# Young English Language Learners

## TeachSmart® ELL Spanish by Hatch®
## Research Basis Whitepaper

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## Contents

Introduction ..... 3
Part I ..... 3
A. How Dual Language Develops in Preschool Children ..... 3
Key Findings about Patterns and Rates of Bilingual First Language Acquisition ..... 3
Morpho-Syntax (grammar and sentence structure) ..... 4
Vocabulary ..... 4
Bilingual Code-Mixing ..... 4
B. The Relationship Between Bilingualism and Cognitive Processing ..... 5
Part II ..... 5
A. English Language Learners' Math and Reading Achievement ..... 5
B. Assessing Young English Language Learners ..... 6
C. Classroom Environment and Teaching ..... 8
Types of Programs: English-Only, Bilingual, Dual Language ..... 8
Language of Instruction ..... 8
The Vital Role of Oral Language Proficiency ..... 9
Transfer of Early Literacy Skills Across Languages ..... 9
D. Specific Instructional Approaches ..... 10
Language and Literacy ..... 10
Mathematics ..... 11
The Power of the Small Group ..... 12
Part III ..... 13
Educational/Instructional Technology and English Language Learners ..... 13
Conclusions ..... 14
References ..... 15
Supplement: Stages of Second Language Acquisition ..... 20
Stage I: Pre-production ..... 20
Stage II: Early production ..... 20
Stage III: Speech emergence ..... 21
Stage IV: Intermediate fluency ..... 21
Stage V: Advanced fluency ..... 21

## Introduction

Effective preschool practices designed to support language-minority children and improve their English ability can assist to counteract educational disadvantages. To do so means the need to understand both the mechanisms through which language (including English) proficiency operate and to pinpoint specific and effective teaching practices and tools by which English proficiency can be increased for these children. This white paper holds a summary of the most current and solid research on these areas. Part I includes How Dual Language Develops, and Bilingualism and Cognitive Processing. Part II includes ELL's Math and Reading Achievement, Assessment, Classroom Environment and Teaching, and Instructional Approaches in Language/Literacy and Mathematics. Part III includes Educational/Instructional Technology and English Language Learners.

* While there are numerous terms used in this literature, the term English Language Learner (ELL) will be used most frequently here. Our working definition of English Language Learner (ELL) is a term used to identify heterogeneous populations of students who have a first (home, primary, or native) language other than English and are in the process of acquiring English. Other terms used to refer to English Language Learners include: language minority students, English as a second language (ESL), culturally and linguistically diverse (CLD), and limited English proficient students (LEP).

## Part I

The focus of this section is on the mechanisms and paths through which language development occurs for children learning more than one language. By understanding how children interact with language helps set the stage for determining best instructional practices for them.

### A. How Dual Language Develops in Preschool Children

Defined as the acquisition of two (or more) languages during the preschool years (i.e., before age 5), dual language learning can happen at the same time (for instance, when parents regularly use two languages with their child); or successively (for instance, when children are exposed to and speak only one language at home during the first 1 or 2 years of life and then go to programs where another language is used) [1].

It is important to have a scientifically-based understanding of dual language learning during the preschool years because apprehensions and misconceptions about young children learning more than one language are held by many people, including parents, general educators, education specialists, professionals who work with young children (e.g., speech and language pathologists and doctors), and educational policymakers [2, 3]. Without accurate knowledge of relevant scientific evidence, there is a danger of making decisions that are not in the best interests of young dual language learners. For instance, policymakers could not support dual language programs on the belief that this is burdensome for preschool children, when in truth the evidence for this is not present. Another area that calls for accurate understanding of dual language learning is assessment and support services because without this what can be expected of young dual language learners might lead to an interpretation of a child's language as delayed or impaired when it is actually typical of dual language learning.

#### *Key Findings about Patterns and Rates of Bilingual First Language Acquisition*

In almost all cases, simultaneous dual language learners gain more proficiency in one language than in the other (often referred to as dominance). The language-specific properties of the languages they are learning

are acquired early in development and in most instances these are the same as those of same age children who are monolingual [4-7].

### *Morpho-Syntax (grammar and sentence structure)*

The same rate of morpho-syntactic development is shown by bilingual children as by monolingual children, at least in the language in which they are dominant [5, 8, 9].

Cross-linguistic transfer of specific morpho-syntactic features from one language into the other has been found and is most prevalent with children incorporating these features from their dominant language into their language(s) that is weaker, rather than from the weaker language into the dominant one [10-12].

### *Vocabulary*

First word production occurs in bilingual children at about the same age (12 months on average) as children who are monolingual [13-16]. Growth rates of vocabulary typically are in the same range as for same-age monolinguals, provided both languages of bilinguals are considered together [13, 17].

Lexical categories distribution (e.g., nouns, verbs, etc.) is also similar for bilingual and monolingual children. Total average conceptual vocabulary (i.e., the number of words they know in either language for different concepts) of bilingual children is also similar to monolinguals. Further, the English vocabulary of bilinguals who are dominant in English is equivalent to that of English norms and, comparably, the Spanish vocabulary of bilinguals dominant in Spanish is equal to that of the Spanish norms [13].

Vocabulary size and the amount of exposure to a language is related so that children show higher vocabulary scores in a language to which they are exposed to more in their everyday lives. A stronger relationship is seen in families that present exposure that is consistent and balanced in both languages compared to those with inconsistent and less balanced exposure. This exposure relationship plays a more important role for the minority language [17, 18].

### *Bilingual Code-Mixing*

It is fairly prevalent that parents, educators, and other professionals take an unfavorable stance on bilingual code-mixing (the use of elements from two languages in the same utterance or stretch of conversation) in children. What often occurs is an effort to follow the one-parent-one-language rule thinking that this will decrease linguistic confusion for children. However, the evidence shows the added challenges of bilingual communication are easily within the capabilities of typically developing children. As we have seen, bilingual children develop for each language that language's specific morpho-syntactic properties early in development. Further, research shows that these children can tap into these simultaneously during production, showing bilingual code-mixing is not because of a blending of the child's underlying representations of their two languages.

Code-mixing appears to happen for three main reasons: gap filling, context-sensitivity, and pragmatic or symbolic reasons.

Gap filling takes place more often when children use the language they are less proficient in than when they use their more proficient language [19, 20].

Code-mixing by bilingual children is responsive to the situation, including contexts around the language of the person to whom the child is speaking, the topic, and the reason for the communication. For example, young children match their language and how acceptable it is to code-switch to the parent to whom they are speaking; they use less code-switching when interacting with authority figures; and they will code-switch to appeal, to quote a parent, and to show there has been a shift in topic [19-25].

## B. The Relationship Between Bilingualism and Cognitive Processing

While beliefs about cognitive disruption and limited processing capacity around bilingualism are still held; for almost half a century now, the majority of the research has not supported these theories. On the contrary, there is increasing research evidence that the process of acquiring a second language is connected to positive cognitive outcomes in the functioning of the brain [26].

Reviews show early studies suffered from several flaws, ranging from not controlling for socio-economic status, to not matching the age of the children, to only assessing intelligence or academic achievement in English [27-29]. What actually may be happening is that many preschool and school-age children are not balanced in both of their languages, particularly the language of school, so that they may think and react more slowly to cognitive language stimuli in the less dominant language used in school. In truth, bilinguals often outperform monolinguals on a variety of cognitive measures, including improved metalinguistic awareness [30, 31]; quantity [32, 33]; spatial concepts [34]; problem solving [35, 36]; and linguistic and cognitive creativity [35].

As research shows that bilinguals process tasks needing focus and cognitive control more efficiently, one explanation for this may be that there are true cognitive differences in the capacity to work out conflicting attention demands in bilingual as compared to monolingual speakers. Interesting evidence for this is that neuroimaging studies are finding that while language is processed in the same parts of the brain, there are actually physical functional differences in the neural structures in the brain and increased gray matter in the brains of bilinguals compared to monolinguals [37, 38]. The function of gray matter is to route sensory or motor stimuli to the central nervous system.

### Part II

In this section we will look at ELL's math and reading achievement, assessment, classroom environment and teaching, and specific instructional practices in language/literacy and mathematics. These topics allow us to investigate how educational environments can make a positive impact on the academic success of these children.

## A. English Language Learners' Math and Reading Achievement

Language-minority children possess assets that are both cultural and linguistic and they have the potential to become competent in two different languages [39]. Advantages such as greater cognitive flexibility, better classification and reasoning skills, and increased awareness and control over language have been found to be associated with dual language skills [40-42].

However, in the United States, many ELL children lag behind those who are native –English-speakers in educational achievement. Compared with English-speaking students, ELL students have lower math and reading test scores, academic grades, and educational and occupational aspirations [43]. This gap is present

early but there are positive outcomes for ELL children who become proficient in English. Compared to native-English-speaking students, language minority children start kindergarten with lower math scores (about three-fourths of a standard deviation, which is the average distance from the average). However, by the end of fifth grade, the gap is reduced by more than half for children not English proficient and is completely gone for English proficient students.

In reading, at entry to kindergarten, language-minority children also have scores that are significantly lower compared to native-English-speaking children. While differences decrease over time, they remain significant through grade 5. Children who start off in kindergarten proficient in oral English have better reading scores than those who begin non-proficient. By the end of fifth grade though, the gap in reading achievement between native-English-speaking and English proficient language-minority children is eliminated.

For children who are non-English proficient language-minority, there is a reduction in the reading gap from the end of first grade to the end of fifth grade, but it is still large (about three-fourths of a standard deviation) and larger than the math gap. By the end of elementary school, language-minority students who have limited English proficiency at entry into kindergarten struggle more progressing in reading than they do in math [39].

The research shows that the role of oral language proficiency is crucial because oral language proficiency at kindergarten entry has a significant impact during the primary school years on achievement in math and reading. Further, the impact of English oral language proficiency stays robust over time and this indicates that improving proficiency in English for language-minority children before they go to kindergarten may be a very important path to better educational outcomes.

## B. Assessing Young English Language Learners

More and more, early childhood programs must document adequate progress for all the children they serve, including English language learners (ELLs), in order to know if goals are being met and to make educationally sound decisions. For ELL children, assessments on an individual level that consist of linguistically, culturally, and developmentally appropriate tools and procedures and that are in line with the goals of the curriculum will generate such information [44, 45]. The main challenge in accurately assessing young ELL children is to ascertain what a child knows in each language, how much was learned of the curriculum, and ways to structure the learning environment so that learning going forward can be maximized [46].

For the most part, one of the languages that the ELL child uses will have a larger vocabulary, or a vocabulary that is specialized; combined with higher grammatical proficiency and competence in the linguistic structure. This indicates the language in which the child should be assessed to learn the upper boundary of ability, linguistically and cognitively.

Making the determination of appropriate language of assessment is often challenging in some cases as there are few individual child assessments specifically constructed for this specific use. Therefore, research indicates that because of a high correlation with language proficiency level; factors including the amount of

input in a particular language, frequency of use, and the parents' estimates of language ability, should be considered when making a decision about language of assessment [47].

Research shows that when the child's achievements are measured in the home language, educators can also predict quite accurately the potential of the child for learning in the second language, which is not the dominant language [48]. This is because the ELL child will most likely be competent in transferring and learning new age-appropriate concepts in English language learning if he or she is able to master such concepts in the home language. There is one area where caution should be exercised. When attempting to determine language development, there is a concern by some researchers about using standardized vocabulary measures with ELL children as the main indicator, because they are inclined to underestimate these children's level of general language development [49-50]. The majority of ELL preschool children will know a smaller number of words in both languages than monolingual children the same age at the time they are acquiring a second language. The results of these test scores in vocabulary could lead to a conclusion that is invalid that the child is not developing at a level or rate that is appropriate for his or her age.

There are many drawbacks to the current measures all around for ELL children. Two of the most widespread are measures just being basic translations with varying levels of attention to ensuring comparability in the conceptual, linguistic, or semantic content and/or level of difficulty of the translated items across languages. The second is the norm group not matching the child/children being assessed currently or being normed on a very small group of young children. What can occur is that if the normative sample for a given measure does not match the demographic characteristics of those children who are being assessed, then the resulting norms may not be appropriate for use with such a different group of children.

There is also a need for improved social-emotional assessment measures for young ELL children, as many suffer from the same issues described above, and further, there may be significant cultural differences in the areas of assertiveness, cooperation, independence, and internalizing and externalizing of problems between ELL and non-ELL populations as well as across language groups within the ELL population. To compensate for these issues, researchers recommended that assessors use multiple measures that may include standardized tests and curriculum-embedded assessments in addition to narrative language samples and observation of children's language usage in natural settings [51-53].

The use of language samples, particularly storytelling, is one promising alternative approach to assessment as it matches well with showing a child's ability to comprehend and produce both oral and written narrative structure (e.g., introduction, character development, referencing) [54].

Equally exciting is using dynamic assessment in order to reduce test bias because it focuses on learning potential. Major characteristics of the dynamic assessment model include a test-teach-retest format and a focus on the learning process, particularly strategies related to problem solving that underpin the ability to be successful during test taking. In a study of culturally and linguistically diverse Head Start children, this dynamic assessment approach was able to differentiate between those children who were developing in a typical fashion from children who had low language ability better than 'static' measures [55].

## C. Classroom Environment and Teaching

Type of program, language of instruction, oral language proficiency, and skill transfer across languages must all be considered in tandem with specific instructional approaches in order to facilitate success for young English Language Learners [46].

### *Types of Programs: English-Only, Bilingual, Dual Language*

Having a common working definition of types of programs helps put the research findings into context [46].

ELL students are expected to learn English from the start in English-Only programs. Any support for the child's home language is to help the child manage. The goal is the rapid acquisition of English and the attainment of learning expectations in English.

Bilingual programs can be transitional, maintenance of home language, or one-way or two-way dual language bilingual programs. Classroom instruction is split between English and the home language. The goals in a transitional program center on using the home language to "bridge" into English.

In a two-way dual language program some of the children are native speakers of English and some are native non-English speakers. All children are expected to become bilingual in both languages. One-way dual language bilingual programs usually include only ELL children.

At present, it is challenging to establish with accuracy the most frequent type of program model for ELL preschoolers. What does seem apparent is that the majority of programs do not put into practice a method that is systematic for English acquisition along with thorough attention to home language proficiency and development 56-60. Bilingual programs also differ in the amount of classroom time spent using English and the non-English language for instructional purposes. The two most common approaches are 90-10 and 50-50 [61].

### *Language of Instruction*

The Report of the National Literacy Panel on Language Minority Children and Youth found that "English language learners may learn to read best if taught both in their native language and English from early in the process of formal schooling. Rather than confusing children, as some have feared, reading instruction in a familiar language may serve as a bridge to success in English because decoding, sound blending, and generic comprehension strategies clearly transfer between languages that use phonetic orthographies, such as Spanish, French, and English (August, 2002; August & Hakuta, 1997; Fitzgerald, 1995a, 1995b; Garcia, 2000)" (p.397) [51].

With respect to amount of instruction in a particular language, research is still limited but does indicate that the ELL students most likely on achievement tests (nationally-normed) to reach the 50th (average) percentile in both their native language and all subjects in English, are those getting at least half (50%) of their instruction in their native language for at least 4 years. Another compelling finding is that these students are also the least likely to drop out of high school [62].

### *The Vital Role of Oral Language Proficiency*

A common thread that unifies the research on ELL children and monolingual English-speaking children is the emphasis on the development of oral language proficiency as a necessary prerequisite for later literacy[63].

For example, in a longitudinal study of 121 Latino children followed from kindergarten entry until the seventh grade, early oral proficiency in English at kindergarten entry as well as emergent Spanish literacy were independently predictive of higher reading scores in the seventh grade, but students with both of these traits had higher success levels than students with only one [64].

### *Transfer of Early Literacy Skills Across Languages*

In the education of ELL children which language to use during early literacy instruction is the topic of an ongoing debate. The potential for transfer, that is, the ability to apply one's previous learning to a new skill, is crucial when determining the language of instruction. Many factors influence whether or not skills learned in one language are transferable to a second language, such as similarities between the two languages, the specific domain/skills being studied and the assessment methods, and the learning conditions and quality of instruction provided. *L1=1st language/home language/native language; L2=2nd language/language of school.

Recent research on the transfer of preschool literacy skills from Spanish to English supports the transfer hypothesis, where "building on a child's language abilities in his or her L1 will not only help the child fully master that language, but provide him or her with the tools to deconstruct the L2. Early development of language skills, such as semantics, syntax, narrative discourse, and morphology, as well as phonological awareness, will provide the child with a 'meta' understanding of language that he or she can apply to language development and literacy skills in the L2" (p. 13) [65].

The National Literacy Panel on Language-Minority Children and Youth reports that the evidence available is in support of the transfer of knowledge (or preparedness for learning) from the first language to the second in certain domains such as word reading, spelling, vocabulary with the use of cognates (words in two languages that are similar), reading strategies, and writing [51]. The conclusions from this large body of research suggest that essential metalinguistic skills can be gained by young children through learning more than one language, that they are quite capable of learning early language and literacy skills in two languages, and that many early language and literacy skills learned in L1 positively factor into English language and literacy development. A well accepted finding at this point is that children taught in English-only classrooms or transitioned to English instruction before they can fully demonstrate well-established oral language abilities in their own language and have achieved some degree of English oral proficiency, do not progress as well as those who have the chance to learn and become competent and proficient through and in two languages [66, 62].

Multiple strategies to increase progress is recommended by the National Task Force on Early Childhood Education for Hispanics [67], including that one of the primary strategies to promote language development for Hispanic Spanish-speaking children is to provide English-plus-Spanish (EPS) education rather than English-only instruction.

With regard to how much home language needs to be spoken to ELL children, research has found that in order for young children to develop proficiency in any language, they need to use it at least 25% of the time [68].

## D. Specific Instructional Approaches

### *Language and Literacy*

The research on ELL achievement during the preschool years suggests that distinct reading skills are a necessary but inadequate approach and there must be in-depth attention to the context in which the learning takes place [46].

The National Literacy Panel on Language Minority Children and Youth Report concluded: "Although language minority students and their native speaking peers perform at similar levels on measures of phonological processing and word reading, their performance on measures of comprehension falls far below their native speaking peers…. To provide maximum benefit to language minority students, instruction must do more than develop a complex array of reading skills….This means that providing high quality instruction in these skills alone would be insufficient to support equal academic success for language minority students." (pp. 447-448) [51].

Lonigan and his colleagues have recently completed a study of the development of literacy skills of preschool ELL children from lower SES backgrounds and recommend that interventions for young ELL children rely on evidence based practices, individualize instruction through small groups, include active participation by children, and be implemented by teachers who are competent in the language of instruction [69]. With respect to vocabulary particularly, a series of studies examining the specific teaching practices that promote sophisticated vocabulary learning by preschool ELL children indicated that those children who had book reading combined with elaborations of word meanings showed gains that were highly significant over the control group children, who were read the same books minus the elaborations. Recommendations generated from this work include: provide definitions and synonyms, point to words and pictures in the book, use gestures to reinforce meanings, provide assistance with comprehension, and provide frequent exposure to the target vocabulary [70].

The Nuestros Niños Early Language and Literacy Program suggests the following practices for Spanish-speaking preschoolers:

- Use prereading activities that identify key words and phrases important to understanding the text; and assist ELL children in learning this vocabulary by translating into Spanish and incorporating materials that use many senses to show the book's meaning.
- Practice effective book-reading strategies including dialogic reading that prompts interaction and responsiveness to the story. Remember as a teacher to be aware of the stage of the child in the acquisition of English so that adaptations can be made. After reading books, make opportunities available for using the vocabulary both in the same book and through extension activities [71].

The following are instructional approaches recommended based on a review of three national data sets [72]:

- Use of the main language in a strategic manner,
- Expectations, instruction, and routines that are consistent,
- Extensions of explanations and opportunities for practice,

- Visual cues and physical gestures,
- Highlighting the similarities/differences (cognates) between English and native language, Build upon home language (L1) language skills,
- Frequently assess comprehension, and
- Restate children's language and encourage them to expand on that language.

### *Mathematics*

The misconception that math is culture- and language-free because it uses symbols and therefore that this makes it a suitable subject may be a factor in the low levels of achievement among ELL children [73]. Language however plays a vital part in math concepts development, which is necessary for strong math performance [74].

There is a relationship between language proficiency and mathematics achievement showing that low achievement in math is predicted by a low level of English proficiency [75]. Not understanding the integral role of language in math instruction has been found to be connected to expectations that are unreasonably high, lack of linguistic support, or low expectations which has the further impact of ELL students not having equal opportunity to learn math skills [76].

There is guidance available however in how best to teach mathematics to ELL children so that they have access and success [77].

An incremental developmental process in instruction is recommended by the National Council of Teachers of Mathematics (NCTM) [74]. These standards show how to build a conceptual understanding of mathematics by starting each new concept with concrete examples and experiences. Next, the math curriculum needs to provide opportunities for children to make connections among concrete experiences, semi-concrete graphical depiction, abstract symbolic representations, verbal language, and written expression to allow them to construct a comprehensive understanding of the new math concept(s). In ELL classrooms, to provide instruction that the students can comprehend, educators must take into account the linguistic complexity of the language used in math instruction and the language proficiency of the students because if new concepts are introduced in a language that is not familiar, the children then must grapple with two unknowns: the language and the concept, which makes learning daunting [78]. It is imperative that teachers first determine the level of fluency in the academic language of their students' primary language because some children may be very fluent in conversational home language but not in academic language.

As mathematics can be taught using many modalities, it has a distinct advantage. In addition to verbal language, math ideas can be expressed through graphical depiction, symbolic representations, and the manipulation of concrete objects, all of which are fairly free of spoken language. This can contribute to ELL children being able to understand new concepts in math. However, as stated above, material often must be presented verbally, particularly about math vocabulary and word problems. Recommendations for ELL students include slowing rate of speech, simplifying syntax though shorter sentences with regular patterns, and defining key terms. In addition, visuals, schematic drawings, and demonstrations also support the understanding of material that is verbally taught.

The compilation of these strategies with the goal of using the best principles of learning a second language (such as using the background knowledge children have in their native language) is defined as "sheltered instruction" [79].

That said, it is important to know that as ELL children transition into English instruction, the English equivalents for the mathematical terms they learned earlier in their primary language may not be taught again in lessons going forward. This can produce irregular and unpredictable holes in their English mathematics vocabulary, making it critical that all the vocabulary that is necessary be reviewed before starting a new concept. Keep in mind that learning a math vocabulary term in English is most effective following the assurance that students have firmly comprehended the concepts the vocabulary words represent. What is occurring then is that they are just having to learn the new "label" for the known concept. Explicitly showing the connection between the new label and an object that is concrete and tangible (such as manipulatives or authentic photographs) is one of the basic principles of second language instruction because for children especially, physically interacting with the object along with much repeating of hearing and seeing the word label, improves the chances that deep learning will occur.

The context of mathematics instruction warrants careful attention as well. The power of context is that it facilitates both comprehension and estimation/evaluation of response reasonableness. Using themes that are constructed over a substantial period of time (weeks or months) allows math problems to come to light as the unit is developed.

This method of math curriculum instruction assists ELL children as it gives them ample time to comprehend the context in which the lessons are presented, they can relate the current context to those they have experienced previously, they will begin to anticipate the kinds of math problems, and they will have time to gain the math vocabulary needed to fully understand the topics as well as to communicate about them. Another area critical for deep math understanding is for students to know if their response is reasonable. Through repeated exposure in the same context this skill is facilitated.

A similar approach is recommended by the National Research Council Committee on Early Childhood Mathematics [80], which points out that operations situations (e.g., addition and subtraction) and the word problems that describe them, allow excellent opportunities for ELL students to learn language, including integrating art, language practice, and pretend play to help generalize their budding knowledge about mathematics. The capacity of word problems in particular for math learning by young children lies in the fact that they are brief and predictable, and allow children to use their own words as well as use the support of visual cues such as objects and acted-out scenarios.

### *The Power of the Small Group*

Much of what has been discussed has been the context of how teachers can and should interact with children. In addition, how the learning environment is structured is key as well. Having children work in small groups allows an excellent opportunity for developing both listening and speaking skills in English and to increase literacy and mathematical understanding [77].

Most children who are learning a second language are tentative about speaking in front of all their classmates; yet, in a small group they will speak more freely. This setting provides all students more opportunities to express their thoughts and ideas.

Peer guides and interpreters are also available for children who did not fully understand the lesson as they have a support system (and for the teacher a beneficial teaching tool), with guidance from their peers as they tackle difficult assignments. Concept development is enhanced through the interaction as children receive peer feedback, must describe their reasoning, and adapt and refine their thinking after gaining more information. The critical internalization of content and concepts is supported through this process so that their comprehension and understanding is deeper [81].

An added benefit is that small working groups provide important practice in both receptive and expressive English for bilingual students.

**Part III**

## Educational/Instructional Technology and English Language Learners

In a meta-analyses of research on instructional strategies and methods found to have the most educational benefit and value to the greatest number of ELLs, the use of technology in the classroom has been found to be effective by improving the teaching and learning of ELL children [82].

Findings include improved sentence structure and breadth of content for 1st and 2nd graders [83]; pairing students who were limited in their English language proficiency with peers who were fluent during computer-based science activities resulted in on-task behavior, equitable turn taking, and cooperative exchanges [84]; and in computer-based mathematics with this type of pairing both types of students outperformed those in traditional instruction on measures of reflection and rotation concepts and visualization ability [85]. Additionally, positive impacts are seen with multimedia use with ELL students through strengthening the development of auditory skills by integrating visual presentations with sound and animation [86].

The meta-analyses reviewed several conceptual articles and research studies which looked closely at the particular ways technology positively impacts ELL students, particularly in their cognitive and psychosocial development [84, 85, 87, 88].

- It is motivational and nonjudgmental;
- Can individualize learning through tailoring the sequence of instruction to the students' needs and learning rates;
- Can give feedback that is prompt;
- Fosters for students a sense of personal responsibility, control, and autonomy;
- Can be less intimidating as compared to traditional instruction;
- Gives children an environment that is linguistically rich; Provides for hands-on learning;
- Allows collaboration in pairs and small groups of children with various levels of proficiency in English; and
- Diminishes the role of the teacher as authoritarian.

With respect to ELL classrooms; in those with technology, it has been found that there is less teacher-dominated instruction (where students most often just listen or watch the teacher passively) and more of a balance between whole-class instruction and independent work [89]. In traditional classrooms, ELL students

often have difficulty following grade-level curriculum and fully participating. As a result, they more often are provided instruction that focuses on skills that are at a lower level, such as phonics and pronunciation [90].

In addition to allowing students to more fully engage in learning, there is evidence that the use of technology increases motivation and excitement for learning.

In a study of technology use involving over 800 ELL teachers over a two-year period, teachers reported that children were particularly responsive when they were able to create learning products to share [91]. Researchers have found that a positive attitude is exhibited by second language learners when using computers to engage in learning tasks around language [92].

What is key is that to get such positive outcomes using educational technology requires many of the same principles of an overall optimal learning environment. These include:

- Rather than superficial learning, the environment should support deep understanding;
- Should bring out and build on the prior knowledge of ELL students;
- Encourage learning that is active and self-regulated by children as opposed to learning that is passive [93]; and
- Provide tasks that are challenging and allow children to generate knowledge through having to read, write, and think in new and complex ways [94].

The term mindtools has been coined by Jonassen to communicate the power of technological tools to support both knowledge construction and critical thinking, where students learn with, not just from, the tools [95-97].

## Conclusions

There is now fairly consistent acknowledgement that one of the most critical challenges in education is to identify and develop strategies that are known to work in order to gain more timely and sustainable academic progress for children who enter U.S. schools as non-English speakers. Further, because patterns in achievement in literacy and mathematics for these children are laid down from birth through about ages 8 or 9, many researchers are focusing on these early developmental periods.

Longitudinal data firmly shows that ELL children lag behind non-ELL children across all socioeconomic groups, although those from low-income families struggle the most. However, there is promise in early intervention, specifically preschool. If based on a solid understanding of how language develops, particularly dual language/bilingualism, educational strategies can and have been developed that lead to more positive academic achievement outcomes for ELL students.

An area showing promise is in the use of educational technology with ELL children as research is building on positive outcomes for these students. The appropriate use of educational and instructional technology allows English language learners to more fully engage in activities, thereby promoting both deeper learning and a personal sense of accomplishment.

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## Supplement: Stages of Second Language Acquisition

*Excerpt from Judie Haynes*
http://www.everythingesl.net/inservices/language_stages.php

*"All new learners of English progress through the same stages to acquire language. However, the length of time each student spends at a particular stage may vary greatly.*

### Stage I: Pre-production

This is the silent period. English language learners may have up to 500 words in their receptive vocabulary but they are not yet speaking. Some students will, however, repeat every thing you say. They are not really producing language but are parroting.

These new learners of English will listen attentively and they may even be able to copy words from the board. They will be able to respond to pictures and other visuals. They can understand and duplicate gestures and movements to show comprehension. Total Physical Response methods will work well with them. Teachers should focus attention on listening comprehension activities and on building a receptive vocabulary.

English language learners at this stage will need much repetition of English. They will benefit from a "buddy" who speaks their language. Remember that the school day is exhausting for these newcomers as they are overwhelmed with listening to English language all day long.

### Stage II: Early production

This stage may last up to six months and students will develop a receptive and active vocabulary of about 1000 words. During this stage, students can usually speak in one- or two-word phrases. They can use short language chunks that have been memorized although these chunks may not always be used correctly.

Here are some suggestions for working with students in this stage of English language learning:

- Ask yes/no and either/or questions.
- Accept one or two word responses.
- Give students the opportunity to participate in some of the whole class activities.
- Use pictures and realia to support questions.
- Modify content information to the language level of ELLs.
- Build vocabulary using pictures.
- Provide listening activities.
- Simplify the content materials to be used.
- Focus on key vocabulary and concepts.
- When teaching elementary age ELLs, use simple books with predictable text.
- Support learning with graphic organizers, charts and graphs.
- Begin to foster writing in English through labeling and short sentences. Use a frame to scaffold writing.

## Stage III: Speech emergence

Students have developed a vocabulary of about 3,000 words and can communicate with simple phrases and sentences. They will ask simple questions, that may or may not be grammatically correct, such as " May I go to bathroom? " ELLs will also initiate short conversations with classmates. They will understand easy stories read in class with the support of pictures. They will also be able to do some content work with teacher support. Here are some simple tasks they can complete:

- Sound out stories phonetically.
- Read short, modified texts in content area subjects.
- Complete graphic organizers with word banks.
- Understand and answer questions about charts and graphs.
- Match vocabulary words to definitions.
- Study flashcards with content area vocabulary.
- Participate in duet, pair and choral reading activities.
- Write and illustrate riddles.
- Understand teacher explanations and two-step directions.
- Compose brief stories based on personal experience.
- Write in dialogue journals.

Dialogue journals are a conversation between the teacher and the student. They are especially helpful with English language learners. Students can write about topics that interest them and proceed at their own level and pace. They have a place to express their thoughts and ideas.

## Stage IV: Intermediate fluency

English language learners at the intermediate fluency stage have a vocabulary of 6000 active words. They are beginning to use more complex sentences when speaking and writing and are willing to express opinions and share their thoughts. They will ask questions to clarify what they are learning in class. These English language learners will be able to work in grade level math and science classes with some teacher support. Comprehension of English literature and social studies content is increasing. At this stage, students will use strategies from their native language to learn content in English.

Student writing at this stage will have many errors as ELLs try to master the complexity of English grammar and sentence structure. Many students may be translating written assignments from native language. They should be expected to synthesize what they have learned and to make inferences from that learning. This is the time for teachers to focus on learning strategies. Students in this stage will also be able to understand more complex concepts.

## Stage V: Advanced fluency

It takes students from 4-10 years to achieve cognitive academic language proficiency in a second language. Student at this stage will be near-native in their ability to perform in content area learning. Most ELLs at this stage have been exited from ESL and other support programs. At the beginning of this stage, however, they will need continued support from classroom teachers especially in content areas such as history/social studies and in writing."

***This Whitepaper was prepared by Lilla Dale McManis, Ph.D., Hatch® Research Director.***
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