self-efficacy

Teachers’ self-perceptions affect how they go about their preparation and the instructional decisions they make in meeting the diverse needs of their students (Enderlin-Lampe, 2002). According to Bem (1972), there are ways in which an individual makes instructional decisions by aligning with one’s own attitudes and feelings, by observing behaviors in various situations, becoming aware of oneself, and thinking about oneself. Furthermore, a significant body of literature has suggested the positive relationship between instructional effectiveness and self-efficacy (Goddard, Hoy, & Woolfolk Hoy, 2004; Woolfolk Hoy, Rosoff, & Hoy, 1990). Self-efficacy, rooted in Bandura’s (1977) social cognitive theory is the belief in one’s ability to succeed in specific situations; whereas, teacher efficacy

is a construct that is often related to effective classroom behaviors (Stein & Wang, 1988) and to positive student outcomes (Woolfolk Hoy & Spero, 2005). Teachers who exhibit high self-efficacy in believing that they can perform well are more likely to view difficult situations and tasks as something to be mastered rather than avoiding them. Thus, they possess the ability to organize their own behaviors to positively affect their teaching outcomes for students.

Data Collection and Analysis

This research employed a mixed method design called *Concurrent Triangulation Strategy* (Creswell, 2003), which is composed of a quantitative survey and a case study to provide rich descriptive data (Merriam, 1998). An online survey was sent out in the spring of 2011 inviting teachers from two suburban school districts in the central Austin area who had been teaching five years or less to participate in the study. One distinct goal of the survey was to select as many new-to-profession teachers as possible to examine how their pre-service experiences affected their teaching practice with ELLs. However, because of the budget shortfall during that time with approximately 220 new-to-profession teachers who received news of non-renewal for the following year when the survey was released, only 11 new teachers participated in the survey. Nonetheless, over 144 teachers (16% retrieval rate) completed the survey questionnaire and a small number of teachers volunteered their names to be interviewed for the second phase of the study. The second phase of the study involved final collection data from five cases of teachers across elementary and secondary levels. These five teachers were selected based on various independent variables, such as age, gender, ethnicity, contextual factors related to current place of employment, teaching certification, proficiency in another language, and ESL methods courses studied in pre-service and/or in-service course experiences.

Antonia, a participant in the original larger study, was chosen to provide a lens through which her perceptions and efficacy beliefs influenced instructional ESL methodologies that were employed during a science lesson. I answered the research questions for Antonia's case by soliciting her self-

reported perceptions and efficacy beliefs from the survey, the personal interview, and my observation of the science lesson within an ESL context. Antonia's completed questionnaire was adapted from a previous questionnaire used to survey alternately certified teachers' attitudes toward working with ELLs. The survey was composed of 30 *Likert*-perception and efficacy items (rated using a six-point scale) that were organized into four categories: culture, teaching strategies, teaching behaviors, and assessment practices respectively.

Closed-ended items on the survey included the teachers' biographical information (age, gender, ethnicity); type of teaching certification(s) held (i.e. bilingual, ESL, special endorsements, etc.); years of teaching experience; nature of teaching assignment; school locale; percentage of students who were identified as ELLs; percentage of students who were identified as economically disadvantaged; teachers' ESL/ELL coursework experience; proficiency in another language, the amount of ESL/ELL training received in professional development; memberships in any local or national teacher organizations; and teachers' efficacy beliefs as to how they felt other staff members at school (i.e., principal, assistant principal, department chairperson, instructional specialists, etc.) improved their skills to instruct ELLs. Open-ended items on the questionnaire included (a) What do you consider has been the most valuable training you have received in working with ELLs? (b) What organization (i.e., university, school district, other) provided you with this training? (c) What area do you feel was most lacking from your preparation in working with ELLs? (d) What are some ways that teacher preparation and staff development could be improved to better prepare teachers to effectively instruct ELL students? and (e) Is there anyone on your campus who provides useful feedback and/or suggestions that improves your instruction with respect to ELL students?

An in-depth interview and classroom observations on Antonia was also conducted, which averaged 90 minutes each. Field notes were the primary form of anecdotal data used to focus on particular ESL components where Antonia showed strengths or weaknesses. Transcription of the

interview and written field notes were developed into customized codes based on the existing literature regarding instructional practices for ELLs (Abedi, 2004; CREDE, 2002; deJong & Harper, 2005; Echevarria, Vogt, & Short, 2004; Menken & Antunez, 2001) into these variations: prior knowledge, vocabulary important to ELLs, slowed speech, hands-on activities, specific learning related to specific coursework, professional development, and cultural understanding. These codes were combined and refined into two main findings for Antonia's case: (a) developing a classroom environment that centers on ESL practice and (b) classroom practices that reveal teachers' understandings of ESL.

Participant

Antonia (pseudonym) identified herself as a 30 year-old Latina female who was currently teaching kindergarten in her fourth year at Edelman Elementary (pseudonym) a PK-5 campus located in a suburban area in Northwest Austin, had an overall ELL population of 19.1% out of approximately 770 students. Her classroom was composed of 22 students, all classified as ELLs who participated in the district's language immersion program. Antonia received her undergraduate degree from a regional Texas university and her teaching certification with embedded ESL courses through a post-baccalaureate type program at a community college.

Findings

After analyzing the interview transcript, observation field notes, and survey responses, I asserted that Antonia's teaching abilities reflected her high efficacy beliefs in teaching ELLs. Antonia's self-reported perceptions and efficacy ratings on the 30 *Likert* items included *well prepared to very well prepared* on 25 items, *fairly well prepared* on 5 items, and *effective* on 29 items in her current role teaching ELLs. Quantitative results with mean averages of perception on all participants from the original study are included in Appendix A, Table A1; and efficacy items in Appendix A, Table A2). Antonia also documented that she received approximately 5 to 10 days of professional development related to working with ELLs during her four years of teaching and credited the campus principal,

assistant principal, instructional coach, and other district staff as major players in supporting her abilities working with ELLs. Finally, Antonia's case emerged to support two main findings: (a) developing a classroom environment that centers on ESL practices and (b) professional development opportunities to reveal understandings of ESL.

Developing a classroom environment that centers on ESL practice.

Antonia's classroom was composed of a print rich environment with various curriculum themes that were posted on the walls including performance goals (i.e., "I can read all of the high frequency words."); walls displaying content-specific and interactive words; a daily calendar with various sections for time of the day/day of week, etc.; number charts; and content walls that included graphic organizers. Students' desks were arranged in collaborative groups and individual work was validated and displayed hanging from the ceiling clipped with clothespins using fish wire. A kidney-shaped table was placed in one section of the room, which was used for small-group instruction, guided-reading, and for differentiated activities according to students' language proficiencies.

Given her prior experiences from coursework, opportunities to participate in professional learning, and an efficacious attitude, Antonia emphasized a keen ability to relate well with her students. As a result, she utilized aspects of community in the classroom by creating shared learning experiences for her students and their families, to which she related the following:

Culture and family: They are very important. Make the kids feel welcomed. I think it's huge. I mean especially because when we have kids going into an immersed classroom [English] and after half a year or three-fourths of year when the parents took the child and put back . . . and the whole reason was because of the environment. . . . The kids really feel like they belong because we emphasize their culture, we emphasize their family, we emphasize their heritage. I mean it is all connected. (Antonia Perez, Interview, March 30, 2011)

This example shows how Antonia infused aspects of home life into learning and a place where students' cultural customs were honored and respected. Here, she alluded to parents who had removed their students from other situations and placed them in her classroom because she possessed the ability to honor students' home cultures and because she taught academic skills. Furthermore, these examples illustrated how Antonia exemplified the third CREDE standard of *making meaning for students by contextualizing teaching and curriculum* to meticulously bridge successful learning experiences between home and school, making experiences and skills come alive for students in their homes and in the classroom.

Professional development opportunities to reveal teachers' understanding of ESL.

I observed Antonia's classroom on a Wednesday afternoon for the science lesson that included the live fish. Students were previously introduced to a new unit earlier in the week and knew about the learning targets for the unit. Introducing the storybook, *Rainbow Fish*, Antonia conducted a read aloud on the classroom rug pausing for students to dialogue in pairs about various fish parts and their functions. Students then transitioned from the floor to their seats with a task to observe the live fish, draw, color, and label the fish parts in a self-created storybook. Antonia had previously arranged foil pieces next to students' work spaces promoting students' sensory skills as they touched the materials to visualize the texture and the shine of fish scales. As students worked to record fish observations, Antonia circulated among the table groups, often getting down at the students' levels, posing inquiry-based questions around size and movement to tap critical thinking skills, and facilitating some discussion with each table group or student pairs. This showed evidence of her ESL practices aligning to CREDE Standard 4 (*teaching complex thinking*), to stress the development of higher order thinking skills. Culminating lesson activities involved a regroup of the whole class as Antonia used a flip chart to recap the story's text and fish terminology to incorporate drawings and students' responses from sentence stems. Opportunities for vocabulary development were noted through multiple exposures,

color-coding, a variety of graphic organizers, and individual accountability in science journals to measure students' understanding of the vocabulary terms as they completed the fish diagram rather than through rote memorization skills. Thus, CREDE Standard 1 (*joint productivity*) was noted with the use of native language support (adult to student and/or peer to peer) to scaffold language based on students' proficiency while student pairs finalized the verbalization of the concepts learned.

Antonia drew on her unique and personal understanding of why certain ESL strategies were critical for teaching ELLs, expanding on this idea, saying,

Those classes (ESL) helped me a lot to understand how I am helping the children . . . I think one of the main things is that you have to understand, you have to make the kids feel comfortable. I mean safe, accept any answers, welcoming answers, never feel that the kid cannot because they cannot talk or express. You know, just make the child express however they can. It can be either with movement, with drawings. . . . I guess that's the main thing because it's very hard for an ELL to speak. (Antonia Perez, Interview, March 30, 2011)

Further, she credited her ESL professional development experiences as having a continued effect on her abilities to teach ELLs effectively. Antonia stressed the importance of creating safe and welcoming classroom environments with confidence to use certain ESL strategies, including movement and alternative formats via drawings to allow ELLs to express their learning during science content time, noting:

Definitely trainings: I mean it helps you when you have trainings especially with ESL. You know, to understand the culture, to understand where they are coming from. And also trainings with your colleagues . . . and, those kinds of trainings, ESL strategies, vocabulary. You know, even though we learn it through the college, once you get into the classroom, you need some trainings to refresh. You know the beginning, during, and at the end of how those strategies

work. It's definitely essential that we have these kinds of trainings to help us with the population and how successful our kids will be. (Antonia Perez, Interview, March 30, 2011)

Here, Antonia mentioned the importance of having opportunities to participate in professional development based on specific needs of teachers, and that continual learning in the context of collaborative work with her colleagues was an essential component in improving her ESL practices for the varied needs of her students. She emphasized the specific professional development opportunities that she had received during the school year that allowed her to refine ESL strategies, especially the vocabulary training to support content learning.

Antonia's exemplified the ESL strategy of *comprehensible input* coupled with additional ESL practices from CREDE Standard 2 (*language development*), Standard 3 (*making meaning for students by contextualizing teaching and curriculum*), and Standard 5 (*teaching through conversation*). Antonia structured activities to promote language development across the domains through repeated exposures and utilized peer interaction to build academic content. Thus, her emphasis on vocabulary, the use of visuals, repetition, and appropriate speech were evident both in the observation and interview when she noted that particular skills are necessary when teaching ELLs:

We use a lot of visuals. We try to use visuals for them to visualize. We use speaking, we try to help the use their sounds, pronounce, and teach them how to linguistically say the words if it is not their first language. They need to learn how to pronounce some of the words. And then, we also do it [learn content vocabulary] with a lot of visuals and a lot prompting, and repetition. You know, we have to go slow, you cannot go too fast with the children. You have them all different ways: to look at it, to taste it, to feel it, to touch it, especially since we have to really emphasize vocabulary which is the main goal (Antonia Perez, Interview, March 30, 2011)

Here, Antonia recalled the use of explicit language structures, visual aids, and extensive modeling, which were also noted in the classroom observation as helpful exercises in helping her students learn, build, and develop academic English.

Additionally, Antonia's passion for ELLs and their success transpired into a classroom that utilized peer interaction as a scaffold to build students' academic language, competency, and success as evident in the use of student pairs as they completed the culminating activity. Antonia consciously crafted instructional decisions derived from her own experiences, professional development opportunities, and from specific strategies found in immersion programs to support language and content to promote a rich classroom environment where cultural and linguistic factors are valued, respected, and enriched for students' understanding of the lesson objectives (Borko, 2004; Fortune & Tedick, 2008; Grossman & Thompson, 2004; Hord, 2004; Howard & Sugarman, 2007).

Limitations

This research study utilized strengths from both quantitative and qualitative methods; however, limitations still existed. One such limitation was avoiding researcher's bias. My choice of methodology, personal beliefs, and interpretation of findings are factors accounted for within this bias. For example, I could have solely chosen one research method over another and randomized cases instead of purposefully selecting Antonia's case. And, although literature documented the need for the study of teachers' perceptions and efficacy beliefs to better improve programs for teachers working with ELLs, my personal views about the topic, including intellectual curiosity, supported the research more closely. Credibility and trustworthiness were gained from the teachers, including the case of Antonia represented through past experiences as a district administrator and staff developer. Furthermore, I believe that this research evolved into a relationship around affinity between the individual teachers studied and myself even in my direct attempt to stay out. This interaction helped to create and support the phenomenon being studied. I also encountered issues with member checking

during the research. In the first case studied in Phase 2 of the research, I was able to take both the transcript analysis and observation data back to the teacher to ensure that the results were plausible. Although this strategy proved successful in the first case, I was unable to do the same for Antonia's case.

The timing of the interview and classroom observations, yet, were other limitations to the study. I conducted Antonia's interview and classroom observations during March and April of 2011. During this time, state assessments simultaneously occurred, which meant overwhelmed and exhausted teachers working in those grades that were tested, including a culture of stress for all stakeholders regardless of grade level, content, or role. Additionally, for teachers of ELLs, across all grade levels, TELPAS (Texas English Language Proficiency Assessment System) was occurring as part of the federal testing requirement of the NCLB Act of 2001 designed to assess the progress of ELLs annually. Online reading proficiency tests were administered for students from second grades and beyond and observation protocols were necessary for students K-12 within the domains of areas pertaining to listening, speaking, and writing. Antonia was subjected to these assessments; and, therefore, her subjectivity on survey responses, her interview, and classroom observation could have been compromised with test preparation.

Implications for Future Research

Antonia's case sheds light on to a topic that has been the least explored in the literature regarding teachers' perceptions and efficacy beliefs working with ELLs. Continued research is necessary in this topic to determine how new and existing teachers feel in their preparation experiences and efficacy for planning and delivering instruction to their ELL students.

Research on teacher candidates' field experiences and student teaching internships may warrant an area of study. Examining the perceptions of teachers' field experiences and their student teaching is useful to determine the impact of applicable tools learned for ELLs. One recommendation is a

longitudinal study on preservice teacher candidates during their coursework related to ESL methodologies and then following teacher candidates through their first years of teaching.

Finally, the professional development literature regarding teachers' beliefs of the quality and scope of such programs for ELLs needs continued research and study. Since professional development has been documented as crucial to improving teacher quality, it is necessary to examine teachers' attitudes, behaviors, knowledge, and skills gained during those opportunities to further discern efforts in supporting ELLs' academic success.

Conclusion

By examining Antonia's case, I have attempted to show how one teacher's perceptions, efficacy beliefs, and professional development experiences have all intersected in her abilities to support ELLs in the context of ESL strategies and applications within a science lesson. Antonia's coursework and professional development experiences seem to have had a profound affect on her abilities to make connections to students' prior learning including cultural competence. Her high efficacy ratings in working with ELLs promoted ESL practices that supported students' acquisition of English academic skills in a classroom environment that bridges culture, home, and families for success in student learning.

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Appendix A

Table A1

Mean and Standard Deviations for Teachers' Perceptions of Preparedness

Teachers' perceptions of preparedness	Mean	Std. Deviation
Develop a deep sense of cultural knowledge.	3.3050	1.40379
Develop an understanding and sensitivity that appreciates differences as well as similarities.	4.0355	1.31155
Incorporate cultural values into the curriculum.	3.4965	1.38680
Include student's home cultures into the classroom.	3.3475	1.49277
Develop relationships with families.	3.7801	1.53573
Engage families in educational experiences of their students.	3.5106	1.53817
Encourage students to use their native language.	3.0922	1.61644
Tap into student's prior knowledge.	4.1915	1.45364
Use realia (real-life) objects as a teaching strategy.	4.2695	1.45837
Help students connect new knowledge to prior experiences.	4.3404	1.38270
Use a variety of vocabulary strategies in lessons.	4.0780	1.37877
Use visuals, nonverbal cues, demonstrations, and graphic aids as teaching tools.	4.5035	1.39194
Use a variety of technologies to assist in student's understanding.	4.1631	1.38164
Incorporate total physical response (TPR) methods in teaching.	3.5390	1.56076
Establish opportunities for students to interact.	4.4468	1.33858
Establish opportunities for students to speak to reinforce learning.	4.2624	1.27417
Adjust the speed of English speech delivery.	3.6596	1.39811
Model appropriate English use.	4.3121	1.41993
Provide oral directions that are clear and appropriate.	4.3262	1.34428

Teachers' perceptions of preparedness	Std.	
	Mean	Deviation
Create opportunities for students to practice their oral English.	4.1418	1.38658
Create opportunities for students to practice their written English.	4.0426	1.46323
Encourage all students to elaborate on their responses.	4.1631	1.40216
Scaffold instruction to help students understand concepts.	4.1844	1.44223
Use a variety of hands-on activities.	4.5035	1.38164
Incorporate student's responses into lessons.	4.1277	1.40332
Provide appropriate wait time for students to respond.	4.4539	1.38087
Encourage students to respond using higher order questioning.	4.1418	1.37623
Provide appropriate accommodations based on student's language proficiency.	3.6170	1.46219
Provide various formats of assessments according to student's intelligence and/or learning style.	3.9007	1.43579
Use a variety of technologies as alternative assessments.	3.5957	1.45886

Note = 144

Table A-2
Mean and Standard Deviations for Teachers' Efficacy Beliefs

Teachers' efficacy beliefs	Mean	Std. Deviation
Develop a deep sense of cultural knowledge.	4.3882	1.22566
Develop an understanding and sensitivity that appreciates differences as well as similarities.	4.8023	1.04959
Incorporate cultural values into the curriculum.	4.3372	1.17434
Include student's home cultures into the classroom.	4.1860	1.25099
Develop relationships with families.	4.3953	1.22982
Engage families in educational experiences of their students.	4.1047	1.27445
Encourage students to use their native language.	3.8837	1.45859
Tap into student's prior knowledge.	4.7326	1.03383
Use realia (real-life) objects as a teaching strategy.	4.7558	1.11604
Help students connect new knowledge to prior experiences.	4.8353	1.04480
Use a variety of vocabulary strategies in lessons.	4.5465	1.19466
Use visuals, nonverbal cues, demonstrations, and graphic aids as teaching tools.	4.7907	1.06402
Use a variety of technologies to assist in student's understanding.	4.6163	1.11849
Incorporate total physical response (TPR) methods in teaching.	4.2558	1.37358
Establish opportunities for students to interact.	5.0116	.95171
Establish opportunities for students to speak to reinforce learning.	4.8353	1.07844
Adjust the speed of English speech delivery.	4.5116	1.10341
Model appropriate English use.	4.9882	1.07453
Provide oral directions that are clear and appropriate.	4.8372	.93129
Create opportunities for students to practice their oral English.	4.8118	1.04077
Create opportunities for students to practice their written English.	4.5581	1.22335
Encourage all students to elaborate on their responses.	4.7209	1.15454
Scaffold instruction to help students understand concepts.	4.6353	1.08942
Use a variety of hands-on activities.	4.9176	1.02599

Table A2 (Continued)

Mean and Standard Deviations for Teachers' Efficacy Beliefs

Teachers' Efficacy Beliefs	Mean	Std. Deviation
Incorporate student's responses into lessons	4.6024	1.20911
Provide appropriate wait time for students to respond.	4.7529	1.07909
Encourage students to respond using higher order questioning.	4.5412	1.19077
Provide appropriate accommodations based on student's language proficiency.	4.4048	1.16287
Provide various formats of assessments according to student's intelligence and/or learning style.	4.4471	1.27714
Use a variety of technologies as alternative assessments.	4.1905	1.32152

Note. N = 86



Parental Imprinting: Home-School Connections for Developing Literacy Skills in Bilingual Learners

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Abstract

The purpose of this study was to investigate the effect of parental imprinting on the development of literacy skills for bilingual learners and to emphasize the value of establishing a home literacy environment through social and cultural experiences. A total of 20 parents responded to an open-ended survey questionnaire about the relationship between the home environment and literacy skills development. A mixed methods design was utilized utilizing a parent survey questionnaire (quantitative) along with a parent interview (qualitative). For the purpose of this study, social and cultural experiences in the home comprises the following characteristics: family values, attitudes, beliefs, and traditions. The study was quantitatively and thematically analyzed and the following conclusion was reached: It is of the utmost importance for schools to have in place a strong parental support system in order to enhance the development of their bilingual learners' literary skills.

Introduction

But reading to children is not the only activity that helps children to become readers. According to Ainley, Hidi, and Berndorff (2002), children who engage in naturalistic and meaningful interactions with interesting and appealing literacy-related activities, like storytelling and singing songs, acquire stronger literary skills.

However, parents, teachers, administrators, and researchers involved in the education of bilingual learners face many issues when considering and developing a meaningful but well balanced

home literacy experience. In many cases, early literacy programs such as the Reading First Initiative, Success by Six, Early Start, Head-Start and the Even Start Family Literacy Program have been initiated to “jump start” our bilingual four- and five-year-olds. Overall, these programs were designed to assist preschoolers in the development of prereading skills.

These students face everyday language and reading challenges that impact their academic experiences, such as (a) limited or no resources at home, (b) limited academic support due to language barriers, (c) lack of reading experiences within their home environment, and (d) lack of opportunities to interact outside their immediate environment (Cummins, 1993). As it pertains to reading in the first and second languages, Cummins noted the implications of the language of instruction and its an impact on academic achievement. Because bilingual students are experiencing low reading performance skills, even though there are accountability measures with its effects and consequences in place, parents are being urged to “bridge” reading and writing opportunities between home and school.

Riojas-Cortez and Flores’ (2009) study examined the collaboration among families, schools, and university partnerships. They found that although parents were often valued, teachers may not see how parents are truly involved in their children’s education within the home. The focus of this study was placed on minority parents of student populations whose teachers often believe that parents who do not become involved in traditional parent involvement roles just simply do not care (De Gaetano, 2007). The study also suggested that language-minority parents are willing and able to help their children succeed academically but that schools do not always comprehend how parents can be involved.

Bilingual preschoolers represent a large group of our society. From the 1997-98 school year to the 2008-09 school year, the number of English-language learners enrolled in public schools increased from 3.5 million to 5.3 million, or by 51% (National Clearinghouse for English Language Acquisition, 2011). During the same period, the general population of students grew by 7.2% (49.5 million). Because a large number of language–minority children who are now in our American schools come from homes

where English has not been their primary language, educators face the unique challenges of striving to meet the requirements of the core curriculum in schools and acquire needed academic knowledge to instruct English-language skills to bilingual learners.

Research Questions

The primary research questions that guided this study asked the following:

- What impact do parents have, within the home environment, on the development of literacy skills for the bilingual learner?
- What is the impact of parental involvement on the development of literacy skills for the bilingual learner?
- How does the home environment affect the development of literacy skills for the bilingual learner?

The selection of the three questions above guided the researcher in developing a platform from which parents could contribute their thoughts regarding the development of literacy skills—a challenging area that many parents and students face at home and at school on a daily basis.

Literature Review

Emergent Literacy

Researchers have noted that emergent literacy or phonological awareness skills are those that reflect children's ability to detect and manipulate the sound structure of words independent of their meaning (Phillips, Clancy-Menchetti, & Lonigan, 2008). It was also noted that children with disabilities and those from low-income families may be especially at risk for reading difficulties. Thus, through emergent literacy activities, teachers can find ways to improve children's interest, examine the range of settings and experiences that support literacy, and understand the children's role as to their contributions.

Home-based Emergent Literacy

Other studies have been explored as to the impact of home-based emergent literacy experiences in the homes of language-minority children. Stratton (2005) stated that literacy development begins in the very early stages of childhood, even though the activities of young children may not seem related to reading and writing. The researcher arrived at a unique conclusion that early behaviors such as *reading* from pictures and *writing* with scribbles are examples of emergent literacy and are an important part of children's literacy development. In the same way, Burningham and Dever (2005) reported that reading achievement by young children is closely related to the childrens' home literacy environments.

In spite of all the accountability measures, and the effect and consequences of such, the reading performance of bilingual students is lacking. Educators and parents need to *bridge* the reading and writing opportunities between the home and school environments. As the bilingual population grows and becomes more diverse, educators' concerns regarding the home literacy environment of bilingual learners will also increase.

Literacy Experiences: The Parental Support System

My daughter needs to know that there is an advantage of being bilingual, although it is difficult to learn to write and speak two languages at the same time. In the end, it is worth it, and better for her future. (Parent participant's response)

There are limited studies that highlight the impact of home literacy experiences on the development of literacy skills of bilingual learners (Lesaux & Geva, 2006). Language-minority children enter U.S. schools needing to learn both an oral language and the necessary literacy skills in a second language, thus the development of literacy skills continues to be a great concern (Lesaux & Geva, 2006). A large amount of research on the development of reading and writing skills includes the cognitive processes. For this reason, the author's study included native English speakers and the effects of reading difficulties on children's knowledge and vocabulary (Lesaux & Geva, 2006). Information

about the normal developmental stages of literacy for language-minority students, as well as the factors in the home environment that influence these stages have contributed to evidence-based methods of literacy expectations for their literacy achievement (August & Shanahan, 2000).

Understanding the literacy development process of bilingual learners and examining the various factors that impact the success of this process have helped build a basic framework for the nature of literacy development. According to Lesaux and Geva (2006), the development of reading readiness for bilingual children includes the following skills: oral language skills (vocabulary and phonological awareness); the concepts and experience with print, and the acquisition of knowledge. The results of this study concluded that there were a variety of environmental factors that impacted the development of these literacy skills, one of them being the factor of parental involvement. Given the available evidence, it is not possible to conclude that there is only one home literacy factor that may have an impact on the development of literacy skills for bilingual learners. Therefore, the following literature in this study examines the influence of parents and family (parent-child interactions) and the home literacy environment (social-context) of bilingual learners.

Arzubiaga, Rueda, and Monzo (2002) stated that the relationship between family activities and specific aspects of children's literacy development impacted children's motivation to read. These family routines provided information about children's roles, expectations, and experiences within specific out-of-school learning situations. The authors encouraged other practitioners to take a closer look at home literacy practices and how these differed from those valued and rewarded at school; for example, a dinner conversation (informal setting) related positively to the literacy-related language skills of children from low-income neighborhoods. Two other sources of literacy that the authors gave are included in family routines of telling traditional stories (pictureless literature) and reading Bible stories to children at home. In other words, through the daily home experiences, some language-minority families exposed their children to a variety of language skills.

Literacy Experiences: The Social/Cultural Context

According to Deckner, Adamson, and Bakeman, (2006), there is growing evidence that increasing literacy activities at home can make a difference in literacy acquisition. Children who have an opportunity to experience early literacy experiences at home have a greater chance of surviving the higher and complex expectations of reading programs at school. Burgess, Hecht, and Lonigan (2002) affirmed that there is a huge influence on children's attitudes regarding reading if emergent literacy skills have been experienced at home in two dimensions. The first is through the active participation of caregivers with the child (e.g., share reading). The other is the passive participation of the caregiver (reading the newspaper in the presence of the child) sends a message that reading is valued in the home environment. Consequently, children who have been read to by parents at an early age will have a more positive attitude toward books and toward visiting and using libraries.

Murphy (2004) wrote about the importance of the school collaborating with the home to strengthen literacy achievement. He pointed out that there is an extensive body of research that confirms the powerful influence of the home on student reading achievement. Nevertheless, there is also the need to look at the "risk of failure increases if either home or school provides a less than optimal environment for learning to read" (p. 191). For example, parent and student discussions about school activities and programs are an essential part of an academic achievement program. Encouraging parents to converse with their children in the home has a positive effect on their children's experiences in the classroom, even though some parents' formal education is limited. Reese et al. (2000) found that the family SES (a composite of parents' education and occupation) is a significant predictor of family literacy practices, which in turn predicts early Spanish literacy and later English achievement.

According to Snow et al. (1991, as cited by Murphy, 2004), high levels of literacy in the home environment are related to children's higher levels of school achievement. Early home environments provide the necessary foundation for early reading achievement and in addition continues to influence

the levels of continued achievement over time. Substantial evidence informs us that provision of literacy in the home is related to increased student achievement especially in the areas of word recognition, vocabulary, and reading comprehension. In addition, a more organized and stimulating home environment results in increased reading achievement between kindergarten and sixth grade (Murphy (2004). Rueda, August, and Goldberg (2006) stated that there were few studies that have examined the role of the social-context and the impact of the social-cultural characteristics of bilingual children and their parents. In some of these studies, the differences between home and the community, school literacy beliefs, and practices were described. Other studies focused on home motivation, attitudes, values and beliefs, and home oral language and literacy experiences (Rueda et al., 2006). For instance, Volk and De Acosta (2001) studied literacy as a socio-cultural practice in home, community, and school. The participants in their study included three Spanish-dominant mainland Puerto Rican children, all of whom attended a bilingual kindergarten. In this case study, observations were conducted twice a month in the classroom and once a month in the home and in a church. Interviews and informal conversations with parents, teachers, and Sunday School teachers were conducted and students' writing samples were reviewed.

The authors found both similarities and differences between parents' beliefs about literacy and those of the teacher. For example, the authors found that most of the parents believed that literacy meant learning the letters and how to combine them, a belief informed by the parents' previous literacy experiences in Puerto Rican schools. The parents also believed that the meaning of text was inherent and not open to negotiation. In contrast, the teacher summarized the literacy events in the classroom as holistic and constructivist so that meaning could be interpreted and constructed in different ways. Contrary to the teacher's belief system, parents of the three **focal** students were actively engaged in various activities at home. Furthermore, the authors concluded that the three children's literacy

development was also promoted by the support of networks beyond the nuclear family, such as extended family members and church friends in the home and the community.

Methodology

Participants

The research design was a mixed methods study conducted at an elementary school setting and located in the south part of Texas by the Mexican border. The National Household Education Survey: Parent and Family Involvement Survey-Questionnaire (NHES-PFI) was administered to 45 parents consisting of 40 (89%) females and 5 (11%) males. Due to their work schedules and the lack of transportation, the parent survey was administered to 20 parents. Prior to administering the parent survey and the parent interview, the researcher explained the purpose of the study to the participants. The parent survey and interview in this study were administered after school, of which only 32 questions were used to assess the home literacy environment of bilingual preschoolers. In addition, the questionnaire included 15 demographical items that gave insight into the participants' background, their language preference, and their educational background. Only four questions asked in the parent interview were used to measure the impact of the home literacy environment in the homes of bilingual preschoolers.

Data Analysis

The researcher used the chi-square (χ^2) test to establish if there were significant differences as to the levels of home literacy experiences in the bilingual preschooler's home. The data results from the survey questionnaire were organized and compiled by using tables and figures to present information as to the participants' perceptions of home literacy experiences. In order to organize the data into categories, the data were "fractured" by coding the interview responses. Coding included searching through the data for patterns, topics, and regularities, as well as the writing of terms and phrases that represent the topics (Bogden & Biklin, 1998). The researcher coded all interview responses by

highlighting, numbering specific responses, and then searching the coded transcripts for themes.

Frequencies for emerging themes were tallied for each of the seven open-ended questions.

The results were consistent with previous studies (Arzubiaga (2002), Cummins (1993), and Cooper (2005). A total of 45 parents who were surveyed identified themselves according to the following demographics: ages 21-29 (38%); ages 30-39 (23%); ages 40-44 (5%); employed (49%); Spanish speaking (100%); married (87%); single (13%); with an oral language proficiency in English in the *low* range (53%) and English reading/writing (29%). The results also indicated that 96% had a vehicle. All 45 respondents (100%) came from a Hispanic background, were predominantly females (89%), and their level of education indicated that most had a middle school (47%) or high school education (36%).

Although the parent-survey questionnaire specifically asked about the home literacy environmental experiences (social and cultural context), the parent interview allowed the researcher to gain in-depth knowledge about the family values, traditions, culture, and language regarding the home literacy environmental experiences of the bilingual preschooler. The questionnaire was designed to generate data information about five home literacy factors. Factor I examined the parents' perceptions of home literacy skills taught. Factor II generated data information about the home literacy environment (social and cultural-context). Factor III investigated data on home literacy resources. Factor IV gathered data on participation in extracurricular activities, and Factor V investigated information concerning family support related to literacy experiences in the home of bilingual preschoolers in one south Texas city.

For the purpose of this study, Factor II (home literacy environment) is the only factor discussed. Table 1 displays the breakdown of Factor II of the parent survey questionnaire (Home Literacy Environment Experiences) used to identify each question accordingly and shows the subscale, number of questions (subsets), and the total questions (32).

Table 1

Factor, Subscales, and Number of Questions

Factor	Name of subscale	Number	Total of questions	questions
II	Home Literacy	1 (a-f)	1	
	Environment	2	1	
	(social & cultural context)	3 (a-e)	5	
		4 (a-d)	4	
	<u>20 (a-e)</u>		4	
	Total Questions		15	

The parents received a 21-question Likert scale questionnaire that included 15 demographical and background items regarding their perceptions of home literacy experiences. Each of the 21 core questions was followed by a set of subquestions in order to gain more depth into the scope of the research questions.

Findings and Discussion

The Quantitative Component: The Parent Survey-Questionnaire

The sample was a natural occurring sample of 45 participating parents (40 females and 5 males) who responded to a Likert scale survey of 21 close-ended questions as to their perceptions of home literacy experiences. Table 2 below provides a summary of the number and percentages of parents responding to Question 1 concerning Factor II (home literacy environment, social and cultural context). The data in the table, in response to Question 1, outline six literacy-related activities that a large majority (66.7%) of parents have been providing their children at home: (a) conversing with child at home, (b) reading together with child, (c) helping child learn about books and text, (d) motivating child to write, (e) reading to child in Spanish, and (f) preparing child to be successful at school. Twelve

parents reported doing five literacy activities (26.7%) with their children. However, a smaller number (6.7%) indicated doing four or less literacy activities with their child.

Table 2

Number, Frequency, and Percentage Summary Regarding Parent Involvement in Home Literacy Experiences/Environment

Home literacy	Frequency	Percent	Cumulative percent
4	3	6.7	6.7
5	12	26.7	33.7
6	30	66.7	100.00
Total	45	100.0	

Table 3 provides a frequency and percentage distribution to show the number of parents who have a special reading place at home. All 45 parents indicated that they had a special place where they read to their preschooler.

Table 3

Number, Frequency, and Percentage Summary Regarding Special Reading Place at Home

Special reading place	Frequency	Percent	Cumulative percent
1	45	100.00	100.00

Question 2 asked, *Is there a special place where you read to your child?* An examination of Table 4 reveals that the special place for reading is the living room (44.4%). The second place to read is the dining room (28.9%). Seven respondents indicated that their place for reading is the bedroom (16.6%).

Table 4

Number, Frequency, and Percentage Summary Regarding Places to Read at Home

Place to read	Frequency	Percent	Cumulative percent
Dining room	13	28.9	28.9
Living room	20	44.4	73.3
Bedroom	7	16.6	88.9
Backyard/porch	5	11.1	100.0
Total	45	100.0	

Table 5 provides a picture of the time spent reading at home every week. Forty percent of respondents indicated spending 45 minutes or more reading to their child every week; whereas, 15% of the respondents reported they read to their child 15 to 30 minutes a week. However, 13.3% respondents indicated they read to their child less than 15 minutes a week.

Table 5

Number, Frequency, and Percentage Summary Regarding Time Spent Reading at Home

Time spent reading (weekly)	Frequency	Percent Percent	Cumulative percent
Less than 15 minutes	6	13.3	13.3
15-30 minutes	15	33.3	46.7
30-45 minutes	6	13.3	60.0
More than 45 minutes	18	40.0	100.0

The last findings listed in Table 6 reveal a large percentage of respondents indicated they have the following family rules at home: (a) reading, (b) homework, (c) weekday bedtime, (d) TV programs, (e) time allowed to watch TV, and (f) safety rules at home. Question 20 asked about the above six rules, to which 82.2% respondents indicated they had at least four rules at home; 4.4% respondents reported they had all six rules, and 6.7% respondents indicated they had only two rules.

Table 6

Number, Frequency, and Percentage Summary Regarding Family Rules Related to Reading Time and Homework

Family rules	Frequency	Percent	Cumulative percent
2	3	6.7	6.7
3	9	20.0	26.7
4	25	55.6	82.2
5	6	13.3	95.6
6	2	4.4	100.00
Total	45	100.0	

The Qualitative Component: Parent Interview

Twenty parents participated in this portion of the study. The sample consisted of 18 females and 2 males. The qualitative component consisted of the researcher collecting interview responses from a randomly selected group of parent participants in the elementary school under study. The 20 parents participating in the interviews were randomly selected from the 45-parent questionnaire group. Denzin and Lincoln (2000) concluded that by conducting interviews the researcher would obtain meaningful information from a number of sources over a period of time, thus providing a more holistic study of complex social networks and of complexes of social action and meaning. These interviews provided the researcher an opportunity to gather insightful information, and the personal transcription of the interviews would enhance the researcher’s comprehension of the data.

The following tables provide the number, frequencies, and percentages of the different categories/themes that emerged during the parent interview process. Table 7 shows the special places at

home that were used by respondents to read to their child. The bedroom, the dining room, and the living room were the top places chosen by the respondents: 50% indicated the bedroom; 25% indicated the living room; and 13%, the living room. However, 12% reported using the floor and the porch to read to their child. Three male parents reported they liked reading to their children in their bedroom because this provided a bonding experience. One female parent said, "We have books all over the house, and we read as much as we can in the living room." Another parent stated, "I like sitting by his bed and reading together. It is a long day for me but this is a special time for both of us."

Interestingly enough, several participants indicated that they only liked reading the newspaper in the dining room, so they would encourage their child to look at the comic section while they read the other sections of the newspapers. One parent said, "I read a paragraph to her and sometimes I have her repeat it and sound out the words." Another parent related, "We read at night, at bedtime, and when I do not read the story accurately, my child lets me know it." Other parents reported talking about the stories in movies, especially during the movie. They talked about predicting how the story would end.

Table 7

Category and Percentage Summary Regarding Special Place for Reading

Special place for reading	Percent	Cumulative percent
Bedroom	50	50.0
Dining room	25	75.0
Living room	13	88.0
Floor	12	100.0

Question 7 asked, *What kinds of stories do you tell your child about his family values, culture, traditions, and language?* An examination of Table 8 reveals that the percentage of family traditions (35%) indicates that parents, through the art of storytelling, share their family traditions with their children. Twenty-five percent of the parents shared their childhood experiences by telling their children stories related to their own school experiences, grandparents' sacrifices, and Mexican celebrations. Parents were very enthusiastic about telling the stories they told their child, stories that were passed down from generation to generation. One parent said, "I tell my child how difficult it was for me to go to school and help my parents with their business, and how blessed my child is today." Another parent said, "Stories about what I learned about my teacher's methods of instruction, for example, that strict teachers are better for students."

Language was also an important theme in this question. Several parents said, "I think that it is very important to tell our daughter that being bilingual is very important in today's world, and she knows how much it means to us." Another parent said, "I tell her stories in Spanish so that she does not forget our language. Sometimes I don't know if this is good for her."

Other parents felt that their children needed to spend time in Mexico with their relatives to maintain their first language (L1). For instance, one parent said, “My daughter needs to know that there is an advantage of being bilingual, although it is difficult to learn to write and speak two languages at the same time. In the end, it is worth it, better for her future.” There were parents who expressed the importance of an education in the United States, although they were trying to figure out how to help their children remember their roots, especially the holidays. One parent said, “Our favorite holiday is Christmas, because we celebrate in different homes the birth of Christ, we call it Las Posadas.” Another parent said, “Our favorite holiday is April 30th, El Día del Niño, and I do not understand why we do not celebrate the Children’s Day in this country, because children are very important; they will be our future.” Parents were able to share more information on this question, since it dealt with their family values.

Table 8

Number, Frequency and Percentage Summary Regarding Stories About Family Values, Traditions, Culture, and Language

Stories about family values, traditions, culture, & language	Percent	Cumulative Percent
Family traditions	35	35.0
Story telling of childhood experiences	25	60.0
Poetry about culture	10	70.0
Stories about toys, games, & fiestas	10	80.0
Stories about school experiences	10	90.0
Language values	10	100.0

Conclusions

The survey outcome suggests that teachers need to seek the wisdom, experience, and knowledge of parents in their classrooms. In addition, progressive educators must build relationships with parents that validate their home language, their life experiences, and their wisdom to engage with their children in proactive ways. This can help foster powerful learning environments for children in the classroom.

Overall, the parents' responses suggest that many families had a special place to listen to their children read, and many parents talked about how they motivated their young children to read and to be excited about going to school. Many parents acknowledged in the responses that if their young children became good readers, this meant that their children would have a prosperous future. Furthermore, having book conversations with young children, creating literacy-rich home environments (where children are encouraged to write letters, make out grocery lists, and take down telephone messages) need to become daily routines between participating parents and their bilingual preschoolers.

Recommendations

Recommendations for Practitioners

Educators need to assess their attitudes and beliefs about parents who are represented in their school's parental involvement sessions, parental outreach programs, and most importantly in their classroom curriculum. Teachers must make an effort to design a more supportive parental involvement environment and *purposefully seek* the advice, wisdom, and participation of parents in an effort to create classrooms in which children can feel proud of their family heritage and community environment. They must also remember that the joy of learning can be enhanced through the experiences between children and their parents.

Recommendations for Parents

The parent imprinting process in the home environment has a positive effect on the student's success and academic achievement. Parents must continue to be a "voice" for their children, in spite of the language barriers and cultural differences. Parents must be aware that they are their child's "first teacher." Parents must demonstrate their support by fostering parent-student discussions in the home about school activities and programs. Parents must engage in home dialogue with their children and make efforts to foster home-learning activities that will increase student achievement.

Future Research

The results of this study reflect a strong parental support for literacy and language development of bilingual preschoolers. The analysis of survey responses demonstrate that the home literacy environment plays a very important role in the development of early literacy skills of bilingual children. However, the results reflect some limitations of the study such as the need to conduct a longitudinal investigation of bilingual preschoolers throughout their four years of elementary school. Furthermore, a qualitative study could be conducted on the connections between parental involvement and teacher strategies.

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El Hogar y el ambiente natural como fuentes de materiales para los centros bilingües de aprendizaje de ciencias: Una perspectiva sociocultural

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Abstract

En este artículo las autoras proponen el diseño de centros bilingües de ciencia en los cuales se incluyan materiales derivados de experiencias cotidianas del infante. Utilizando un marco sociocultural, la discusión se centra en: (a) principios básicos de aprendizaje que influyen en la selección de materiales para estudiantes en edades de 4-8 años, (b) el hogar del estudiante como fuente de materiales para los centros de aprendizaje de ciencia bilingües, y (c) el ambiente escolar natural como fuente de materiales para los centros de aprendizaje. Finalmente, proporcionamos recursos y ejemplos de estos tres principios puestos en práctica. El objetivo es retar la percepción de que la práctica de la ciencia en el aula infantil es necesariamente compleja y costosa.

Los centros bilingües de aprendizaje de ciencias: Una perspectiva sociocultural

Una realidad en el sistema educativo y en el panorama laboral de los Estados Unidos es la escasa participación de los estudiantes y de los profesionistas latinos en campos de las ciencias, la tecnología, la ingeniería y las matemáticas (STEM por sus siglas en inglés). Las estadísticas indican que del total de científicos e ingenieros empleados sólo 4.9 por ciento son latinos (National Science Foundation, 2012). Esto es preocupante en un país en el que los pronósticos demográficos señalan que

para el año 2050 los latinos representarán cerca del 30 por ciento de la población total (Dowd, Malcolm, & Bensimon, 2009). Para mitigar tal disparidad, las iniciativas nacionales de reforma en la educación de las ciencias (American Association for the Advancement of Science, 1990; National Research Council, 1996) sugieren implementar pedagogías incluyentes, sensitivas respecto a los grupos minoritarios y que promuevan la exploración científica desde una temprana edad. Una intervención a tiempo es importante, no sólo para impulsar una actitud positiva respecto a la ciencia, sino, porque los niños poseen una motivación intrínseca que los lleva a disfrutar y razonar mientras exploran la naturaleza y el ambiente que les rodea (Eshach & Fried, 2005).

La exploración y el aprendizaje inicial de ciencias, sugería Karplus (1977), está íntimamente relacionado con el entorno natural y cultural de los alumnos. El involucramiento espontáneo del infante con su ambiente inmediato resulta de gran relevancia para el docente ya que las conexiones con las experiencias previas del estudiante son esenciales para determinar no sólo los temas curriculares en el aula de clases, sino, el cómo éstos se introducen y se extienden (Shor, 1992). Bajo este esquema, la metodología, el currículo y los materiales de ciencia que reflejan la realidad sociocultural del alumno generan posibilidades ilimitadas de aprendizaje y transformación a corto y a largo plazo. Este enfoque centrado en el alumno es de importancia particular en la enseñanza de las ciencias, materia cuya instrucción requiere de estrategias que propicien el descubrimiento por medio del juego. En este artículo las autoras proponen el diseño de centros bilingües de Ciencia en los cuales se incluyan materiales derivados de experiencias cotidianas del infante en un rango de 4 a 8 años de edad.

Los centros de aprendizaje son espacios o áreas diseñados con un enfoque específico que propician una variedad de oportunidades en las que los alumnos aprenden activamente relacionando las diferentes materias del currículo escolar (Kostelnik, Soderman, & Whiren, 2011). Dentro de los centros de aprendizaje, los alumnos pueden identificar conexiones entre los conceptos que de manera informal aprenden en su vida diaria con conceptos académicos presentados de manera deliberada y sistemática

por el docente. Dicha conexión entre lo formal e informal, o los conceptos espontáneos y científicos es ampliamente discutida por Vygotsky (1986), quien explica el acto cognitivo, o proceso de aprender, como un acto social enfatizando el papel que los símbolos y los artefactos culturales juegan en dicho aprendizaje.

Los conceptos formales o ‘científicos’ que el docente deliberadamente incluye en una lección o en un centro de aprendizaje se entretajan en la fibra existente de una cultura dinámica y cambiante en la cual los individuos han ido desarrollando interpretaciones y conocimiento peculiar a su entorno (Gonzalez, Moll, & Amanti, 2005). La escuela, pero también el hogar y sus alrededores, específicamente el ambiente natural son parte de ese entorno cultural y físico en el que se generan, acumulan, y comparten fondos de conocimiento y estrategias esenciales para la sobrevivencia. Es así que conceptos académicos o formales en las ciencias, tales como densidad o flotabilidad de la materia encuentran eco en lo que Kincheloe (2004) denomina ‘situaciones históricas concretas’ tales como experiencias con la familia en la cocina, en la alberca, en un río, etc. Al interactuar con otros individuos los niños aprenden habilidades dentro de una “Zona de Desarrollo Potencial”. Con este concepto Vygotsky (1986) enfatiza la diferencia entre lo que el estudiante puede lograr sólo a diferencia del nivel que lograría con la ayuda de otros miembros de su comunidad.

El marco teórico sociocultural propuesto en este artículo se lleva a la práctica enfatizando aspectos tales como: (a) principios básicos de aprendizaje que influyen en la selección de materiales para estudiantes en edades de 4-8 años, (b) el hogar del estudiante como fuente de materiales para los centros bilingües de aprendizaje de ciencias, y (c) el ambiente escolar natural como fuente de materiales para los centros bilingües de aprendizaje de ciencias (ver Figura 1). Finalmente, proporcionamos ejemplos de recursos y de estos tres principios puestos en práctica.

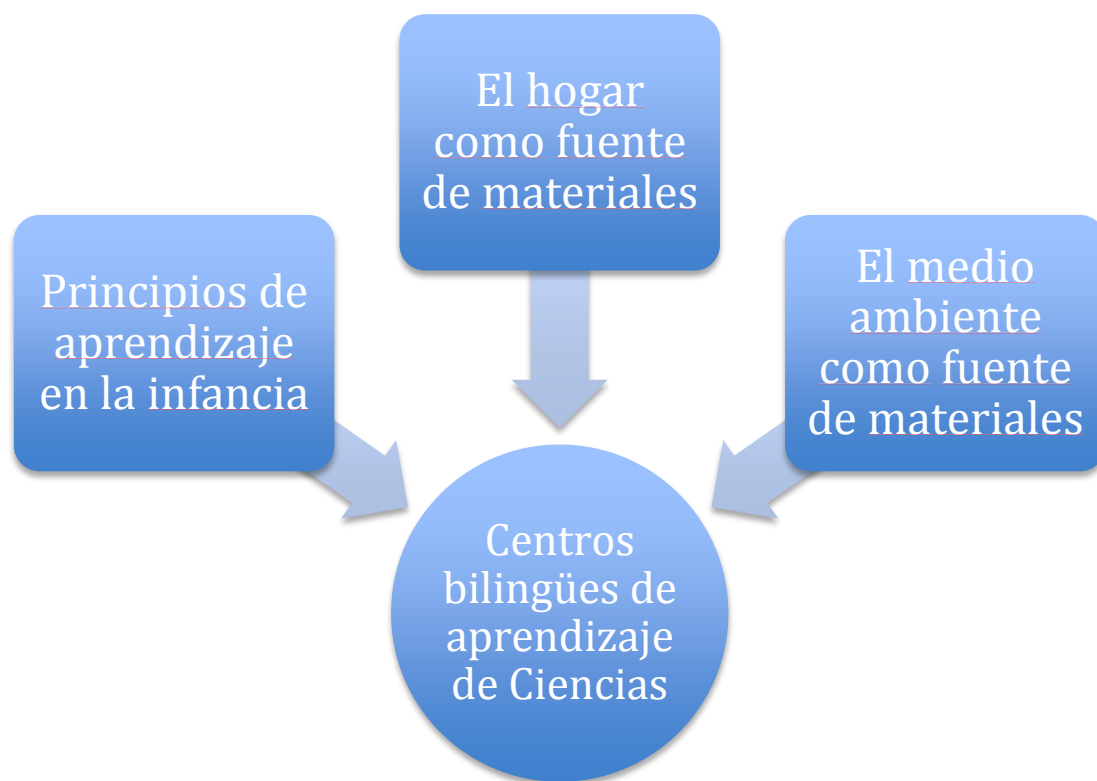


Figura 1. Marco teórico para el diseño de centros bilingües de aprendizaje de ciencias.

Principios básicos en la selección de materiales para los centros bilingües de aprendizaje de ciencias en la educación infantil

Uno de los aspectos a considerar al planear la instrucción es la inclusión de actividades y el diseño general de experiencias educativas que vayan de acuerdo a la edad de los alumnos; que se ajusten a sus necesidades individuales; y que sean sensibles respecto a la cultura y entorno social del estudiante (National Association for the Education of Young Children, 2009a). Este tipo de criterio, conocido como prácticas congruentes con el desarrollo del infante (DAP por sus siglas en inglés) se traduce en principios didácticos en los que las actividades incitan al juego; los niños tienen la oportunidad de aprender de manera activa, es decir manipulando y haciendo; y el docente anima a los estudiantes a tomar las riendas de su propio aprendizaje. Dos principios didácticos claves en la educación infantil que se relacionan directamente con la selección de materiales para hacer y aprender

ciencias incluyen el diseño de experiencias de aprendizaje que avancen de una exploración libre a una exploración guiada; y diseños pedagógicos en los que el enfoque vaya de lo concreto a lo abstracto (Kostelnik et al., 2011).

Principio de exploración libre a exploración guiada

El aprendizaje de la ciencias se presta para que los alumnos sean libres para jugar y para explorar. Una exploración libre cimentada en el juego permite a los estudiantes practicar de manera espontánea una variedad de procesos científicos tales como la observación, la clasificación, la comparación, la predicción, la descripción, la formulación de inferencias, la medición, y la formulación de hipótesis de manera divertida (Kostelnik et al., 2011). Este énfasis pedagógico basado en el juego promueve un aprendizaje auténtico (Copple & Bredekamp, 2009; Frost, Wortham & Reifel, 2012; Singer, Golinkoff, & Hirsh-Pasek, 2006), de hecho, “cuando los niños juegan se involucran en el pensamiento científico” (Izumi-Taylor, Ogdon, & Abdi, 2012, p. 24) abarcando incluso destrezas cuya demanda cognoscitiva es alta al verse en la necesidad de identificar e interpretar información. Dada la naturaleza inquisitiva del niño, los adultos pueden planear actividades en las que los materiales además de la exploración, inviten a la discusión y al desarrollo de nuevas ideas (Bosse, Jacobs, & Anderson, 2009).

Al explorar materiales con intervención sistemática del docente, el alumno enfrentará retos mentales o preguntas para las cuales no tiene respuesta. Es entonces que de manera natural se crea una ‘zona de desarrollo potencial’ y la necesidad de la intervención del docente como guía. La enseñanza, pero sobre todo, el aprendizaje inquisitivo en el cual el alumno genera sus propias preguntas, busca respuestas y gradualmente formula teorías respecto a sus experiencias, es congruente con un enfoque Vygotskiano en el cual el aprendizaje es activo. Por ejemplo, las hojas de diferentes variedades, formas y tamaños son algunos de los materiales que los niños encuentran de manera natural, y que pueden coleccionarse dentro de una caja reciclada. Una vez que los alumnos han tenido oportunidad para jugar

con las hojas, el docente puede extender el juego inicial al introducir conceptos tales como la clasificación basada en tipos de hoja, textura, planta o árbol del que provienen, etc. Aunque de inicio los nombres científicos sean desconocidos para los estudiantes (Bass, Contant, & Carin, 2009), los docentes proporcionan nuevas experiencias, facilitan la exploración científica, y proveen los materiales adecuados, para eventualmente introducir terminología especializada.

Principio de aprendizaje de lo concreto a lo abstracto

Las experiencias concretas informales, en las que se utilizan los sentidos despiertan el interés de los alumnos y los involucran cognoscitivamente. Al tocar, oler, ver, escuchar, y en ocasiones probar materiales y objetos directamente, los niños acumulan experiencias que servirán como cimientos para las conversaciones y experiencias indirectas que puedan surgir más tarde al aprender conceptos científicos más abstractos. Esto es muy relevante en el aprendizaje de ciencias, materia en la que los docentes deben exponer a los alumnos a experiencias directas en las cuales:

1. el equipo, juguetes y materiales se ajusten a la edad, el nivel de desarrollo, las habilidades, las necesidades, y los intereses de los niños;
2. el material u objeto genere involucramiento, no sólo observación y entretenimiento; a final de cuentas, el estudiante debe poder utilizarlo de manera independiente;
3. el equipo sea simple y tan libre de detalles como sea posible; estimule la versatilidad, la imaginación, la variedad, y el atractivo; y
4. el equipo sea versátil y genere posibilidades al ser manipulado (Eliason & Jenkins, 2012, p. 21).

Sea cual sea la decisión respecto a la cantidad de materiales versátiles que se utilizarán en el aula de clase, es importante incluir desde un principio materiales que permitan al niño hacer conexiones conceptuales con lo cotidiano para luego introducir materiales no tan conocidos que también contribuyan al refinamiento de destrezas clave en ciencias a corto y largo plazo (Bronson, 1995).

Esta experiencia concreta con una variedad de objetos conocidos, adecuados, versátiles y simples permite a los alumnos generar imágenes mentales que los ayudan a establecer conexiones interdisciplinarias dentro o fuera del contexto en el que inicialmente se presentó el concepto científico. Finalmente, la meta es que ellos apliquen los conocimientos adquiridos utilizando todas las destrezas del lenguaje. Por ejemplo, materiales concretos y simples como el agua y un recipiente de plástico son ideales para explorar conceptos abstractos tales como la evaporación, la densidad, la temperatura, el sabor, el volumen, etc. De esta manera los niños podrán no solo manipular el objeto, en este caso el agua sino eventualmente hablar cómo se siente, escribir acerca de la densidad de objetos que caen en el agua, leer acerca del volumen del agua o escuchar y entender conceptos como la evaporación al involucrarse en actividades auténticas de ciencias.

El hogar del estudiante como fuente de materiales para los centros bilingües de aprendizaje de ciencias: Incorporando una perspectiva sociocultural

La selección de materiales para el juego/aprendizaje de ciencias requiere de un análisis de los antecedentes socioculturales del alumno, sus motivaciones, sus experiencias previas y las destrezas a desarrollar. Los materiales con conexiones culturales y afectivas ajenas a él/ella obstaculizan el involucramiento cognoscitivo de los infantes. Además, dificultan que el infante identifique lazos relevantes entre él y el currículo de ciencias.

En los centros de aprendizaje, el docente toma en cuenta las características individuales del alumno, su estilo de aprendizaje y sus antecedentes culturales antes de planear las actividades que introducirá y los materiales que utilizará. Al situar la pedagogía dentro de un contexto auténtico, Freire (1994) sugería, los objetos dejan de ser simples objetos y adquieren una dimensión cultural encapsulando conocimiento acumulado, tradiciones que se transmiten de generación en generación o prácticas que surgen dentro del dinamismo de la vida diaria. Objetos como un juguete, una botella de

vidrio o de plástico vacía, hojas de té de menta, son ejemplos de objetos caseros cuyo simbolismo se origina en las prácticas diarias (ver Tabla 1).

Esta participación del docente como facilitador del aprendizaje y como agente cultural es congruente con la visión sociocultural de Vygotsky (1978), quien afirmaba que el entorno social y cultural son factores importantes en el desarrollo cognoscitivo del estudiante. Los centros bilingües de aprendizaje de ciencias se proponen como una alternativa pedagógica que facilita la construcción de conocimiento al combinar actividades relevantes para el alumno dentro de un espacio en el que se le asista al estudiante en su avance académico y lingüístico. Este apoyo, de acuerdo con Vygotsky (1978), es más significativo cuando es el resultado de interacciones con otros individuos de los cuales el niño aprende y/o inicia el proceso de construcción de significado.

Es en el entorno familiar que los niños pequeños inician sus exploraciones del mundo natural. Ahí es donde identifican patrones; inician una exploración informal de las propiedades de la materia que tienen a su alcance y utilizan sus sentidos para observar, oler, tocar, probar, y escuchar objetos, fenómenos naturales, y organismos vivos. Es también, en ese ambiente familiar, que el niño/a al socializar adquiere valores y actitudes respecto a la ciencia.

Al iniciar su experiencia académica formal, los alumnos ya han sido expuestos a normas culturales respecto a los insectos, las flores, la tierra y el espacio, los objetos materiales, etc. Por ejemplo, es posible que a una corta edad, los estudiantes ya hayan adquirido hábitos de reciclaje; temor a las arañas; conocimiento de ciertas flores para preparar té, etc. Con esto en mente, la Asociación Nacional para la Educación Infantil y la Asociación Nacional de Maestros de Ciencia (NSTA por sus siglas en inglés) también promueven el involucramiento de los padres en la educación de sus hijos, particularmente en el área de ciencia (National Association for the Education of Young Children, 2009; National Science Teachers Association, 2009). Al respecto, la NSTA anima a los padres para que ayuden a los niños a reconocer que la ciencia está en todas partes; a llevar a cabo actividades de ciencia

juntos y aprovechar los recursos que se encuentran dentro de la comunidad. Dichas interacciones son sumamente benéficas ya que al asumir el papel de maestro informal, el padre de familia educa al niño de manera integral proporcionando destrezas y conocimientos relevantes que le serán útiles en el ámbito académico (Gonzalez, Moll, & Amanti, 2005; Moll, Amanti, Neff, & Gonzalez, 1992). Al respecto, la NSTA promueve la importancia de impulsar el pensamiento crítico y creativo a través de actividades auténticas tales como cocinar, llevar a cabo tareas domésticas, practicar la jardinería, reparar o ver reparar una bicicleta (o cualquier otro objeto casero), planear un viaje y otras actividades cotidianas. Es en este contexto que los alumnos usan, observan o juegan con materiales u objetos conocidos dentro de su entorno tales como: un molde, una cuchara, una espátula, una caja de herramientas, agua, aceite, monedas.

En general, estos objetos son significativos por su conexión con los fondos del conocimiento generados dentro de la comunidad del estudiante (Gonzalez, Moll, & Amanti, 2005). Es debido a esta conexión íntima entre el estudiante y el hogar de donde proviene que la NAEYC sugiere una comunicación continua entre padres y docentes. De hecho, debido a que en Estados Unidos el 50.4 por ciento de la población menor de un año pertenece a un grupo minoritario (United States Census Bureau, 2012), se sugiere que los lazos entre docentes y las familias de culturas diferentes se estrechen desde un inicio de la experiencia escolar del estudiante. Para los padres de familia, esto implica una conexión total en la cual tanto las prácticas culturales así como los objetos relacionados con éstas se incorporen en el ámbito académico (ver Tabla 1).

Tabla 1

Materiales que se pueden encontrar en el hogar del estudiante

Ejemplos de materiales perecederos y no perecederos	
Fécula de maíz, Harina, Soda carbonizada, Sal, Azúcar, Frijoles, Arroz, Pasta, Aceite, Vinagre, Fruta, Leche y tortilla.	Latas de aluminio, Papel aluminio, Tuercas y tornillos, Bolitas de algodón, Cotonetes, Botellas de plástico vacías, Pelotas y llaves viejas.



El ambiente natural como fuente de materiales para los centros bilingües de aprendizaje de ciencias


El parque y el patio son ejemplos de espacios ideales para el descubrimiento y el juego. Ahí, el niño percibe sonidos, identifica texturas, explora organismos, y genera preguntas. Estas experiencias directas con la naturaleza echan a andar una serie de procesos cognoscitivos y lingüísticos (Kellert, 2002) que pueden extenderse por medio de centros aprendizaje en el aula de clase. Al iniciar la educación infantil La NAEYC recomienda que el docente diseñe instrucción que sea congruente con la curiosidad innata de los niños. Específicamente, la Posición de Declaración de NAEYC respecto a las prácticas apropiadas para la primera infancia sugiere que los docentes “propongan la exploración y la investigación, e involucran la participación activa y sostenida de los niños y que lo hagan ofreciendo una rica variedad de materiales, desafíos e ideas que capten la atención de los niños” (National Association for the Education of Young Children, 2009a, p. 20).

El jardín por ejemplo, puede ser fuente de piedras, semillas, ramitas, insectos que observar y materia cuyas propiedades descubrir. Además, es posible identificar oportunidades adicionales de afinar los sentidos. Respecto a la recolección dentro de ambientes naturales, es importante modelar responsabilidad ambiental siguiendo lineamientos tales como: (a) recolectar únicamente si se ha identificado el potencial pedagógico del objeto/organismo, (b) respetar especies migratorias o en extinción, además de aquellas protegidas por las leyes, (c) obtener permiso de los dueños o administradores del lugar antes de la recolección, (d) recolectar únicamente si existe un número abundante del objeto/organismo, (e) recolectar un animal sólo si es posible mantenerlo en buenas condiciones y retornarlo a su ambiente, y (f) retornar lo recolectado a su lugar de origen (Project WILD, 2009). En la tabla 2 se describen varios ejemplos de materiales que pueden ser ideales para los centros de ciencia. De manera específica, sugerimos que la selección de materiales sea motivada por su potencial para el desarrollo y adquisición de conceptos científicos, el desarrollo del lenguaje, destrezas sociales, y la toma de decisiones ya sea de manera estructurada o informal a través del juego espontáneo.

Tabla 2

Materiales que se pueden encontrar en el medio ambiente natural

Organismos vivos y objetos inertes	
Semillas	Barro
Palitos y ramitas	Lodo
Pasto	Conchitas
Nidos de pájaro	Tronco
Capullos	Flores
Conos de pino	Bellotas
Rocas	Hojas
Tierra	Plantitas
Insectos	
Arañas	



El valor de los materiales arriba mencionados radica no sólo en su valor como herramienta para explorar y descubrir conceptos científicos, sino en su relevancia al proporcionar un contexto auténtico en el que se impulsa el desarrollo del lenguaje y el enriquecimiento del vocabulario. Una variedad de materiales son ideales para introducir vocabulario y estructuras lingüísticas especializadas y más complejas que las que se utilizan en interacciones comunes y corrientes. Por ejemplo, al modelar el uso de frases tales como: “Yo me pregunto . . .” o “¿Qué crees que pasaría si . . .?” se estimula el pensamiento científico y la verbalización de eventos no inmediatos. Asimismo, organismos como cochinillas, pueden inspirar al alumno a entablar conversaciones en las que utilice patrones lingüísticos de causa y efecto al comentar: “Debido a que tratamos de recoger una cochinilla, ésta se hizo bolita” o “Si nos quedamos quietos los insectos no huirán.”

Por otra parte, padres de familia y maestros pueden impulsar el uso de vocabulario sofisticado. Por ejemplo, el juego con objetos que flotan o se hunden puede utilizarse para mencionar que algunos

objetos son mas densos que otros y que la flotabilidad de todos los objetos varía. En resumen, los objetos que se encuentran en el hogar y en el medio ambiente natural apoyan el desarrollo de vocabulario no sólo porque se da la oportunidad de nombrar objetos, organismos, y herramientas, si no porque estos objetos facilitan el aprendizaje y adquisición de lenguaje al participar en experiencias en las que pueden ver, tocar, probar, u oír (Coople & Bredekamp, 2009).

A continuación presentamos dos actividades en las que se utilizan materiales de la naturaleza y del hogar. Estos materiales se describen en el marco de actividades ideales para un centro de aprendizaje en los cuales se integran los principios de exploración libre con objetos concretos que son versátiles.

Investigando rocas

Grado escolar: K-2 materiales

- Una variedad de rocas ígneas, sedimentarias y metamórficas
- Lupas (si están disponibles)
- Un recipiente para colocar las rocas
- Organizador gráfico con tres columnas para cada tipo de roca

Ideas para centros de aprendizaje de ciencias

Actividad #1: Los niños explorarán en pares y libremente todas las rocas. Esto permitirá que intercambien ideas; compartan experiencias previas de su ambiente cultural; y utilicen el lenguaje por medio conversaciones que les permitan construir conceptos científicos.

Actividad #2: En parejas, los niños clasificarán las rocas de acuerdo a sus características físicas tales como textura, color, peso y forma. Luego explicarán esta clasificación a otro par o entre ellos.

Actividad #3: Los alumnos seleccionarán una roca y utilizarán la lupa para describirla a su pareja. Luego escribirán su descripción en su diario de ciencias o en una tarjeta.

Actividad #4: Las parejas de estudiantes seleccionarán dos rocas o dos grupos de rocas, luego las compararán y contrastarán utilizando un diagrama de Venn.

Actividad #5: Los estudiantes traerán una roca de su casa para que escriban o dicten una descripción de su roca incluyendo características físicas del lugar donde la encontraron.

Conocimiento y destrezas científicas

Observación e identificación de propiedades de las rocas.

Para enfatizar el uso del lenguaje académico, se recomienda que de manera gradual y una vez que han aprendido el vocabulario relacionado con el tema de las rocas (ver Figura 2), los alumnos incorporen dicho vocabulario en sus actividades orales y escritas.



Figura 2. Colección de rocas de formas, texturas y colores variados.

Botecitos de aromas

Grado escolar: PK-1 Materiales

- Seis botecitos de plástico numerados. Se sugiere utilizar recipientes herméticos como los utilizados por los farmacéuticos para surtir pastillas (ver Figura 3) .
- Seis diferentes extractos alimenticios aromáticos como la fresa, limón, canela, vainilla, etc.

- Bolas de algodón.
- Tarjetas con fotocopias del extracto.

Procedimiento

Actividad #1: Con su pareja, los niños explorarán libremente cada botellita aromática.

Actividad #2: Luego de explorar, los alumnos preguntarán acerca de los aromas que ellos no reconocen y compartirán aquellos aromas que sí conocen indicando oralmente los recuerdos que los aromas les traen.

Actividad #3: Los niños seleccionarán un botecito para oler y adivinar el contenido. Luego compararán sus inferencias con las tarjetas de respuestas proporcionadas.

Actividad #4: Las parejas de alumnos seleccionará un botecito de aroma conocido y escribirán acerca de su experiencia incluyendo detalles relacionados con preguntas acerca de *cuándo, cómo, dónde, por qué*, etc.

Actividad #5: Los niños traerán de su casa una especie o extracto que se pueda colocar en un botecito y el cual describirán indicando el recuerdo que les trae.

Conocimiento y Destrezas Científicas

El uso de los sentidos para observar y comunicar las propiedades de objetos y materiales.



Figura 3. Ejemplos de recipientes herméticos para guardar aromas.

Conclusiones

Aunque para los docentes, y para los adultos Latinos en general, la ciencia es frecuentemente percibida como una materia compleja, para los niños el ‘hacer ciencia’ resulta no sólo natural sino atractivo. La fascinación al explorar su entorno cultural y físico lleva a los niños a desarrollar conceptos cotidianos o espontáneos que servirán de cimiento durante el transcurso de su experiencia académica. De ahí la importancia de utilizar estrategias tales como los centros bilingües de aprendizaje en los cuales es posible incorporar los principios básicos de la educación infantil; establecer nexos con el hogar, y recurrir al medio ambiente natural como fuente de actividades y materiales.

Los principios básicos de aprendizaje en la primera infancia sugieren que los alumnos aprenden mejor cuando las actividades en el área de las ciencias son concretas e invitan a la exploración. Sin

embargo, la exploración activa sólo resulta benéfica para el alumno cuando el docente asume su papel como facilitador y diseñador pedagógico que deliberadamente mantiene a sus alumnos activos cognitivamente. Es decir, los involucra en la práctica de destrezas científicas tales como la observación, la clasificación, la experimentación, la formulación de hipótesis, la medición, la comunicación y la predicción en relación con situaciones y materiales que de inicio le son familiares.

Al incluir en los centros bilingües de aprendizaje materiales que proceden tanto del hogar del alumno como de su entorno natural no sólo se atienden aspectos cognoscitivos y culturales sino, el aspecto afectivo de la enseñanza. Por décadas, y bajo el argumento de que una educación equitativa implicaba la estandarización del currículo de tal manera que todos recibieran un trato pedagógico similar, se estableció la desconexión alumno-escuela que afectó principalmente al estudiante latino. Esta desconexión es grave en todos los aspectos, pero en el caso de las ciencias a nivel infantil, se sientan precedentes que eventualmente se reflejan en una escasa participación de los estudiantes en los campos de la ciencia, tecnología, ingeniería y matemáticas. En última instancia, los diseños educativos cimentados en una perspectiva sociocultural propician no sólo un mayor interés del alumno en su aprendizaje, sino que lo empoderan con destrezas que trascienden el contexto de las ciencias.

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The Case for Non-Targeted Comprehensible Input: The Net Hypothesis

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The Case for Non-Targeted Comprehensible Input: The Net Hypothesis

In nearly all foreign and second language classes, there is a "rule of the day" as well as vocabulary that students are expected to focus on, often referred to as "target" grammar and vocabulary. In traditional pedagogy, exercises are aimed at the conscious learning of this targeted grammar and vocabulary. They are also included in brief readings, which are generally packed with the targeted items.

I present here the disadvantages of the grammatical syllabus and targeted input in general, and then argue that comprehensible input effortlessly deals with grammatical syllabus' shortcomings.

Problems with the Grammatical Syllabus

The Natural Order Problem

As is well known, studies have shown that we acquire the grammar of a language in a predictable order, and this order cannot be broken. For an item of grammar to be acquired, the language acquirer must be ready to acquire the item. It must, in other words, be at the acquirers' $i+1$, where i = aspects of grammar that were most recently acquired.

We cannot simply teach along the natural order, presenting earlier acquired aspects of language first and late-acquired aspects of language later. While we have enough evidence for the natural order in a few languages to support the hypothesis that the order exists, we do not know enough to create a

syllabus. So far we have only been able to specify the order of acquisition of a handful of structures. But even if we could specify the entire order of acquisition, it would not be a good idea to base a syllabus on it. In fact, it is not a good idea to have any grammatical syllabus.

Constraint on Interest

The goal of the language classroom is to provide input that is genuinely interesting, or *compelling*, so interesting that students, in a sense, *forget* that it is in another language (Krashen, 2011). The Compelling Input hypothesis maintains that language acquisition proceeds best when all attention is focused on the message to such an extent that thoughts of anxiety and focus on form do not occur.

The Compelling Input Hypothesis is influenced by the concept of *flow* (Csikszentmihalyi, 1990). Flow is the state people reach when they are deeply but effortlessly involved in an activity. In flow, the concerns of everyday life and even the sense of self disappear—our sense of time is altered and nothing but the activity itself seems to matter. Flow occurs in reading when readers are “lost in a book,” when they are aware only of the story or the message in the text. It is when this happens that language acquisition occurs most effectively. Note that this position is the opposite of the “focus on form” and focus-on-forms points of view.

It is very hard to create compelling messages when the hidden agenda is a grammatical rule or pre-selected target vocabulary. In fact, it is hard enough to do this when there are no constraints on what vocabulary and grammar can be used.

The Review Problem

Traditional second and foreign language methods work through the basic grammar of the language the first year. Once a grammar rule is presented and practiced, it may not be seen again until the second year when we review the entire grammar again, because students did not master it the first year.

The unteachable and untaught grammar problem. The grammar presented in class is nowhere near the complete grammar of the language. Even the most accomplished linguists concede that they have only described fragments of languages. Moreover, language textbooks do not contain all that linguists have described, and teachers rarely teach everything in the texts.

Denial of i+1. The impoverished input provided by the grammatical syllabus will result in students not getting input in structures they actually are ready for. Grammatical syllabi typically place easily describable items early in the sequence and more complex ones later, but the natural order of acquisition runs on different principles. Some rules that look easy to the linguist and teacher (e.g., the third person singular in English) are acquired late, whereas others that appear to be complex are typically acquired early. The early acquired items must be in the input for their acquisition to take place.

Individual variation. There is individual variation in the rate of acquisition, because of input factors (some students may have had additional input in the language outside of class) and affective factors. Even if the rule of the day happens to be at i+1 for some students, it will not be for other members of the class.

Non-Targeted Comprehensible Input: The Net Hypothesis

An important corollary of the Comprehension Hypothesis is the *Net* Hypothesis: Given enough comprehensible input, all the vocabulary and structures the student is ready for are automatically provided. In other words, "i+1" is automatically there. In Krashen and Terrell (1983) this was referred to as the Net:

When someone talks to you in a language you have not yet completely acquired so that you understand what is said, the speaker "casts a net" of structure around your current level of competence, your 'i'. This net will include many instances of i+1, aspects of language you are ready to acquire. (p. 33)

The same, of course, goes for reading: If you understand the text, and you read enough of it, you will get $i+1$.

Before looking at the evidence, let us for the moment assume that the Net Hypothesis is correct and see how non-targeted comprehensible input completely solves the problems of the grammatical syllabus.

The Natural Order Problem

Non-targeted comprehensible input, according to the Net Hypothesis, contains the aspects of language the acquirer is ready for. This means we do not need to know the natural order. Rather, grammatical competence will emerge in a natural order as a result of getting non-targeted comprehensible input.

Constraint on Interest

With non-targeted comprehensible input there are no target structures and target vocabulary that must be used in creating activities and stories. Anything goes, as long as the input is comprehensible and interesting (or compelling).

The problem of providing comprehensible and interesting input is the fundamental problem of beginning language teaching. It is easy to get input that is interesting but not comprehensible, from the real world. Unfortunately school tends to provide input that is comprehensible, but not interesting. It is hard to get both, to say interesting things using limited language, even if one is not required to use specific vocabulary and grammar.

The Review Problem

Non-targeted comprehensible input provides natural review, especially if there is some topic continuity in the progression of activities and reading.

The unteachable/untaught grammar problem: This is no problem for non-targeted comprehensible input. "Unteachable rules" are only a problem when the goal is conscious learning.

Second language acquirers have always been able to acquire rules that have not been taught and that cannot be taught.

Denial of i+1: Non-targeted comprehensible input, according to the Net Hypothesis, solves this problem easily: i+1 is always there, if there is enough input.

Individual variation: If the input is comprehensible for all members of the class, everyone is getting what they need, even if i+1 is different for every member of the class. (See discussion of "picking out" i+1 below.)

The Evidence

The evidence supporting the Net Hypothesis comes originally from first language acquisition. Caretaker speech to children is typically comprehensible, but is not *finely tuned* to the child's current linguistic level. As the child develops linguistically, caretaker speech tends to get more complex, but the relationship is not exact: The caretaker does not limit the input to precisely the next rule the child is ready for.

Evidence includes studies showing that the correlations between input complexity and the child's competence are usually positive, but are not extremely high. Cross (1977) concluded that the syntax of mothers, even to rapidly developing children, is not uniformly pitched just a step ahead of the child in either linguistic or psycholinguistic complexity. Some utterances are pitched at the child's level, some even below this, and others are considerably in advance of what the child themselves can say. (p. 180)

No studies of input to second language acquirers have examined input to this level of detail, but we do know that teacher talk is roughly tuned to the level of students, not finely-tuned (Krashen, 1981). We also know that second language acquirers improve from communicating with native speakers and from reading authentic reading material (Krashen, 1981, 2004), input that is certainly not finely tuned to the acquirer's i+1.

Picking out i+1

There is, in addition, evidence that children are able to pick out the aspects of the input that are relevant to their stage of development; that is, they can pick out and make use of what is at their i+1. First language researchers (Gleitman, Newport, & Gleitman, 1984) studied the relationship between the frequency of yes/no questions in caretaker input and the development of the verb phrase auxiliary. A relationship was suspected because in yes/no questions the verb phrase auxiliary in English is often placed at the beginning of a clause and is often stressed, which makes it very prominent (e.g., Is John playing the violin? Does Mary have a kite?). They found that the frequency of yes/no questions was indeed very strongly related to verb phrase auxiliary development for the older children in their sample (23.9 to 24.8) months ($r = .91$) but was not significantly related to verb phrase auxiliary development for the younger children (18.5 to 12.3) months.

The two groups received similar input; for the older children, however, this structure was at their i+1. For the younger group, it was beyond their i+1. This did not, apparently, impair the younger children's comprehension. This suggests that the best input for acquisition is input that contains maximum richness but remains comprehensible. Such data will contain, inevitably, some i+n (input beyond i+1), as caretaker speech always does, in the form of later acquired aspects of grammar. Including this *noise* does not impair communication, nor would deleting it make the input more comprehensible. Rich input, as long as it is comprehensible, provides the acquirer with a better sample to work with, more opportunities to hear and read structures he or she is ready to acquire.

Roger Brown (1977) summarized this point of view succinctly. After reviewing research on how caretakers talk to children, Brown offered this advice in answer to the question, "How can a concerned mother facilitate her child's learning of language?"

Believe that your child can understand more than he or she can say, and seek, above all, to communicate. To understand and be understood. To keep your minds fixed on the same target.

In doing that, you will, without thinking about it, make 100 or maybe 1000 alterations in your speech and action. Do not try to practice them as such. There is no set of rules of how to talk to a child that can even approach what you unconsciously know. If you concentrate on communicating, everything else will follow. (p. 26)

The same, I am hypothesizing, holds for second language acquisition.

Suggestions

The Net Hypothesis is, of course, a hypothesis. As is the case with all scientific hypotheses, it could be refuted tomorrow. I suggest here some modest ways of introducing non-targeted comprehensible input into classes, and at the same time further test whether the hypothesis is correct.

In class

I suggest we consider loosening up class discussions and in-class stories. The focus in TPRS (Teaching Proficiency Through Reading and Storytelling), for example, has been making input 100% comprehensible, with students being able to understand, and translate, every word (Ray & Seeley, 2008). Some beginners, because of bad experiences in other classes, might require fully transparent input at first, but it might be more efficient, and easier, to gradually relax the transparency constraint and insist only that the input appear to be fully comprehensible. I am suggesting that it is okay, and even desirable, that the input contain a small amount of *noise*, or i+n.

Note that some late-acquired structures have little communicative value. The third-person singular –s in English is hard to avoid in English input, yet it is acquired very late. English acquirers have no trouble understanding input containing –s because it contributes so little to meaning. *Teaching* –s to beginners is useless, because it is late-acquired, and *simplifying* the input to exclude it is hopeless.

This proposal can be tested by examining teacher-talk in non-targeted input classes. The Net Hypothesis predicts that the appropriate grammar and vocabulary will be included and that substantial language acquisition will take place.

Readers

A modest first step is the creation of books and readers that are not targeted at certain structures and vocabulary. Instead of writing stories that include just those items that have been taught or are about to be taught, writers can simply try to make the texts interesting and comprehensible, based on their own experiences with students at the beginning levels. If beginning students understand the texts (and like them), then the texts are appropriate; the Net Hypothesis claims that just the right aspects of language will be automatically included.

To see if the Net Hypothesis is correct, as suggested just above, we can examine the texts of comprehensible/interesting readers written in this way and determine what structures and vocabulary are covered. We can also compare the achievement of classes using these texts with those using readers matched to a grammatical syllabus and vocabulary list.

Summary

This corollary of the Comprehension Hypothesis makes life much easier and more interesting for teachers and students: If comprehensible input, when provided in quantity, contains all the structures and vocabulary the acquirer is ready for, we are liberated from the constraint of targeting specific aspects of form and can focus entirely on meaning, on providing input that is comprehensible and compelling.

If only the feeling of comprehension is required, if input is allowed to contain some $i+n$, we no longer have to make sure that every word and even every morpheme is completely transparent. If, in fact, input is truly compelling, it is likely that students will not even notice the *noise* or bits of incomprehensible and nontransparent elements in the input.

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