

## **Scaffolding language, literacy, and academic content in English and Spanish: The linguistic highway from Mesoamerica to Southern California**

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*ABSTRACT: This article contains a description of the Dual Proficiency (DP) program in an urban elementary school located in the heart of a large south-western city, as well as the teachers who designed and now implement DP, and the immigrant community participating by choice in DP. We write from a context where, ironically, the number of English language learners (ELL) in the United States is at its highest and yet use of the children's native language for classroom instruction is severely restricted, for all intents and purposes, by law. On top of this, district, state and national accountability demands, and the resulting focus on standardised test scores as indices of achievement, have served to narrow the curriculum and to direct classroom time to intensively tested skills. For schools with large numbers of students whose scores do not meet state testing standards, the prescribed remedy is often mandated, skills-based commercial programs. In the DP program, on the other hand, thoughtful content-based instruction utilising academic language connections between the students' two dominant languages (Spanish and English) with explicit recognition of the contributions of additional heritage indigenous languages from Mexico and Central America provides the scaffold to academic understanding for participating students. DP students consistently score significantly above their non-DP peers on state-mandated achievement tests.*

*KEYWORDS: Bilingual education, cross-content instruction, academic English language, home-school connection.*

At Orquidea Elementary, instruction for heritage-language children can take many forms. Parents can select from a range of options according to their desired proportion of English spoken and the manner in which it is taught, including English Only, Structured English Immersion (sheltered English), Dual Language Immersion, Waiver to Basic Bilingual Education, and, unique to this school, Dual Proficiency<sup>1</sup> programs. This article contains a

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<sup>1</sup> Named by teacher-developers, *Dual Proficiency* is not to be confused with Dual Immersion or Dual language Immersion, which refer to the district's two-way language immersion program. These latter two approaches often require native English language models as well as native speakers of the second target language (Spanish, Korean, or Mandarin) as language models in each classroom. In contrast, the students in the study context are primarily English Learners.

description of the Dual Proficiency (DP) program, the vertical team of teachers (K-4) who designed and now implement DP, and the student and parent community participating by choice in DP. A vertical team, as differentiated from a horizontal, single-grade-level team, is a group of teachers whose students pass as a group each year (K-4) through the teacher cohort and are not dispersed among other teachers. As will be demonstrated, thoughtful content-based instruction utilising academic language connections between the students' two dominant languages (Spanish and English) with explicit recognition of the contributions of additional heritage indigenous languages from Mexico and Central America provides the scaffold to academic understanding for participating students.

Much of the controversy over bilingual education has focused on the language of instruction. In contrast, much less attention has focused on instructional quality and on understanding how specific classroom instructional strategies affect student learning outcomes. Where instruction is considered, it is usually with respect to fidelity – as in fidelity of treatment or as in comparing bilingual vs. English-only instruction. We think it is critical to bring the focus back to instruction. We write from a context where, ironically, the number of English language learners (ELL) is at its highest and yet use of the children's native language for classroom instruction is severely restricted, for all intents and purposes, by law. On top of this, district, state and national accountability demands, and the resulting focus on standardised test scores as indices of achievement, have served to narrow the curriculum and to direct classroom time to intensively tested skills. For schools with large numbers of students whose scores do not meet state testing standards, the prescribed remedy is often mandated, skills-based commercial programs.

With this context in mind, we describe key aspects of this unique setting for ELL students in the DP program at Orquidea Elementary School (pseudonym). This cohort of students, who constitute about 10% of the students of similar socio-economic status (SES) and similar ethnic background at this school, has demonstrated strong academic gains. Our purpose here is to describe strategies used by the team and to focus on specific examples of classroom implementation of the strategies by two of the six members.

These teachers and their vertical teammates have worked together for about 20 years. They have managed to navigate the considerable and often competing demands of state and local authorities and administrators while still producing notable student outcomes. They have developed their own community of practice. This includes the creation of an extensive collection of curricular materials designed to advance language acquisition in English and Spanish while simultaneously teaching state content standards. We would claim that they employ strategies and practices that are universally recognised as good instruction and that have been recognised as beneficial, particularly for English learners (Goldenberg, 2006).

We have noted that often teachers ask, after reading a piece regarding “best” or “effective” practice, “But what does it look like in the classroom?” We provide here a brief window into aspects of DP classroom instruction by focusing on selected patterns and examples from two of the classes. We highlight three key aspects of professional practice, which our extensive observations of these classrooms suggest are characteristic of ongoing practice, including:

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1. **Frequent, explicit tying of the Latin/Spanish academic unit vocabulary to the subsequent standards-based learning in English of the same subject matter.** Material presented in English is not just a translation of the Spanish work; it is another step forward in the advancement of the children's age-appropriate expertise in the same subject.
2. **Content-based instruction with development of two languages embedded in history, geography, science and mathematics.** The units are chronologically and geographically organised, and intentionally tied, wherever possible, to the children's three heritage backgrounds: Indigenous, Hispanic and European. The units are not static. They are continually adapted as both need and opportunity are identified by the teachers. Non-fiction trade-books provide a very high percent of the base for teaching both reading and content material; high-quality related fiction titles support the content units.
3. **Strong ties between the lessons presented in the classroom and the children's life experiences and ethnic and linguistic heritage.** These ties are integral to the selection and creation of instructional material designed to lead the children to an understanding of the state content standards.

## RESEARCH OVERVIEW

### Academic language

Grade-level academic language proficiency and content-area knowledge acquisition have been traditional areas of difficulty for English-language learners (Francis, Rivera, Lesaux, Kieffer & Rivera, 2006). Researchers have noted that underachieving English language learners require specialised instruction and interventions to prevent further difficulties (August & Shanahan, 2006). Mastery of the specialised language of academic content areas such as science is critical for academic achievement. Many of these specialised words are used primarily in academic contexts (for example, "diameter", "condense") but not in everyday conversational settings. In other cases, however, there are words with equivalent meanings but that are normally used in one context but not the other (for example, "gather" in everyday settings versus "collate" in academic settings) (Bailey, 2007; Maatta, Dobb & Ostlund, 2006).

The term that researchers and practitioners often use for these specialised language skills is academic language, or Academic English. Proficiency in this discourse style is often seen as a unique dimension of general language development essential to successful participation in school. It is important to note that Academic English is more than just technical vocabulary. It includes broader aspects of literacy as well. In general terms, literacy encompasses the ability to read, write, speak, listen and think effectively. It is fundamental to school success. Increasingly, sophisticated levels of Academic English are also required for competent participation in the many economic, social and practical demands of life beyond school

(Moore, Bean, Birdyshaw & Rycik, 1999). This broader notion of what it takes to succeed in academic settings has been termed “high literacy” and includes:

...the ability to use language, content, and reasoning in ways that are appropriate for particular situations and disciplines. Students learn to “read” the social meanings, the rules and structures, and the linguistic and cognitive routines to make things work in the real world of English language use, and that knowledge becomes available as options when students confront new situations. This notion of high literacy refers to understanding how reading, writing, language, content, and social appropriateness work together and using this knowledge in effective ways. It is reflected in students’ ability to engage in thoughtful reading, writing, and discussion about content in the classroom, to put their knowledge and skills to use in new situations and to perform well on reading and writing assessments including high stakes testing (Langer, 2001, p. 838).

Some generally accepted characterisations of Academic English include mastery of content-area vocabulary and concepts, writing and following procedures, reviewing information, summarising data, constructing logical and sequential arguments, responding from an empirical base to a critical analysis of peers or teachers, and communicating results for a variety of different audiences with a specific focus on the expository genre of text, especially in the upper elementary grades. While the need for such language skills is widely recognised, there is not always complete agreement about how to address them in everyday classroom practice (Bailey, 2007; McSwan, 2000). Some researchers such as McSwan (2000) have argued that an overemphasis on academic language skills tends to discount students’ existing language competence and also tends to privilege narrow, standardised assessments which emphasise Academic English. Nonetheless, it is clear that higher-level language proficiency is required for comprehension of classroom instructional content and is measured on standardised achievement tests. Additionally, and importantly, it is a goal supported by parents of ELLs in this program.

Many low-SES ELLs may not be exposed to highly literate peers, adults and environments with school-based experience and knowledge providing platforms for exposure to discourse styles beyond those of daily communication. This lack of exposure is typical of the language experiences of the majority of the population in large urban school districts (August & Hakuta, 1997; August & Shanahan, 2006; Bailey, 2007; Scarcella, 2003). The challenge for classroom teachers of ELLs is to provide an environment in which the acquisition of academic discourse registers can be achieved simultaneously with the acquisition of basic, English skills.

Because specialised vocabulary is so prominent in science, a great deal of the work on academic language has focused on this content area. Some researchers have utilised an empirical approach to defining the components of academic literacy (Bailey, Butler, LaFramenta & Ong, 2004; Butler, Lord, Stevens, Borrego & Bailey, 2004), demonstrating that there are unique and recognisable features of academic literacy. Butler and colleagues (2004), for example, examined the organisational features, language functions, structural features, and lexical features of content standards in textbooks in science and math and analyzed videotapes of classroom language interaction. The content standards were found to be the most complex in terms of distinctive language features, but the common language functions across all areas examined included classification, comparison and contrast,

definition, description, evaluation, explanation, inference and labeling. It is not that these functions are absent from everyday life; it is just that they are not as central nor precise in their use, and the consequences for errors are much less pronounced. Their analysis indicated that there was an identifiable science register that included academic language features such as formulating hypotheses, proposing alternative solutions, describing, classifying, using time and spatial relations, inferring, interpreting data, predicting, generalising, and communicating findings (National Science Teachers Association, 1991; National Research Council, 2000).

We take the view that all children develop language skills before entering school in the contexts in which they live, and that these are valid, functional and useful skills. These skills can and should be used as scaffolds to reach learning goals in classrooms. We also argue that in order to gain access to the benefits of formal education, acquiring academic language and, especially, the underlying components of academic literacy, is essential. Moreover, integrating the acquisition of these academic register skills with content-based material and language development enhances rather than hinders either domain. The program teachers are guided by the belief that subject matter content provides a meaningful and motivating context for the learning of academic language structure and functions. The specialised analytical and descriptive language of content area material provides the medium for written and spoken communication of subject-matter knowledge (Stoddart, Pinal, Latzke & Canaday, 2002).

We posit that the content-area language register can be seen as both a tool and a goal for ELLs whose home language is Latin-based Spanish. While the goal is widely shared among educators focusing on improved achievement for ELLs, we suggest that one primary difference between other approaches to the goal and that of DP is in the latter's extensive and specific use of the shared, Spanish-English, Latin-based academic vocabulary to propel student progress. The symbiotic development approach utilising content material to teach the academic register is supported by studies focusing on science instruction in which academic literacy has been successfully integrated with content instruction (Baker & Saul, 1994; Casteel & Isom, 1994; Gasking, Guthrie, Satlow, Ostertag, Six, Byrne & Connor, 1994; Glynn & Muth, 1994; Keys, 1994; Palincsar & Magnessen, 2000; Rivard, 1994).

### **Content-based instruction**

Many terms have been applied to the notion of integrated teaching, including: integrated content, integrated curriculum (Jacobs, 1989; Schubert & Melnick, 1997), interdisciplinary curriculum (Lipson, Valencia, Wixson, & Peters, 1993) integrative education (Perkins, 1991; Shoemaker, 1989), interdisciplinary instruction (Lawton 1994; Yolks & Follo, 1993), thematic teaching (Yorks & Follo, 1993), synergistic teaching, and/or content-based instruction (Crandall and Tucker, 1990). For many second and foreign language educators, the various forms of language/content integration fall under the rubric of content-based instruction.

Lipson, Valencia, Wixson and Peters (1993) trace the idea of curriculum integration to reforms of the 1930s – specifically to John Dewey's 1933 discussion of meaningful learning. Bruner's (1966) theory of instruction emphasised the ways in which a body of knowledge can be structured so that it can be most readily grasped by the learner. The overall goal is teaching for understanding. Interactive and motivated by a concern with understanding in a

broader and a deeper sense, integrative education connects concepts and integrates ideas within and across subject matters and with elements of out-of-school life. Cutting across subject-matter lines, it brings together various aspects of the curriculum into meaningful ways to focus upon broad areas of study. It views learning and teaching holistically and reflects the real world.

Proponents of socio-cultural approaches view knowledge as part of a conceptual ecology, where individuals' understandings are complex systems of diverse knowledge elements (diSessa, 2002) influenced by social and material influences on such knowledge (Cole, 1996; Hutchins, 1995). "Accordingly, explanation or action is governed by a contextualized coordination of different knowledge elements, and the genesis of such knowledge derives from social, cognitive, and material experiences" (Bell, Briker, Lee, Reeve & Zimmerman, 2006, p. 1)

The use of content-based instruction has waxed and waned as the approach of choice in American public schools, although it is still popular in Australia, Ireland and Spain (Hargreaves, Earl, Moore & Manning 2001). However, in the final decade of the Twentieth Century, the emphasis on accountability and direct instruction has led to the popularity of the highly differentiated curriculum, separated into different subjects named by Bernstein (1990), "strong classification." "Weak classification" refers to a curriculum that is integrated and in which the boundaries between the subjects are fragile. Despite pressure from their peers and their superiors to implement the highly segmented, "strong classification" curriculum, the K-4 Dual Proficiency teachers at Orquidea have held fast to their content-based approach based on their observation of student learning outcomes.

### **Home-school connections**

The important role that Latino students' families and culture play in the overall learning process is often overlooked. This is consistent with the widely held misconception that immigrant Latino families have nothing valuable to contribute to American schooling (Arzubiaga, Ceja & Artiles, 2000; Epstein, 2001; Valencia & Black, 2002). The disconnect between the family and community and the classroom has troubled educators for many years. Dewey (1907) lamented:

From the standpoint of the child, the great waste in the school comes from his inability to utilise the experiences he gets outside the school in any complete and free way within the school itself; while, on the other hand, he is unable to apply in daily life what he is learning at school. That is the isolation of the school -- its isolation from life. When the child gets into the schoolroom he has to put out of his mind a large part of the ideas, interests, and activities that predominate in his home and neighborhood. So the school, being unable to utilise this everyday experience, sets painfully to work, on another tack and by a variety of means, to arouse in the child an interest in school studies (p. 89-90).

For educational experiences to be relevant and accessible, they must reflect and connect with the students' particular life experiences and perspectives. This need reflects the fact that learning is more effective when new ideas are related to prior knowledge and initially are taught in ways familiar to students (Boggs, Watson-Gegeo & McMillen, 1985; Cazden, John & Hymes, 1985; Mayer, 2008; Schunk, 2007). The most effective schools and programs

recognise the vital role of families' and communities' perceptions and support in bridging the gap between the two worlds experienced by immigrant students.

Thanks to the work of Vygotsky (1978, 1987) and others who have extended his ideas (Kozulin, 1998; Rogoff, 2003; Tharp & Gallimore, 1989; Wertsch, 1998), teaching and learning have come to be seen as not only cognitive processes but sociocultural processes as well (Bransford, Brown & Cocking, 2000; Lambert & Combs, 1998; Schunk, 2007). The basis of sociocultural theory is that learning is socially mediated and rooted in specific cultural contexts. Learning occurs as individuals engage in culturally meaningful productive activity with the assistance of a more competent other (Vygotsky, 1978, 1987).

The notion of using students' existing knowledge and experiences as a departure point for instruction is consistent with research on funds of knowledge. This work seeks to make students' hidden household and community resources revealed, validated and built upon as resources for instruction (Gonzalez, Moll & Amanti, 2005; Moll, Amanti, Neff & Gonzalez, 2001). Funds of knowledge refer to the practical and intellectual knowledge manifested in household and community activity. It constitutes the collective "everyday" knowledge found among social networks of households that function through the reciprocal exchange of resources (Moll & Greenberg, 1990; Velez-Ibanez 1988). This exchange, essential to household survival, is sustained through "confianza" (mutual trust) which is re-established and confirmed through each reciprocal social transaction and produces relationships that are long-lasting (Veléz-Ibáñez 1988). Moll & Greenberg (1990) argue that these relationships produce contexts in which proximal development occurs, as children participate in activities with people they trust.

One important component of the sociocultural aspects of these classroom learning processes is teacher-student interactions and relationships. There is long-standing evidence that these factors play an especially vital role in learning and academic achievement (Hartup, 1985; Pianta, 1999). Carpenter, Paris and Paris (1999) surveyed K–3 teachers in exemplary schools. Respondents reported making school-to-community connections that integrated the community into the classroom – extending literacy into homes using diverse methods and topics of communication with frequent attempts to communicate with parents and sending home a variety of literacy materials. "Where lines of communication are open, where different groups are sensitive to and respectful of the views of others, and where resources are made available to support families in their quest to support their children and the schools they attend, achievement is more likely to be enhanced" (Taylor & Pearson, 2004, p. 171). Yet there is also evidence that relationships between minority children and teachers are often strained (Heath, 1983; McQuillan, 1998; Phillips 1983; U.S. Commission on Civil Rights, 1973; Valenzuela, 1999). These authors suggest that teachers' lack of knowledge about students' languages, cultures, and communities result in deficiency perspectives and inhibit the development of close relationships with students, their families and their communities.

## **THE RESEARCH CONTEXT AND BRIEF DESCRIPTION OF THE STUDY**

The authors of this article include a university professor, a district researcher, and a retired teacher who was the author of the majority of the 1<sup>st</sup> and 2<sup>nd</sup> grade DP material. A

demographic overview of the community and the setting in which the research took place follows.

| Characteristic                           | Orquidea | District |
|--|----------|----------|
| Free Lunch                               | 94%      | 91.9%    |
| EL Percentage                            | 71.2%    | 42.2%    |
| ELD level 1 at school entry <sup>2</sup> | 99.1%    | 89.8%    |
| Born in USA                              | 88.1%    | 90.2%    |
| Home language - Spanish                  | 91.1%    | 53.8%    |
| Reclassified                             | 11.5%    | 10.9%    |

**Table 1. Background characteristics of the students by school**

### School and community background

Orquidea families come primarily from Mexico, Guatemala and El Salvador. Most parents are fluent Spanish speakers, but may also speak an indigenous language from Mexico or Central America such as Zapotec, Nahuatl (the language of the Aztec people of Mexico), Purepecha and several Maya dialects. As can be noted in table 1, the students in this inner-city, urban community in Southern California are more likely than students district-wide to be low income ELLs who speak Spanish and enter school with no English-language knowledge. They are less likely than the district average to have been born in the United States.

### Teacher cohort history

In the words of our teacher co-author, “The DP program at our 1,300-plus inner city K-5 primary school is a teacher-developed, content-based developmental bilingual K-4 program. We have built our vertical team consisting of two kindergarten teachers and one teacher for each of first, second, third and fourth grades over the course of more than twenty years of active collaboration. We have focused on content development, community-building, and constant program refinement based on measured student achievement of state learning standards. We are intensively reflective about the effectiveness of various strategies and have operated with varying degrees of independence during most of the years of our work.” The team encourages and invites other interested staff members to attend regularly scheduled, professional development meetings (which they conduct themselves) to learn about the DP approach, to exchange ideas about how to integrate content instruction into all areas of the curriculum, and to share teacher-made DP materials.

<sup>2</sup> For Spanish, home language children.

## **How the researchers became involved**

While directing an evaluation in spring, 2006, on the district-mandated, Spanish reading curriculum, the district researcher (Hayes) met several vertical-team members and, recognising how they parlayed students' home language and life experiences into increased academic success for Spanish-speaking ELLs, requested that they join her in documenting the process. These teachers were creatively and successfully addressing a concern identified by the district school board (inadequate levels of academic achievement district-wide by English language learners) using significantly different materials and strategies. That year (2006), 60% of the cohort second-graders scored "proficient" or "advanced" on the English Language Arts (ELA) portion of California Standards Test (CST) and 75% scored "proficient" or "advanced" on the mathematics portion. Fifty-eight (58) percent of the cohort's third-graders scored "proficient" or "advanced" in ELA and over 90% scored "proficient" or "advanced" in mathematics. The teachers and researcher then approached the professor (Rueda) who, upon observing the dual-language approach and pedagogy, agreed to join the team. During the 2006-07 academic year, the team obtained external funding and district clearance to conduct the research, which took place the following school year.

## **RESEARCH APPROACH**

The principal research approach utilised in this study was descriptive and observational. Bilingual classroom observers visited the four cohort classrooms regularly during the school year. Each classroom was visited a total of ten times, and each observation lasted from three to five hours. Unstructured field notes did not utilise pre-assigned categories; rather, observations focused on English language arts and reading/literacy. Observations were designed to capture as much detail as possible about the instructional setting and interactions within it. The field notes served as a written narrative describing in concrete terms the activities and interactions observed. In addition to formal and scheduled data collection, the investigators had many opportunities to converse with and informally interview the teachers. In general, these conversations were focused around issues such as the history, development and operation of the program.

## **FINDINGS**

### **The dual proficiency approach**

One of the precepts of Orquidea's DP program is that typical beginning English reader series are largely filled with one-syllable or two-syllable, daily-use vocabulary with roots in German or Anglo-Saxon languages. Spanish-speaking primary students find it more difficult to efficiently use a German- or Anglo-Saxon-based ladder to content comprehension. The teachers believe that the Latin-based roots of Spanish are best used as a cornerstone for these students when instructional materials lend themselves to utilising metalinguistic strategies for which the students' home language constitutes a foundational building block. The DP team further asserts that the best tie from Spanish to English acquisition is found in non-fiction, academic subject matter trade-books (not textbooks) written for primary-grade students.

From the perspective of the DP team, utilising content-area trade books for literacy instruction is a two-point winner: not only is the connection from the known language to the second language much clearer, but also the time spent in reading instruction using these materials means content standards will be addressed during a far greater percentage of the school day. Specifically, they find that the vocabulary necessary to describe and understand state content standards in geography, earth's place in the solar system, history, geology, biology, mathematics and all other content subjects is largely of Greek and Latin origin. Examples of some of these content-specific words include *arquitectura*, *columna*, *colossal*, *astronauta*, *celestial*, *espacio*, *navegar*, *equivalente*, *científico*, *comparacion*, *carnivoro* and thousands more, all of which have virtual cognates in English. Additionally, core academic process words like compare (comparar), connect, (conectar), analyze (analizar), process (proceso), control (controlar), extend (extender), investigate (investigar) are widely represented among the cognates frequently identified (identificados!) as target words that often distinguish academic language from everyday language.

Researchers in the area of second language and reading have suggested that use of cognates as a scaffold to language acquisition and comprehension is a useful strategy (Garcia, Jimenez & Pearson 1998; Jimenez, 1997a, 1997b; Jimenez & Gamez, 2000). However, they have noted that there is a metacognitive aspect to this approach that must be mastered as well for the strategy to be useful. The Dual Proficiency teachers emphasise the need to teach the cognate strategy explicitly. They have found that students, as they begin kindergarten, are almost totally unaware of this potential scaffold to understanding academic language. In fact, they may well be primed to "leave their Spanish at home". They have to be explicitly instructed to see the connection – a linguistic bridge from Spanish to English – and be consistently prompted to look for it during the early primary grades.

To utilise this bridge, teachers must know how to teach content subject matter in Spanish and then visually and orally connect the Latin-based academic vocabulary, which often has roots in daily-use Spanish as well as in academic Spanish, to academic English. Students need to learn not only the strategy, but when and how to use it. As our teacher partner notes, a one-letter difference is sufficient to throw off a six-year old until the child has been taught to see the relationships and can see the "roots". They may all know "carne" but they need to be shown that *carne* is the foundation for "carnivore" and taught that "vor" is has to do with eating, as in *devorar* and devour, *voraz* and voracious, *herbivoro* and herbivore.

These teachers note that huge blocks of classroom time in sheltered or mainstream, English, primary-grade classrooms are dedicated to decoding artificially assembled phonetically-based selections conveying minimal academic content information. Therefore, a Spanish-speaker in sheltered or mainstream English instruction spends the bulk of the school day practising decoding of basic, daily-use English vocabulary unrelated to Spanish. Our teacher co-author reports her observation that, because the bulk of the one- and two-syllable words in common use in beginning reading textbooks are of Anglo-German-based derivation, they are not at all similar in spelling or pronunciation to their Latin-based synonyms (for example, daily use English: "house", German: "Haus", as compared with academic English "domicile" and Spanish "domicilio".)

**Excerpt One: Building on Spanish to Learn English**

What follows illustrates the intentional and systematic way that Latin-based Academic English and Spanish relationships are made explicit in this same, second-grade classroom as a way of helping students recognise the connections between their two languages. This excerpt is from a vocabulary lesson.

(There are many picture cards taped onto the board with the English term written next to them. The target words are derived from the Spanish language children's trade-book *Los cavernícolas (The cave dwellers)* which is used in the DP class following two, prior, second-grade units that include the titles *La tierra y el cielo (Earth and sky)* (Pérols, 1999) and *El dinosaurio* (Delafosse, 1992) (*Dinosaurs*) from the same publisher. The teacher engages the students with a vocabulary lesson. Her goal is to get them to see that the English and Spanish terms are very similar in sound and in spelling. She is explicitly teaching the students to use the Latin/Spanish-Academic English connection tool which they possess.)

- Ms. M: Sitio es site (English). What's the difference between this (pointing to sitio) and this (pointing to site)? Jose, This is fragil (Spanish) and this is fragile (English). (T writes words on the board next to the English word: sitio, site; fragil, fragile). Que tienes que añadir? Now look at this (writes identify next to identificar). (T writes "coleccion.") What's the word in English? (T writes "collection.") En ingles...me encanta como esta sentada Irene. Cuando miran "cion" (Spanish) se cambia a "tion" (English) y se pronuncia "shun." It sounds like "shhhhhh." It's very very... [What do you have to add? Now look at this (writes identify next to identificar). (T writes "coleccion.") What's the word in English? (T writes "collection.") In English...I like the way Irene is sitting. When you see "cion" (Spanish) change it to "tion" (English) you pronounce it "shun." It sounds like "shhhhhh." It's very very...]
- Ms. M: How do I say this in English? In English, you say prehistoric animals. Animales prehistoricos. Museo (Spanish), museum (English). Exhibicion, fue un exhibicion en un museo. Vimos una exhibicion de dinosaurios. Exhibicion es lo que muestran los museos. Esta exhibicion es una pintura. Exhibicion es en ingles? Exhibition. Spell it for me, Eduardo.  
[Exhibition, we went to an exhibition in a museum. We saw an exhibition of dinosaurs. Exhibition is what the museum shows. This exhibition is a painting. Exhibicion es en ingles?]
- Eduardo: E-x-
- Ms. M: What's this? (Pointing to "hib.")
- Eduardo: h-i-b
- Ms. M: Then we know the rule...
- Eduardo: t-i-o-n
- Ms. M: What's this word? Look how it looks (Ms. M. is referring to "esqueleto" in Spanish).
- Ss: Skeleton (English).
- Ms. M: Glaciar (Spanish), glacier (English). One little change. Look what changes. Just "a." Hachas (Spanish) is...?
- Ss: Ax.
- Ms. M: What's the word? Ax. What's this? Ambar (Spanish) is amber. There are fossils inside and this is a saber tooth cat. These large teeth are when they're used sometimes the tusk from elephants. This is above. They used to make

- marble. The tusks, they make. It's an ivory. They used to kill elephants and their tusks for their very beautiful jewelry.. translucent. Se puede ver como una perla. It's against the law. La gente mata el animal y dejaba la carne y solo se llevaban los colmillos. Que palabra va con este? (points to ancient). [It looks like a pearl. It's against the law. People kill the animal and leave the meat and only take the tusks. What word goes with this? ]
- Diana: Antiguo.
- Ms. M: Antiguo. Now look at the word. (She writes antiguo.) Que quiere decir? [What does it say]
- Ss: Viejo. Este era un carro de los bomberos (She is pointing to a picture of an antique firetruck) [Old. This was a firetruck]
- Stefani: Como prehistorico.
- Ms. M: Si, pero no. Habian carros? [Yes, but no. Were there cars?]
- Ss: No.
- Ms. M: Algunas personas hacen colecciones de cosas antiguas. Antiques. (She writes "antiques.") Angela, que es? (She points to a picture of the map of the arctic ice cap). [Some people make collections of antique things. Antiques. (T writes "antiques.") Angela, what is this? (T points to a picture of the map of the Arctic ice cap).]
- Angela: Artico.
- Ms. M: How do you say it in English?
- Angela: Arctic.

This excerpt illustrates the deliberate and systematic way that the teacher guides the students to leverage their knowledge of Spanish to help comprehend English. The choice of words is strategic and systematic, with the goal of emphasising the root similarity and the common simple transformations between the Spanish and English cognates, for example *sitio* and "site:, *fragil* and "fragile". In addition, she explicitly instructs the students about a metalinguistic rule, namely when one encounters "cion" in Spanish, it can be changed to "tion" for the English equivalent and pronounced "shun." She also points out how sometimes the English equivalent of a word in Spanish is discovered through a simple one-letter change as in "glaciar" vs. "glacier." It is also important to note that all of this vocabulary and language instruction is going on with direct connection to the social science unit. These mini-language lessons are not isolated, but occur throughout the day and in all subject areas. They are an important feature of the instructional approach which helps students leverage their existing language competence into a broadly applicable skill – cognate recognition – that will help them reach achievement standards for both language proficiency and academic subject knowledge.

### ***Excerpt Two: The caveman discussion***

The following lesson excerpt is also from the same second-grade unit, the goal of which was to develop the students' understanding of human migrations as survival strategies. Cross-content links include literacy, academic language development, human history, world geography and archeological science. Ms. Melquiades builds on the historical theme that has served as the foundation for the lesson and extends the work begun with these students by her DP colleagues in kindergarten and first grade.

- Ms. M: Que es esto? (She holds a picture of a migration map). [What is this?]

- Many Ss: Un mapa. [A map]  
 Manny: De las personas que... [Of the people who...]  
 Ms. M: Right, y la palabra muy importante. Primero, se trata del hombre primitivo. [Right, and the very important word. First, it relates to primitive man]  
 Maria: Se desplaza. [They move]  
 Ms. M: Se desplazaron. Empezamos en Africa y despues se desplazaron y se fueron a Europa. Empezaron en el norte de Africa. Porque se desplazaban? [They moved. We started in Africa and later they moved and they went to Europe. They started in northern Africa. Why did they move?]  
 Eduardo: Un viento fuerte. [A strong wind]  
 Ms. M: Quizas el ambiente no era conveniente. Porque se desplazaron sus padres? [Perhaps the climate wasn't hospitable. Why did your parents move?]  
 Ss: Para trabajar [To work]  
 Ms. M: Right. El trabajo de ellos era matar, cazar, tejer. Cuando una person no tiene casa fija se llama? (pause). Nomadas. Nomadas son personas que necesitan cambiar de lugar a lugar. Se desplazan. Se desplazaron porque necesitan comida. [Right. Their work was to kill, hunt and weave. When a person doesn't have a permanent home, they're called (pause) Nomad. Nomads are people who need to change from place to place. They move. Then moved because they didn't have food.]  
 Juan: The monkey the person was, how they change from monkeys?  
 Ms. M: Eramos monos? [We were apes?]  
 Jose: Cavernicolas. [Cavemen]  
 Ms. M: Otra clase de especies. (T writes "especie de mamifero" - las personas mamiferos.) Porque tienen pelo las vacas? Yo tengo plumas? Me voy y voy a volar. Tiene pelo? Por que mas? No me digan mas animales. I know that you know. Changos son gorillas.[Another type of species. Why do cows have hair? Do I have feathers? Do I go fly? Does it have hair? What else? Don't give me more names of animals. I know that you know. Monkeys are like gorillas.]  
 Various Ss: Caballos, elefantes, zorros, perros, vacas, leones, tigres, cerdos, pumas, ratones, leopardos, mamuts! [Horses, elephants, foxes, dogs, cows, lions, tigers, pigs, pumas, mice, leopards, mammoths!] (T makes a list of these animals on the board as Ss shout them out.)

(At the point, the class breaks into groups, and this small group continues talking with the teacher about cavemen using a highly illustrated, transparent page book called *Los cavernicolas* (Grant, 1999) with copies for each child.)

- Ms. M: You'll need your brain. Vamos a mirar este libro, Los Cavernicolas. Vamos a dar un vistazo. De que se trata? [Let's look at this book, The Cavemen. Let's take a look at it. What is it about?]  
 Ss: Los mamuts! [The mammoths!]  
 Ms. M: Vamos a mirar unas cosas interesantes. [We are going to see interesting things.]  
 Don't read it. Just look at the pictures  
 Juan: They funny looking [sic]! Ha ha ha. Keep going.  
 Eduardo: Whoa! Mira! [Look]  
 Sandra: O es un chango. [Oh, it's a monkey.]  
 Evelina: Una calavera [a skull]  
 Juan: Hay huellas. [There are footprints.]  
 Sara: That's interesting!

- Juan: Ooh, look! Look! Ellos matan patos! [They kill ducks!]
- Evelina: Cazan pescados, mira. Parecen que quieren matar a este, mira. [They hunt fish, look. Looks like they want to kill this one, look.]
- Jose: Mira, estan cazando un mamut! Mira, van a comer pescados. Alguno cazaron pescados alli. [Look, they are hunting a mammoth! Look, they are going to eat fish. Someone hunted for fish there.]
- Evelina: A mi no me queda. (Puts her hand on the handprint in the book). Un caballo! [It doesn't fit me.. A horse!]
- Ms. M: You're done?
- Juan: Yup. Entraron ellas. Estan escondidas. [They came in. They are hiding.]
- Ms. M: Really? Vamos a empezar. Right. Good. Aqui, mira en la primera pagina. Pon los libros para alla. Este lugar, una persona decidir... [Really? Let's start. Right. Good. Here, look at the first page. Put the books there. This place, one person decides...]
- Rosa: Se parece! [They look alike!]
- Ms. M: Si se parece. Es un sitio o yacimiento donde algunos ven un pedazo de casa, fosil y deciden que hacer. Que tienes que hacer? [Yes, they look alike. It's a site, an archeological dig where someone sees a piece of a house, fossil and decides what to do. What do you do?]
- Evelina: Excavar! [Excavate!]
- Ms. M: Ellos estan excavando. Estos son diferentes de los paleontologos. Estos son arqueologos. "Arqueo" quiere decir antaño... de los maya, los aztecas, los zapotecas, y excavan y sacan las cosas de alli. Y despues los estudian. Todo de la gente del pasado, civilizacion. Las cosas que ellos encuentran son artefactos. Right. Son los artefactos, son los restos que dejaron. Muchas veces son la basura. Asi vamos a mirar la pagina de aca. La herramienta. Y que es? [They are digging. They are different from the paleontologists. Those are archaeologists. Archaeo means ancient...from the Mayas, the Aztecs, the Zapotecs, and they dig and bring things from there. After that, they study them. Everything from people from past civilization. The things that they find are artifacts. Right. They are artifacts, those are the things they left behind. Many times, it's just garbage. Let's look at this other page. The tools. And what is it?]
- Ss: Cubeta y taza de medir. [A bucket and measuring cup.]
- Ms. M: El pico, el cincel, y que mas? Es para balancear. No se como se llama. [The pick, the chisel, and what else? It's to balance. I don't know what is called.]
- Evelina: Es pintura adentro? [Is that paint inside?]
- Ms. M: Se llama yeso (yeso-plaster). Usan yeso para pintar casas, si, tienes razon. Eso fue una copia. Que mas ven? Que otra herramienta? [It's called plaster (yeso-plaster). They use plaster (whitewash) to paint houses, yes, you are right. That was a copy. What else do you see? What other tool? Juan?]
- Evelin: Un microscopio! [A microscope!]
- Ms. M: Si, muy bien! [Yes, very good!]
- Evelina: Son para ver como estan? [Are they meant to see what they look like??]
- Ms. M: Agrandar. Microscopio. Hace que, Evelina? Con una lupa puedes ver algo diminuto, algo pequeno. Se ve mas grande. (She shows Ss a magnifying glass, and then draws a labeled diagram illustrating the difference between a telescope and a microscope). [Enlarge. Microscope. What does it do, Eva? With a magnifying glass you can see something diminutive, something small. It looks bigger]
- Ms. M: Algunas veces tienen que encontrar huesos chiquitos. Juan, ensename algo. Aqui, que son? Fosiles, huesos, apunte los huesos, everybody, good. Objetos

- tallados. Aca, esta. [Sometimes they have to locate small bones. Juan, show me something you see. Here, what are these? Fossils, bones, point to the bones, carved objects.](T grabs some artifacts she has brought to class). Esto, antes de empezar. Empezo de un pedazo de madera. (Ss touch it. It resembles a wooden pinecone). Una persona, que es artista, lo tallo con cuchillo. Esto esta tallado. Uds. ven algo tallado donde esta el cuerno tallado? You're jumping ahead. Ves el hombre tallando? Juan, you said something important. [These, before we start. It began from a piece of wood. A person who is an artist carved with a knife. This is carved. Do you see something carved where the horn is? You're jumping ahead. Look, do you see the man carving? Juan, you said something important.]
- Juan: Tejidos. [Weavings.]
- Ms. M: Tejidos estan hechos de que? [Weavings are made of what?]
- Many Ss: Tela. [Cloth.]
- Ms. M: A veces, esas cosas duran. Estan en capas de tierra con y huesos. [Sometimes those things last. They are in layers of dirt with bones.]

The choice of migration for survival as the over-arching concept behind this unit is strategic, as it is an important aspect of the life histories of many students in the classroom as well as of the community as a whole. In fact, it is the history of the human race. Furthermore, the second-grade, social studies standard taught by Ms. Melquiades states that the students should, "Locate on a map where their ancestors lived, describing when their family moved to the local community, and describing how and why they made their trip." Clearly, Ms. Melquiades moves far beyond the state content standards in her teaching, tying historic human behaviours to choices made by the children's parents.

The discourse in this seemingly informal conversation is laden with academic vocabulary to which the students would be unlikely to have adequate exposure for mastery apart from the classroom environment: *primitivo* (primitive), *desplazarse* (migrate, displace), *ambiente* (environment, ambient), *nomadas* (nomads), *cavernicolas* (cavern dwellers), *mamuts* (mammoths), *amamantar* (to nurse a baby, related to mammal and mama), *calavera* (skeleton), *huellas* (footprints), *yacimiento* (archeological site), *fossil* (fossil), *paleontologos* (paleontologists), *arqueologos* (archeologists), *civilizacion* (civilization), *artefactos* (artifacts), *herramientas* (tools, related to hierro, ferrous: iron), *cincel* (chisel), *microscopio* (microscope), *objetos tallados* (carved objects). Many, although not all, of these words, show a close correspondence between the students' native language and English or are tied to related Latin-based word families. Again, this strategy is not haphazard, but is rather an integral part of the approach, as the teacher works to insure that the Latin-knowledge assets possessed by the Spanish-speaking students are used to the fullest advantage to access the academic curriculum

At this grade level in the Dual Proficiency class, most reading to and by children is expository (approximately 60%). This choice of expository material dominating narrative material is another factor differentiating the Dual Proficiency team's literacy/content instruction. More typical instructional approaches, including mandated reading series, tend to be predominantly narrative with small aggregations of expository writing.

As illustrated in Excerpts One and Two, Academic English and academic literacy skills are advanced by capitalising on the students' natural interest in learning about the world and by

making skillful use of the felicitous fact that the students come to school with knowledge of a Latin-based language. State standards are the framework, but the teacher weaves them into simultaneous reading and content instruction related to the children's life experiences.

Repeated access to the same content and vocabulary in both languages is promoted by filling the bookshelves with a wide variety of trade books meeting the needs of learners at different literacy levels in both languages. Daily class time is provided for self-selected student enjoyment of those books. By permitting the students to read either individually or to peruse the books in pairs or threes, and by monitoring and engaging in on-task conversations about the books with individuals or groups, the teacher increases opportunities for use of the content related language.

### **Cross-content instruction: Adding English**

DP teachers at Orquidea provide cross-content instruction incorporating literature, science, music, math, social studies and art. They use cross-curricular themes to create active readers and writers by engaging students in authentic literacy tasks in both languages that emerge naturally from interesting and worthwhile topics and ideas. Student choice plays a major role and topics extend beyond the classroom walls. Learning tasks involve a variety of reading and writing opportunities; promote discussion and collaboration; and build upon students' interests, abilities, background, and language.

Our teacher co-author points out that there is no "transition to English" reading program required for students in Dual Proficiency. The idea that many aspects of reading transfer from the first to the second language (August & Shanahan, 2006) sums up the vertical team's observation during decades of experience implementing and developing the DP program: English "decoding" follows with minimal additional instruction once the children know both the subject and the academic vocabulary in Spanish and have learned to comprehend the words in oral English from content-filled songs, poems and read-alouds. These activities contribute to the cross-content connection as carriers of both language and academic information.

The next excerpt illustrates cross-content teaching in Ms. Luna's explicit connection of the fiction literary pieces under study (especially *Mrs. Frisby and the rats of NIMH*, O'Brien, 1971) to the science concept of alternative scientific approaches to studying species' behaviour: in the laboratory – where more control and closer observation and measurement are facilitated, and in their natural habitat – where the scientist has less control but the circumstances are more authentic. The literature piece familiarised the students with rich academic language in an exciting, well-written context before the expository study of Jane Goodall's work with gorillas was begun. The excerpt indicates student understanding of science terminology, including such terms as *observe, observation, laboratory, clues, comparison, experimented, experiments, behaviours, natural habitat, specific, objective, communication, refuge, and methods*.

Ms. L:            Como terminamos el cuento del gatito de Koko y les estaba diciendo de Jane Goodall que fue a vivir con las chimpances. Dime de los programas que hay de la naturaleza. [Since we finished the story of Koko's Kitten. I was telling

- you about Jane Goodall who went to live with the chimpanzees. Tell me about programs about nature.]
- Students shout out answers.
- Alberto: Discovery Channel.
- Mercedes: Nature Guy.
- Jose: La Vida Animal. [Animal Life]
- Ms. L: Cual es la meta de estos programas. [What is the objective of these programs?]
- Esteban: Para observar los animales. [To observe animales.]
- Ms. L: Cuales son los metodos? [What are the methods?] (Silence) Piensan en que hacia el Dr. Shultz en comparación con Jane Goodall y los chimpances. [Think about what Dr. Shultz did in comparison with Jane Goodall and the chimpanzees.]
- Alberto: Experimentaba? (OC: The teacher refers to Dr. Shultz because the class is reading *The Secret of NIMH*. In the book, Dr. Shultz conducts experiments on lab rats.) [He did experiments?]
- Ms. L.: Como? Eso era en el lab. [How? That was in the lab.]
- Alberto: Las rata vivian en las jaulas. [The rats lived in the cages.]
- Ms. L: Si. Y cual es el habitat de las ratas en la ciudad? Si Dr. Shultz queria observar sus animales en su habitat natural pero decidio observar en un lab. Por que Jane Goodall, no? Piensan. [Yes. And what is the habitat of rats in the city? Yes, Dr. Shultz wanted to observe his animals in their natural habitat, but he decided to do his observations in a lab. Why didn't Jane Goodall?]
- Mercedes: Queria ver su comportamiento. [She wanted to see their behaviour.]
- Ms. L: Sin que? [Without what?]
- Mercedes: Sin experimentos.[Without experiments.]
- Ms. L: Su comportamiento. Y me gusta esa palabra. Y la voy a poner aquí. [Their behaviour. I like that word. I am going to write it here.] (Ms. L writes the word *comportamiento* on the board.) De que estoy hablando? [What am I talking about?]
- Joaquin: Lo que hacen. [What they do.]
- Ms. L: Lo que hacen. Especificamente? [What they do. Specifically?]
- Marco: Como viven. [How they live.]
- Ms. L: Muy general pero lo voy a escribir de todos modos. [That's very general, but I'm going to write it anyway.] (Next to the word *comportamiento*, the teacher writes words about specific behaviours.) Si digo como viven, what do I mean by that? [If I say, "How they live,...."]
- Students: Lo que hacen. [What they do.]
- Ms. L: OK, pero vamos a ser mas especificos. Si alguien estudia que haces en tu casa...[OK, but we are going to be more specific. If someone studies what you do in your home.....]
- Marco: Veo la tele. [I watch television.]
- Sandra: Leo. [I read.]
- Ms. L: Trabajos. Como viven y que hacen es lo mismo. Lo puedo quitar? [Work. How they live and what they do mean the same. Can I remove it?] (She had written *como viven* but erases it because it does not add to their list.)
- Julieta: Juegos. [Games] (Students add other ideas that the teacher adds to the list on the board: *alimentan*, *duermen*, *refugio*. [they eat, they sleep, they take refuge])
- Joaquin: Como se comunican. [How they communicate.]
- Ms. L: Bingo! Como se comunican. Bingo. [Bingo! How they communicate.] OK, en este video estamos observando comportamiento y como viven. [In this video

we are observing behaviours and how they live.] (She repeats the words from the list the class created together.) La gente busca claves para saber como viven los animales. Para saber como viven la gente. Este es un video de una observación de gorilas. [People look for clues to understand how animals live. To know how people live. This is a video of an observation of gorillas.] (She begins the video and tells the class the title of the video, “Mountain Gorillas: Gentle Giants.”)

### Home-school connection

The previous excerpts provide examples of instruction from two Dual Proficiency classrooms using students’ home-source knowledge and experiences as a departure point for expanding standards-based content knowledge and academic vocabulary acquisition. Both academic discourse and room environment in these classrooms reflect the genuine respect that Ms. Luna and Ms. Melquiades have for the communities from which their students come and their conviction that making the home-school connection advances academic achievement. Their approach to standards mastery reflects two guidelines common to US educational philosophy: “start teaching where students are” and “expand the social, cultural, and intellectual horizons of students”. Application of these principles leads the Dual Proficiency teachers to consider students’ life experiences and “funds of knowledge” in unit planning, in selecting instructional materials, in motivating performance, and in developing effective teaching techniques. The teachers recognise that students learn in different ways, many of which are governed by their cultural socialization.

It is important to note the community-building and home-school connection effects of the fact that the children of the four cohort teachers in this study have been with the vertical-team teachers since kindergarten, when they were enrolled in one of the two kindergarten classes taught by a pair of DP teachers, a mother and daughter, natives of Spain. The home-school connection began in those kindergarten classes and included steps taken by the mother-daughter team to encourage parent participation in the classroom as volunteers, to teach basic literacy to some of the parents who indicated a desire to learn along with their children, and to help the parents understand the opportunities and expectations typical of US schools in relation to parent rights and responsibilities. Students then moved en masse to the DP first grade, then to Ms. Melquiades’ second grade and, finally, to Ms. Luna’s third-grade and then fourth-grade classroom.

An example of the home-school connection can be seen in a foundational unit in the first-grade DP class, “Remembering our Ancestors: Los Dias de Difuntos” (Days of Remembering the Dead). The first-grade DP teacher introduces songs and reads stories from the child’s Hispanic/Indigenous heritage. He assigns students to do “interviews” with parents and grandparents to focus on the contributions of European and Indigenous American cultures to remembrance of the deceased by writing and drawing about one of their ancestors. Parents come to class to describe the culturally rich traditions surrounding the ways of remembering their loved ones in their home country. Everyone sings traditional songs together (teacher, parents and children) including *A don Martin, tiririn, tiririn, La ca chumba*, and *Arroz con leche*. Books related to the holiday like *Pablo recuerda los dias de muertos* (Dias, 1993) (*Pablo remembers the Days of the Dead*) and *Gabrielito, el fantasmita simpatico en Mexico* (Schrade, 1979) (*Gabrielito, the friendly little ghost in Mexico*) are featured during this unit.

The children are encouraged to take the books home (the team teachers have assembled collections of a dozen or more copies of each) and discuss the books with their parents.

The same concept is continued in English, comparing the origins and traditions of the celebration of Halloween with *Dias de Difuntos* (Days of the Dead) and recognising the roots of Halloween as the Eve of All Hallows. The cross-content features of this unit link geography, history, music, art and both target languages.

A major goal of the first grade is to begin developing an awareness of the child's place in history. That beginning awareness will then be expanded in ever greater historical and geographical detail as the children move through subsequent years in the program. As a beginning step, the children often make illustrated timelines, generally ending with themselves as "*La Actualidad*" or "The Present Time". Literally, they begin to see that they are "part of the picture".

Meanwhile, in Ms. Melquiades' second grade, the start of the study of the Mayas brings the focus to the American continent and its principal grain, corn, after the immediately preceding second-grade unit on the domestication of wheat and the development of Egyptian civilization on the other side of the Atlantic. Ms. Melquiades had begun the year with "Earth and its Place in the Solar System" (linked to a growing understanding of the relationship between celestial orbits and cycles of months, years, seasons, days and related climate zones). She had completed previous units developing the students' initial familiarisation with the continents and oceans begun in first grade.

Using the Latin/Spanish-to-Academic English-link, reinforced through content and language-rich songs (for example "Let me tell you 'bout the continents" in which children take turns pointing to the continents while the rest sing), she moves on through geography and geology (fossils and dinosaurs) to history, focusing on human survival strategies from the time of early man, the intertwined role of the water cycle and seasonal cycles in food production in different regions of the world, the rise of early civilizations, crop and livestock domestication, and the producer-consumer cycle leading to the present. Ms. Melquiades continually relates these units to the lives of the students in her class and to work done in first grade.

In the following excerpt, Ms. Melquiades accesses her students' background knowledge about Mexican food staples to focus on the cultivation of corn, a crop that played a major role in the history of Mesoamerica. She also uses this opportunity to emphasise the important role of indigenous languages as contributors to Spanish vocabulary and compliments one volunteer mother's cooking skills. A few days later, this parent comes in to set up a griddle and make hand-patted corn tortillas with each child in the class. During the tortilla-making process, the parent also shares information about raising and preparing the corn for the masa.

The group is working on a language arts lesson using the story, *The corn grows ripe* (Rhoads, 2001). There is a graphic organiser charted on a large piece of white paper taped to an easel. The chart has "photographs" on the left column and "story" on the right column. Underneath photographs, the words listed are: hamacas, casas, verduras. Underneath "story", the words are: hamacas, religion, rifle, casa).

- Marco: Cacahuates. [Peanuts.]  
 Ms. M: Otra palabra de Nahuatl. [That's another Nahuatl-derived word.]  
 Marco: Sus caballos [Their horses.]  
 Ms. M: En Taxco [In Taxco]  
 Marco: En el terreno cerca de mi casa sembraba muchos elotes. [On the plot of land near my house, he planted lots of corn.]  
 Ms. M: Entonces tu sabes mucho del maiz. [Then you know a lot about corn.]  
 Marco: Sembraba platanos. [He also planted bananas.]  
 Gisela: My mom is from Mexico and knows how to talk Nahuatl.  
 Ms. M: Where is she from?  
 Gisela: Puebla  
 Raquel: Mi abuelita y abuelito tienen una milpa y luego crece el elote y luego mi mami arranca el elote y mi mami los hace. [My grandmother and grandfather have a cornfield and then the corn plants grow and then my mommy pulls off the ears of corn and prepares them.]  
 Irene: Cuando hay un party, hace champurrado. [When there's a party, she makes a corn and chocolate drink.]  
 Ms. M: Tu mamá hace un mole muy rico. [Your mother makes a very delicious peanut-chocolate sauce.]  
 Evalinda: Elote quemado. Yo me lo como. [Charred corn. I eat it up!]  
 Rosa: Tostado! [Toasted!]  
 Ms. M: Sobre una parrilla? [On a grill?] (pause). Asado, [Roasted?] lots of background. (Referring to students' knowledge.)

Ms. Melquiades then extends the students' background knowledge conversation to bring in what the students can learn through interviews about their parents' and grandparents' experiences growing corn, thus accessing their "funds of knowledge". She has the students write and post their family interviews, as exemplified by the following two pieces, both of which were written by the newest immigrants in the class with the least English knowledge and the least formal schooling.

*Mi familia (escrito por Evalinda): Mi familia es de Guatemala ellos hablan en Quiche y español.[sic] Vivian en una casa de madera y de ladrillo. El maiz se cultivaba sembrando la semilla en la tierra siempre se pone abonos naturales, no químico para que los agua también se hacha (sic) y con más agua se crece. [sic] El maiz es importante. El maiz nos da comida. Como la pupusa.[sic] Usamos masa de maíz y después lo cultivamos en la estufa. [sic] [My Family (written by Evalinda): My family is from Guatemala they speak Quiche and Spanish. They lived in a wood and brick house. They cultivated corn planting the seed in the earth they always use natural fertilizers, not chemicals they put water on them also and with more water it grows. The corn is important. Corn gives us food. Like pupusas. We use corn masa (dough) and afterward we (cook it) grow it on the stove.*

*Escrito por Indira: (No title). Mis padres son de Acapulca [sic] y también mi familia. Ellos hablan Amusco y también un poquito en Español.[sic] Viven en una casa hecha de tariquez [sic] de tierras. El maiz se cultivaba en la tierra. Se siembra las semillas y poco a poco crece la milpa. Después hace una cosecha de elotes. El maiz era importante para comer. El elote es importante porque nos da el maiz. Con el maiz se hace tamales y atole. [Written by Indira: My parents are from Acapulco and also my whole family. They speak Amusco and also a little Spanish. They live in a house made of earth blocks. Corn is cultivated in the land. The seeds are planted and little by little the cornfield grows. Afterwards, there is a harvest of the*

ears of corn. Corn is important food. Corn plants are important because they give us corn. With corn tamales and atole are made.]

Pictures of the students (a few in traditional Mayan dress) are mounted above their writing on the bulletin board. Note the mixing of English and Spanish in the following one-to-one editing session, the scaffolding of the novice by the more expert other, and the positive effect as the teacher both praises Eduardo for learning a new word and then jokes with him, offering him a prize.

- Eduardo: I did a lot of writing already.
- Ms. M: Okay, take it out and let me see it. Alright, what are you doing? Puebla. Puebla es un-Lee lo que escribiste para ver si tiene sentido. [Read what you wrote to see if it makes sense.] You know, esta linea, que tienes que hacer porque vas a empezar un nuevo parrafo? Indentar. [This line, what do you have to do because you are going to begin a new paragraph? Indent.] *(Pause.)* Finger between each word so I can read it. Tienes que poner un dedo para poder leer. [You need to put a finger to be able to read.] *(Ms. M. draws the indent mark on Eduardo's paper and reads aloud).* Mi familia vivia en una casa de madera. [My family lived in a wooden house.] *(She reads on in a whispered voice.)* You already used the word cultivar. [to cultivate] La palabra cultivar quiere decir que alguien esta cuidando las yerbas malas, no? Regando, echando abono. Todo eso esta implicado. Tus padres cultivan el maiz? [The word "cultivate" means that someone is taking care of the weeds, no? Irrigating, putting fertilizer. All of this is implied in "cultivate." Your parents cultivate corn?]
- (As Eduardo and Ms. M: are talking, they are editing parts of his writing.)*
- Eduardo: Mi abuelo tenia un terreno con una milpa. Le echaba agua. [My grandfather had a plot of land with a cornfield. He watered it.]
- Ms. M: Quien? [Who?]
- Eduardo: Mi abuelo. [My grandfather.]
- Ms. M: Tu mama no ayudo? *(Eduardo nods his head.)* [Your mother didn't help? *(referring to telling Eduardo about what his grandfather did)*] So we can say, "Mi mama me dijo"? [My mother told me?"] *(Ms. M. begins to write that down.)*
- Eduardo: Mi mama le echaba agua para mojar la tierra. [My mother would water to wet the land.]
- Ms. M: No se empieza con "y". Pon un punto. [We don't start with "and". Put a period.] Reads from Eduardo's paper "araban y se cosechaba...Era importante por que daba comida." ["they plowed and harvested..." ] *(Ms. M. turns and looks at Eduardo)* Very nice! *(Regarding the use of the word "araban" because it was a vocabulary word learned the week before.)* Do you want a special pin? *(Jokingly.)* So let's start a new page. En la nueva pagina hay que darle un titulo. Como quieres llamar tu entrevista? [On the new page it's necessary to put a title. What do you want to call your interview?]
- Eduardo: Como mi familia cultivaba el maiz [How my family cultivated corn]
- Ms. M: That's your title. Don't forget this is your first paragraph. *(Eduardo writes on his final draft):* Mis papas son de Puebla y de Oaxaca. Ellos hablan zapoteco y nahuatl. Mi familia vivian en una casa de madera. [My parents are from Puebla and from Oaxaca. They speak Zapotec and Nahuatl. My family lived in a wood house.]

Ms Melquiades applies the knowledge gleaned from the parent interviews and writing exercise with her small group, using what the students have already learned in Spanish about growing corn (science: plant growth requirements for soil, nutrients, sunlight, water and their relation to the water cycle and tropical and subtropical climates) to the science lesson. She also engages in a practice that requires significant familiarity with the students' language comprehension skills: code-switching or moving seamlessly from Spanish to English as student comprehension dictates. This approach, while used judiciously and not haphazardly, is viewed by the DP team as reinforcing the message that development of both target languages is a desired goal reflecting the purpose of language: communication of ideas and information.

- Ms. M: That's a good idea. El grano. [The grain.] The grain has formed. Cada grano necesita polen. No se forma si no hay polen. Si, el grano necesita – Yes, la hembra necesita el macho. El polen necesita – El grano es como el bebe. [Each grain needs pollen. It doesn't form if there is no pollen. Yes, the grain needs, the female needs the male. The grain is like the baby.]
- Students: Eeeeeewwwww!
- Ms. M: It's not bad. You've been eating it all your life. Se protege. Como se protege? [It's protected. How is it protected?]
- Ramona: Hojuela [The husk]
- Ms. M: La hojuela. En ingles we say it's the husk. The husk wraps around the corn.
- Lucia: Pero protege las mazorcas. [But it protects the ear of corn.]
- Miguel: Mi papa me enseno. [My dad showed me.]
- Ms. M: I don't see you finishing your drawing. (*Refers to the illustrations the Students are making on the back of the worksheet*)
- Miguel: Ya lo termine. [I already finished it.]
- Ms. M: Can you see the cornsilks? That's a lot of information but you all did a good job. Como se escribe silks? [How do you write "silks"? (*Ms. M. points to the word on the board. Then she helps Miguel finish up his drawing.*) Nice. Okay. Where's the female? Donde esta la hembra? [Where's the female?] Male. Donde esta el hombre? [Where's the male?] You need to make the corn silks. They kind of stand out. Let me show you.
- (*Ms. M. gets a diagram worksheet from the back of the room off of the bulletin board. It's the work students did last week when the student teacher filmed her lesson on the cornstalk.*)
- Ms. M: That's a female. Where's the male? That's it. Where's the corncob? That's it. And where are the kernels?
- Lucia: Se estan secando. (Referring to the kernels.) [They are drying out.]
- Ms. M: That's right. Se estan secando. Necesitan agua. [They are drying out. They need water.]

In these excerpts, Ms. Melquiades demonstrated her regard for her students and their families and communicated to the children their role in history. The identity and background Ms. Melquiades taught focused on a 7,000-year-old bond of the people of Mesoamerica through a cultural identity based on their relationship with corn as the American staff of life.

Many classrooms, both within this district as well as in urban schools across the country, include activities aimed at providing culturally responsive approaches to accommodate the backgrounds and understandings of their students, and often parent involvement strategies

and programs are included as part of this response. Yet one of the features that distinguishes the Dual Proficiency program is that the tie between cultural relevance and standards-based instructional goals is never broken. The academic objectives are never subordinated to cultural goals, and cultural recognition is not limited to holiday celebrations. Instead, both are pursued in daily context in a synergistic fashion so that each strengthens the other.

## **CONCLUSION**

We (Hayes and Rueda) became interested in this study when we discovered teachers who were truly making a difference for their students. The students we observed are those students who would, by every demographic measure, be considered students at risk. They are children of poor immigrants most of whom have minimal formal education. Some of the students come to school without speaking Spanish or English, but rather a third indigenous language. Yet, during the time they spend with the DP cohort teachers, they thrive. They are happy, motivated, intelligent children and they show us what they can achieve with a supportive, respectful and carefully designed learning environment that builds on the significantly valuable “funds of knowledge” they bring to school.

### **An interesting research dilemma**

It is interesting to note that what we describe here is not particularly novel. All of the practices that we have described have been discussed in the literature previously. The scaffolding strategies and instructional practices are consistent with theory from a range of disciplines – education, psychology, sociolinguistics and anthropology, among others. What is unique is that these practices are not often done with the rich combination seen here, nor under conditions which are not entirely supportive, nor for as long a period as this program has operated with no external support or assistance (school, district, or university). From a research perspective, what makes this intriguing is that the traditional research approach to determining the efficacy of any given intervention or approach is to isolate it and then assess the independent effects on one or more outcomes. While there is value in this approach, it is often hard for practitioners to put the pieces back together again, since in their classrooms, practices do not occur in isolation nor in controlled settings. In the classrooms we have described, the reality is more like a dynamic mosaic, where many different threads of practice are woven together and re-woven as the need or opportunity arises. Not all aspects of the program are seen every day or in every lesson, but as a whole they characterise the unique context that makes this program noteworthy. It suggests that a wide array of approaches is necessary to distill the key components that make multi-layered instructional programs like this one viable, although it also raises the possibility that the elements *only* work in tandem, not in isolation.

### **Motivational considerations**

While we did not dwell on the motivational aspects of the program here, teachers in this program clearly and convincingly communicate to students and families that their language and cultural practices outside of school are valued. From kindergarten through all following grades of the DP program at Orquidea, a consistent and real message is sent: “You (the

student) are expected to progress in two languages. Your Spanish knowledge will directly help you to reach a higher level in English than you would be able to reach otherwise.” This is not superficial, cultural window-dressing. It is the first step in teaching the child how to use an effective tool, his Latin-based native language, to access academic English and standards-based achievement. Throughout the year, in every DP class, teachers constantly, explicitly relate academic Spanish to academic English, making the bridge visible and accessible. From kindergarten, the tie between Latin-based Spanish and Latin-based academic English forms the connecting rungs of the two-language ladder speeding the child to higher comprehension of content-based reading material and greater mastery of grade-level standards in all content areas. The few examples in the previously presented excerpts constitute an “aperitif,” a small sample of the DP curriculum and strategies.

### **The importance of dedication, hard work and reflection**

In the two classrooms focused on in this paper, there were clear differences in terms of interactional and instructional styles, Spanish language proficiency, years of teaching experience, and philosophical approaches to bilingual education. While teacher expertise and drive played a role in these success stories, what we saw in common was teachers who, in their own time, worked together to examine their own practice and to problem solve. They knew their students and had closely observed their growth over time. It was not uncommon for Ms. Luna to confer with Ms. Melquiades, for example, about the second-grade standards that the cohort of students from any given year should have internalised by third grade and did not. This helped Ms. Melquiades revise and refine the content she presented. These teachers thought deeply about their instructional practices and had a deep and abiding respect for the children with whom they worked. Teacher expertise and drive also played a role in the success stories.

### **Professional development and a learning community are essential**

One of the factors that makes this setting unique is that, at Orquidea, the professional development (as well as the program itself) was developed and has been carried out by the teachers themselves. This grass-roots, professional learning community created by the DP teachers also served to provide psychological support for their combined efforts, occasionally in times of duress. While DP students often flourished, this was not the case for students in other programs and with other teachers. Because of the school’s overall low achievement, the school received scrutiny and pressure from the district and the county for all teachers to “walk the party line”. Participation in the DP group helped teachers hold to their pedagogical convictions. The group created a forum for continual reflection about and close examination of each member’s practice in a loving and supportive manner. A clear focus on instructional quality was evident at their regular meetings which featured presentations by individual teachers of their implementation of the program, general discussions about the program philosophy and theory, and discussions about specific teaching issues or problems. Their professional development was highly practice-focused, but theoretical considerations about second-language learning were also central and explicit. The teachers modeled a desire to learn and to improve their pedagogy.

We do not claim that these are perfect teachers nor that DP is a perfect program. Nor do we know how DP would be implemented in a wider setting. Given the hard work by experienced master teachers over many years to refine their program and its delivery, it might be very difficult indeed. But we do know that current public school instructional procedures are not leading to high levels of achievement for English-language learners and we posit that the three program elements (development of academic English through use of the Latin-Spanish cognate ladder, utilisation of content-based trade books as a significant element of early literacy instruction, and strengthening the home-school connection) offer alternatives worthy of further investigation. Importantly, a key indicator of student progress for these teachers was informal measures, performance-based assessments, and day-to-day monitoring of individual student achievement. Their program was standards-driven, but not test driven. They relied on their three principle strategies to produce improved learning and testing outcomes. We noted that certain key elements were prominent – a shared vision, a strong focus on instruction, regular interaction around pedagogy, a strong focus on students, and a focus on results as a barometer for effectiveness. We would propose that these should be at the core of every successful program.

### **The debate about which language to use in instruction should be superseded by a focus on instructional quality**

As noted at the beginning of the report, much debate has taken place about the *language of instruction* issue for English learners. It is our belief, reinforced by our observations at this school, that the focus should rather be on the *quality* of instruction. With respect to this issue, the work on effective bilingual programs suggests that there is not a single indicator of high-performing or effective programs for English learner students, but rather multiple features that have been found to characterise effectiveness (Gold, 2006). Summarising the results of several “effectiveness” studies for English learner students, as well as his own case studies of six exemplary programs, Gold noted the following features:

- The bilingual programs were a school-wide effort
- Teachers collaborated and team-taught, particularly for ELD instruction
- Staff demonstrated extensive language and cultural competence
- Staff displayed overall support for language and cultural diversity
- Staff demonstrated a focus on the individual student and differentiated instruction
- The school culture emphasised consistent monitoring of students’ progress and teaching to rigorous academic standards
- Staff articulated rigorous expectations of staff and students
- Consistent leadership supported and benefited programs and instruction
- Staff demonstrated a focus on consistent, coherent program design.

While these conditions did not exist school-wide, they did exist within this community of learners. But the consistency with which they have appeared in the literature and in this study as well suggest that they represent a strong set of principles that should be used as a guide in creating or evaluating programs for this population.

We should note that there are limitations in the work we describe here. For example, this work was descriptive, and did not set out to test hypotheses regarding the program or the

independent impact of selected components. In addition, our sample was relatively small and further limited in other respects as well (one geographic area, one district, and a relatively short time span). However, we are confident that we have captured the key aspects of how the program developed, the basic principles and assumptions underlying its implementation, and how it has managed to survive under less than ideal circumstances.

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## REFERENCES

- Arzubiaga, A., Ceja, M., & Artiles, A. (2000). Transcending deficit thinking about Latinos parenting styles: Toward an ecocultural view of family life. In C. Tejeda, C. Martinez & Z. Leonardo (Eds.), *Charting new terrains of Chicana(o)/Latina(o) education* (pp. 93-106). Cresskill, NY: Hampton Press.
- August, D., & Hakuta, K. (Eds.). (1997). *Improving schooling for language minority children: A research agenda*. Washington, DC: National Research Council.
- August, D., & Shanahan, T. (2006). *Developing literacy in second language learners: Report of the National Literacy Panel on language-minority children and youth*. Mahwah, NJ: Lawrence Erlbaum.
- Bailey, A. (2007). *The language demands of school: Putting academic English to the test*. New Haven: Yale University Press.
- Bailey, A., Butler, F., LaFramenta, C., & Ong, C. (2004). *Towards the characterisation of academic English in upper elementary science classrooms*. (CSE Tech. Rep. No. 621). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).
- Baker, L., & Saul, W. (1994). Considering science and language arts connections: A study of teacher cognition. *Journal of Research in Science Teaching*, 31, 1023-1037.
- Bell, P., Briker, L., Lee, T., Reeve, S., & Zimmerman, H. (2007). *Understanding the cultural foundations of children's biological knowledge. Insights from everyday cognition research*. Retrieved September 8, 2009 from <http://life-slc.org/wp-content/up/2007/05/Bell-et-al-ICLS06-FolkBio1.pdf>.
- Bernstein, B. (1990). *Class, codes and control: Vol 4. The structuring of pedagogical discourse*. London: Routledge.
- Boggs, S., Watson-Gegeo, K., & McMillen, G. (1985). *Speaking, relating, and learning: A study of Hawaiian children at home and at school*. Norwood, NJ: Ablex Publishing Group.
- Bransford, J., Brown, A., & Cocking, R. (2000). *How people learn: Brain, mind and experience & school*. Washington, DC: National Academy Press.
- Bruner, J. (1966). *Toward a theory of instruction*. Cambridge: Harvard University Press.
- Butler, F., Lord, C., Stevens, R., Borrego, M., & Bailey, A. (2004). *An approach to operationalising academic language for language test development purposes: Evidence*

- from fifth-grade science and math*. Los Angeles, CA: Center for the Study of Evaluation, National Center for Research on Evaluation, Standards, and Student Testing.
- Carpenter, R., Paris, A., and Paris, S. (1999). *Exploring reading practices in K-3 classrooms that link schools, families, and communities*. Poster session presented at the annual meeting of the American Educational Research Association, Montreal.
- Casteel, C., & Isom, B. (1994). Reciprocal processes in science and literacy learning. *The Reading Teacher*, 47, 538-545.
- Cazden, C., John, V., & Hymes, D. (Eds.). (1985). *Functions of language in the classroom*. Prospect Heights, IL: Waveland Press.
- Cole, M. (1996) *Cultural psychology: A once and future discipline*. Cambridge, MA: Belknap Press of Harvard University Press.
- Crandall, J., & Tucker, G. (1990). Content-based language instruction in second and foreign languages. In Anivan, S. (Ed.), *Language teaching methodology for the nineties* (pp. 83-96). Singapore: SEAMEO Regional Language Centre. ED 366 187
- Delafosse, C. (1992). *El dinosaurio* Madrid: Ediciones SM (translated by P. Barroso) Paris: Gallimard Jeunesse.
- Dewey, J. (1907). Chapter 3: Waste in education. *The school and society* (pp. 77-110). Chicago: University of Chicago Press.
- Dewey, J. (1916). *Democracy and education*. New York: The Macmillan Company.
- Dewey, J. (1933) *How we think: A restatement of the relation of reflective thinking to the educative process (Revised edn.)*, Boston: D. C. Heath.
- Diaz, J.A. (1993) *Pablo recuerda: La fiesta del Dia de los Muertos*, New York: Lothrop, Lee & Shepard Books.
- diSessa, A. (2002.) Why “conceptual ecology” is a good idea. In M. Limon & L. Mason (Eds.), *Reconsidering conceptual change: Issues in theory and practice* (pp. 29-60). Dordrecht: Kluwer
- Epstein, J. (2001). *School, family, and community partnerships: Preparing educators and improving schools*. Boulder, CO: Westview Press.
- Francis, D., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for instruction and academic interventions*. Portsmouth, NH: RMC Research Corporation, Center on Instruction.
- García, G., Jiménez, R., & Pearson, P. (1998). Metacognition, childhood bilingualism, and reading. In D. Hacker, J. Dunlosky & A. Graesser (Eds.), *Metacognition in educational theory and practice* (pp. 193-219). Mahwah, NJ: Lawrence Erlbaum Associates.
- Gasking, I., Guthrie, J., Satlow, E., Ostertag, J., Six, L., Byrne, J., & Connor, B. (1994). Integrating instruction of science, reading and writing: Goals, teacher development, and assessment. *Journal of Research in Science Teaching*, 31, 1030-1056.
- Glynn, S., & Muth, D. (1994). Reading and writing to learn science: Achieving scientific literacy. *Journal of Research in Science Teaching*, 31, 1057-1073.
- Gold, N. (2006) *Six successful bilingual programs in California*. San Diego: San Diego County Office of Education.
- Goldenberg, C. (2006). Improving achievement for English-Learners: What the research tells us. *Education Week*, 25(43), 34-36.

- González, N., Moll, L., & Amanti, C. (2005). *Funds of knowledge: Theorizing practices in households, communities, and classrooms*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Grant, D. (1999). *Los cavernícolas*. Madrid: Ediciones SM (translated by P. Barroso) Paris: Gallimard Jeunesse.
- Hargreaves, A., Earl, L., Moore, S., & Manning, S. (2001) *Learning to change: Teaching beyond subjects and standards*. San Francisco: Jossey-Bass.
- Hartup, W. (1985). Relationships and their significance in cognitive development. In R. Hinde, A. Perret-Clemon & J. Stevenson-Hinde (Eds.), *Social relationships and cognitive development* (pp. 66-82). Oxford: Clarendon Press.
- Heath, S. (1983). *Ways with words*. New York: Cambridge University Press.
- Hutchins, E. (1995). *Cognition in the wild*. Cambridge: MIT Press.
- Jacobs, H. (1989). The growing need for interdisciplinary curriculum content. In H. Jacobs (Ed.), *Interdisciplinary curriculum: Design and implementation* (pp. 1-12). Alexandria, VA: Association for Supervision and Curriculum Development.
- Jiménez, R. (1997a). The facilitating effects of transfer on the reading comprehension of bilingual Latina/o students. *National Reading Conference Yearbook, 46* (pp. 147-155). Chicago, IL: National Reading Conference.
- Jiménez, R. (1997b). The strategic reading abilities and potential of five low-literacy Latina/o readers in middle school. *Reading Research Quarterly, 32*(3), 224-243.
- Jiménez, R., & Gámez, A. (2000). Literature-based cognitive strategy instruction for middle school Latina/o students. In D. Moore, D. Alvermann & K. Hinchman (Eds.), *Struggling adolescent readers: A collection of teaching strategies* (pp. 74-82). Newark, DE: International Reading Association. (Reprint of article: *Journal of Adolescent and Adult Literacy, 40*(2), 84-91.)
- Keys, C. (1994). The development of scientific reasoning skills in conjunction with collaborative writing assignments: An interpretive study of six ninth-grade students. *Journal of Research in Science Teaching, 31*, 1003-1022.
- Kozulin, A. (1998) *Psychological tools: A socio-cultural approach to education*. Cambridge: Harvard University Press
- Langer, J. (2001). Beating the odds: Teaching middle and high school students to read and write well. *American Educational Research Journal, 38*(4), 837-880.
- Lawton, E. (1994). Integrating curriculum: A slow but positive process. *Schools in the Middle, 4*(2), 27-30.
- Lambert, N., & Combs, B. (1998). Introduction: Learner-centered schools and classrooms as a direction for school reform. In N. Lambert & B. McCombs (Eds.), *How students learn: Reforming schools through learner-centered education* (pp. 1-22). Washington, DC: American Psychological Association.
- Lipson, M, Valencia, S., Wixson, K., & Peters, C. (1993). Integration and thematic teaching: Integration to improve teaching and learning. *Language Arts, 70*, 252-263.
- Maatta, D., Dobb, F., & Ostlund, K. (2006). Strategies for teaching science to English learners. In A. Fathman & D. Crowther, (Eds.), *Science for English language learners: K-12 classroom strategies* (pp. 37-59). Arlington, VA: NSTA Press.
- Mayer, R. (2008). *Learning and Instruction* (2<sup>nd</sup> ed.). Upper Saddle River, NJ: Pearson
- McQuillan, P. (1998). *Educational opportunity in an urban American high school: A cultural analysis*. New York: State University of New York Press.

- McSwan, J. (2000). The Threshold Hypothesis, semilingualism, and other contributions to a deficit view of linguistic minorities. *Hispanic Journal of Behavioural Sciences*, 22(1), 3-45.
- Moll, L., Amanti, C., Neff, D., & Gonzalez, N. (2001). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory Into Practice*, 31(2), 132-141.
- Moll, L., & Greenberg, J. (1990). Creating zones of possibilities: Combining social contexts for instruction. In L. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociocultural psychology* (pp. 319-348). New York: Cambridge University Press.
- Moore, D., Bean, T., Birdyshaw, D., & Rycik, J. (1999). *Adolescent literacy: A position statement for the Commission on Adolescent Literacy of the International Reading Association*. Newark, DE: International Reading Association.
- National Research Council. (2000). *Inquiry and the national science education standards: A guide for teaching and learning*. Washington, DC: National Academy Press.
- National Science Teachers Association. (1991). *Scope, sequence, and coordination of secondary school science*. Washington, DC: Author.
- O'Brien, R.C. (1971) *Mrs. Frisby and the rats of NIMH*. New York: Antheneum Books for Young Readers.
- Palincsar, A., & Magnussen, S. (2000). *The interplay of firsthand and text-based investigations in science class*. Ann Arbor, MI: CIERA.
- Pérols, S. (1999). *La tierra y el cielo*. Madrid: Ediciones SM (translated by P. Barroso) Paris: Gallimard Jeunesse.
- Perkins, D. (1991). Educating for insight. *Educational Leadership*, 49(2), 4-8.
- Phillips, S. (1983). *The invisible culture: Communication in classroom community on the Warm Springs Indian Reservation*. Prospect Heights, IL: Waveland Press, Incorporated.
- Pianta, R. (1999). *Enhancing relationships between children and teachers*. Washington DC: American Psychological Association.
- Rhoads, D. (2001) *The corn grows ripe*. New York: Puffin Newbury Library.
- Rivard, L. (1994). A review of writing to learn in science: Implications for practice and research. *Journal of Research in Science Teaching*, 31, 969-984.
- Rogoff, B. (2003). *The cultural nature of human development*. Oxford: Oxford University Press.
- Scarcella, R. (2003). *Accelerating academic English: A focus on the English learner*. Oakland, CA: Regents of the University of California.
- Schunk, D. (2007). *Learning theories: An educational perspective* (5<sup>th</sup> Ed.). NY: Prentice Hall.
- Schubert, M., & Melnick, S. (1997). *The arts in curriculum integration*. Paper presented at the Annual Meeting of the Eastern Educational Research Association (Hilton Head, SC).
- Schrade, A.O. (1979). *Gabrielito, el fantasmita simpatico en Mexico*. Lincolnwood, IL: National Textbook Company.
- Shoemaker, B. (1989) *Integrative education: A curriculum for the Twenty-First Century*. Oregon School Study Council Report 33/2.
- Stoddart, T., Pinal, A., Lutzke, M., & Canaday, D. (2002). Integrating inquiry science and language development for English language learners. *Journal of Research in Science Teaching*, 39(8), 664-687.

- Taylor, B.M., & Pearson, P.D. (2004). Research on learning to read-at school, at home, and in the community. *Elementary School Journal*, 105 (2), 168-181
- Tharp, R., & Gallimore, R. (1989) *Rousing minds to life: Teaching, learning, and schooling in social context*. Cambridge: Cambridge University Press.
- United States Commission on Civil Rights. (1973). *Teachers and students: Differences in teacher interaction with Mexican American and Anglo Students*. Washington DC: Government Printing Office.
- Valencia, R., & Black, M. (2002) Mexican Americans don't value education!" – the basis of the myth, mythmaking, and debunking. *Journal of Latinos and Education*, 1(2), 81-103.
- Valenzuela, A. (1999). *Subtractive schooling: U.S. Mexican youth and the politics of caring*. New York: State University of New York Press.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, eds.). Cambridge, MA: Harvard University Press.
- Vygotsky, L. (1987). *L. S. Vygotsky, Collected Works, Volume I* (R. Rieber & A. Carton, eds.) (N. Minick, Trans.). New York: Plenum (Original work published, 1934).
- Wertsch, J (1998) *Mind as Action*. New York, NY: Oxford University Press.
- Veléz-Ibáñez, C. (1988). Networks of exchange among Mexicans in the US and Mexico: Local level mediating responses to national and international transformations. *Urban Anthropology*, 17, 25-51.
- Yorks, P., & Follo, E. (1993). *Engagement rates during thematic and traditional instruction*. ERIC Document Reproduction Service. [ED363412]

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