Improving English Fluency and Literacy in English Learners with Technology

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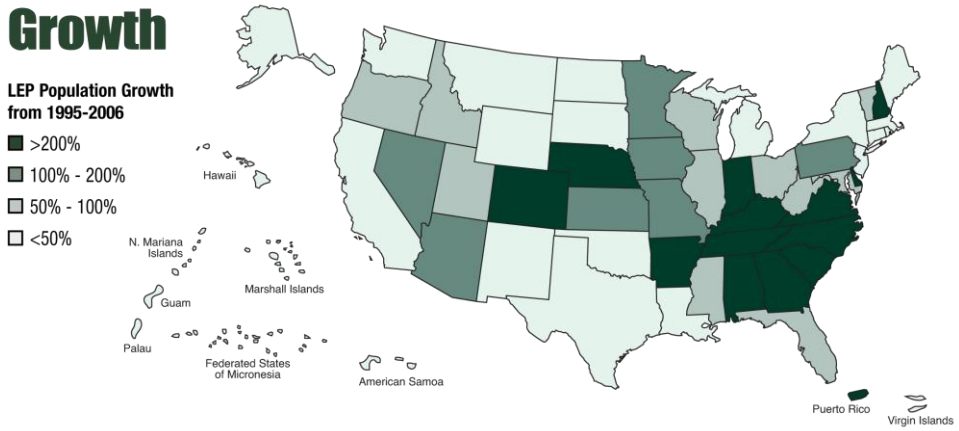
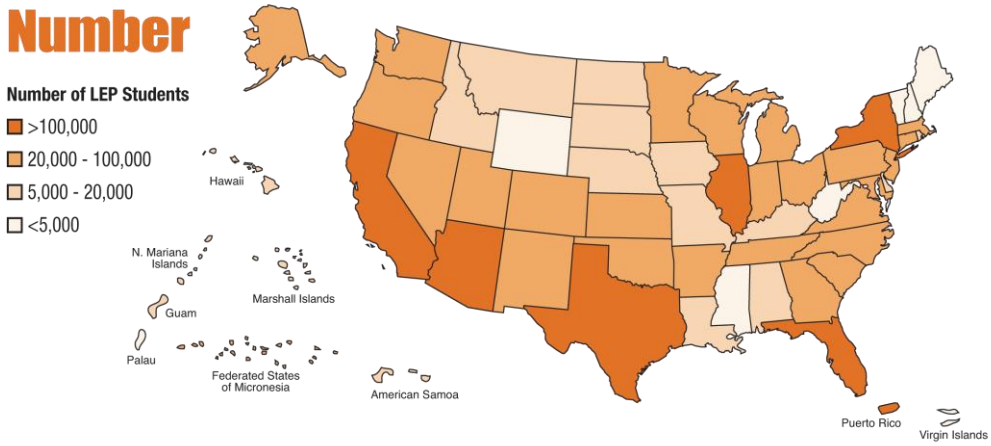
Challenges Confronting English Learners

English learners constitute the most rapidly growing segment of the total prekindergarten through 12th grade public school enrollment—growing 50 percent from 1995 to 2006 (National Center for Education Statistics, Common Core of Data, 1998 –99 through 2005 –06). Compare that to the general school population, which grew by only 3 percent during the same time period. Some states have experienced even higher rates because of the recent shift away from the traditional receiving states. New receiving states (Alabama, Arkansas, Colorado, Indiana, North Carolina, and others) have experienced much higher rates, between 200–300 percent (Padolski, 2005). Schools in these new receiving states are often unprepared for the influx of non-English speaking students and ill-equipped to provide services for English learners.

The map below (Figure 1) illustrates recent changes: many states are experiencing a dramatic increase in the numbers of English learners (note the number of dark green states with greater than 100 percent increase, as well as the light green states with their 50–100 percent increase). Meanwhile, the major immigration states (California, Arizona, Texas, Florida, New York, and Illinois) continue to serve the bulk of English learners, together accounting for nearly 70 percent of all elementary school children of immigrants in 2006.

Figure 1: Immigrant Children in High and Low LEP Schools



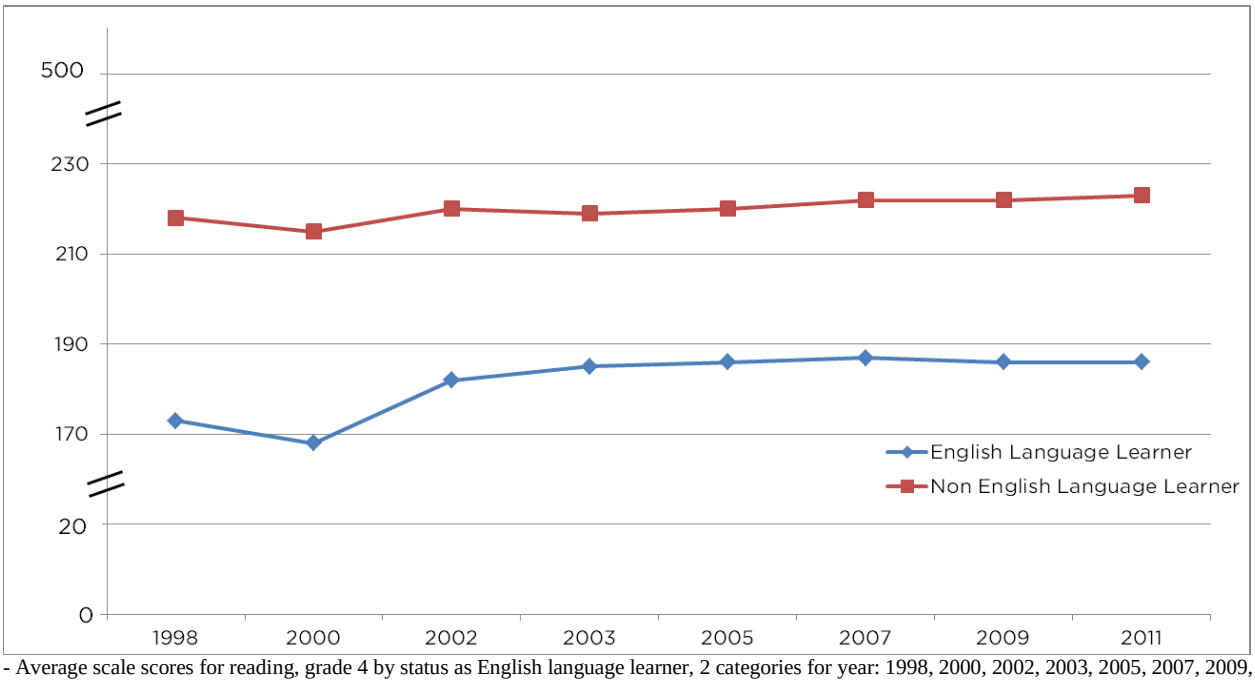


Source: National Clearinghouse for English Language Acquisition (NCELA)

Most English learners are concentrated in a small number of schools. The Urban Institute's 2005 report states nearly 70 percent of the nation's English learners are enrolled in 10 percent of the nation's schools. These schools are referred to as "high LEP," where English learners make up more than 50 percent of enrollment. These schools have larger class sizes, higher levels of poverty, health problems, tardiness and absenteeism, greater reliance on unqualified teachers, and lower levels of parent participation. This is the repeating irony in American schools: students needing and deserving more actually receive less.

Not surprisingly, English learners lag behind their peers in most school subjects, since they have the additional task of learning a new language at the same time as they learn new content. Although this gap has narrowed somewhat over the years, it persists. The Nation's Report Card illustrated this disparity in its report of reading scores for fourth graders on the 2007 NAEP (see Figure 2).

Figure 2: Reading Scores for English learners as Compared to Their English-Only Peers



- Average scale scores for reading, grade 4 by status as English language learner, 2 categories for year: 1998, 2000, 2002, 2003, 2005, 2007, 2009, and 2011.
NOTE: the NAEP Reading scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant. SOURCE: U.S. Department of Education, Institute of Education Sciences. National Center for Education Statistics. National Assessment of Education Progress (NAEP). 1998, 2000, 2002, 2003, 2005, 2007, 2009, and 2011.

Looking for the Solution

Given these challenges, it's difficult to see how government mandates can bring about sufficient change. No Child Left Behind (NCLB) has proven to be a mixed bag; its insistence that English learners be included in measurements of yearly progress has raised expectations—a step forward. But it hasn't been able to achieve a real solution.

Specifically, Title III of the No Child Left Behind Act requires that schools measure students' English proficiency and demonstrate improvement annually. To aid in the measurement process, NCLB provides support for states and school districts to create new assessments of English proficiency as well as native-language tests or accommodations on English language tests. Although there is some debate as to when English learners should be expected to take these tests, most agree that the very fact that English learners are

required to take the test means that schools are required to address English learner performance. In the past, exempting English learners from assessment has often meant exempting them from learning.

In spite of these gains, it is not clear that the NCLB initiative's focus on measurement has benefited English learners. If English learners do not perform well on these tests and their schools do not show "adequate yearly progress," NCLB will impose sanctions. If scores continue to be low, supplemental services or transfers or both are made available.

The expectation is that if schools discover they are not making adequate progress, they will expend greater effort towards more focused and intense instruction. But the cost of assessment in both instructional time and money seems to detract from energies needed to improve literacy instruction for English learners. In their review of the reauthorization of NCLB, September 2007, ASCD points out that perhaps too much documentation effort is required, raising the concern that extensive reporting uses "precious resources (both financial and human) to demonstrate compliance."

For these reasons, the NCLB mandate is both lauded and criticized. In a brief published by the National Access Network (Teachers College, Columbia University), NCLB is described as "a powerful national statement that the achievement gap is a national concern." But the same report raises serious questions about NCLB methods to measure student achievement and the methods of addressing deficiencies, concluding, "…the law has been funded at a level not related to the true cost of achieving state educational standards. There is a concern that if students are required to attain standards without being provided the basic resources needed to learn, we will be leaving millions of children behind, thereby undermining the laudable goals of NCLB" (Lecker, 2005).

Some have argued—including David Brewer, superintendent of Los Angeles Unified School District—that instead of helping English learners and schools succeed, NCLB "sets students and their schools up for failure" (*LA Times*, September 7, 2007). He points out that when schools don't make "adequate yearly progress (AYP), the entire school is subject to a list of unproven and inefficient 'corrective actions.'"

A positive side-benefit of NCLB is the recent surge of reports identifying effective literacy instruction for English learners. Because AYP measures always include a reading test, literacy instruction for English learners has become more urgent. However, helping English learners become literate in a second language is not straightforward because of these factors:

1. English learners vary considerably in their preparation for English literacy instruction. If English learners already read in their first language, the transition to English is much easier, since many literacy skills transfer across languages. A widely accepted belief is that one only needs to learn to read once. Unfortunately, some English learners are not literate in their first language; greatly complicating their efforts to become literate in English (NCLEA, 2007).
2. Literacy instruction alone, even if skillfully delivered, is not sufficient. English learners need a comprehensive oral language development program even as they develop literacy. Oral language instruction can happen (and often must) simultaneously with literacy instruction. This instruction should include comprehensible input, verbal interaction, contextualized language, reduction of anxiety, and active involvement (Herrell, 2000). An understanding of "academic talk" is necessary in order for an English learner to make progress in learning the content taught (Kinsella, 2005).

New reports and research summaries take into consideration these unique challenges to becoming literate in a second language. A synthesis of recommendations from these reports is listed below:

1. **Assess and monitor L2 literacy.** Students should be assessed for reading problems, and progress should be carefully monitored (August & Hakuta, 1998; Graves, Gersten & Haager, 2004; Haager, Gersten & Graves, 2003; and Gersten, et al., 2007).

2. **Provide explicit instruction.** (August & Hakuta, 1998; Graves, Gersten & Haager, 2004; Haager, Gersten & Graves, 2003)
3. **Differentiate instruction.** (Gertsen, et al., 2007).
4. **Develop the same five basic reading abilities (as identified by the National Reading Panel to be valuable for native speakers)** (Shanahan & August, 2006; Education Alliance, 2007; Frances, et al., 2006):
    a. Phonemic awareness—give systematic and explicit instruction.
    b. Phonics—provide early, explicit and intensive instruction in order to build decoding skills.
    c. Vocabulary—apply research-based methods for both direct and indirect vocabulary instruction.
    d. Fluency—engage students frequently in oral reading to develop their reading fluency.
    e. Comprehension—equip English learners with strategies and knowledge to comprehend and analyze both narrative and expository texts.
5. **Add important modifications (to the five basic reading abilities) for English learners** (Shanahan & August, 2006, Frances, et al., 2006):
    a. Build on background knowledge.
    b. Scaffold instruction to make it comprehensible.
    c. Develop oral language around content areas. English learners need significant opportunities to engage in structured academic talk.
6. **Provide opportunities to practice** (Graves, Gersten & Haager, 2004; Haager, Gersten & Graves, 2003; August & Hakuta, 1997; Jensen, 2005; Frances, et al., 2006, Linan-Thompson & Vaughn, 2007)

These recommendations are based on effective instructional programs and are universally accepted, but the herculean effort required to implement them is often unacknowledged. A recent survey of teachers of English learners in California reveals difficult realities. Teachers list among their top challenges (1) the wide range of abilities of students in their classroom, (2) insufficient instructional time, and (3) inadequate tools (Gandara, Maxwell-Holly & Driscoll, 2005).

Here are just a few of their comments addressing the wide range of ability levels of English learners in their classrooms:

> *"Every student is at a different level and the curriculum is not well-designed to meet everyone's needs."* —Elementary school teacher in a large urban district
>
> *"50 percent of the class doesn't need ELD support and the remainder are at all different levels of English acquisition. It is really tough to balance so many levels."* —Elementary school teacher in a small rural district

The feeling that students present a broader range of abilities than they have in the past is not just a feeling; an increase in the ability ranges represented in the classroom has been documented as a recent phenomenon in the United States. The range of reading ability in a typical classroom is about five years and is more diverse than at any time in history (Kameenui & Carnine, 1998; Mathes, et al., 2003).

Teachers also commented on how the lack of instruction time is frustrating:

> *"How do I spend 40 minutes a day on ELD and still fit in the time required by the state for all other subjects?"* —Elementary school teacher in a large urban district

> *"It takes longer to do the lessons because I scaffold and pre-teach."* —Elementary school teacher in a small urban fringe district

> *"The greatest challenge is having the time to give them what they need while meeting the needs of all the other students in the class."* —Elementary school teacher in a large urban fringe district

The lack of tools, including appropriate assessment materials, compromises instruction. Teachers indicated they did not have textbooks that made the material accessible. English learners used the same textbooks as English speaking students, even though they often could not understand them. Additionally, English learners are tested even if they do not understand the language of the test; making it impossible to determine if their low scores are due to language problems or to lack of academic skill. To make matters worse, the California English Development Test does not provide diagnostic information, nor are the results available in a timely manner in order to allow teachers to plan or adjust instruction.

Only one report offers the following suggestion, seemingly as an afterthought:

> *"Perhaps schools might use computer technology to support reading instruction."* —Educational Alliance, 2005

While computers will never replace teachers, they can certainly share their instructional load. Computer-delivered instruction that follows the recommendations for helping English learners develop literacy (as listed above) can significantly reduce the burdens placed on teachers and give English learners the opportunity to succeed academically, which they both need and deserve. The pages that follow show how computers can assist teachers in this way, as demonstrated by a new software program, Imagine Learning.

Imagine Learning: Implementing the Recommendations

The following section reviews the six recommendations listed above for improving English learner performance, and illustrates the ways that Imagine Learning is an effective tool for meeting these recommendations.

Recommendation #1: Assess and Monitor L2 Literacy

The IES Practice Guide (Gersten, et al., 2007) on Effective Language and Literacy Instruction for English Learners lists the recommendation to assess and monitor progress first and foremost. They cite a common fallacy: that a lack of oral proficiency in English prevents English learners from learning to read in English. Because of this misconception, screening ELL's reading ability is frequently delayed. However, oral language measures (syntax, listening comprehension, and oral vocabulary test results) have little relationship to reading acquisition ability. On the other hand, early reading measures (assessing phonological processing, letter knowledge, and word and text reading) are an excellent way of predicting who might struggle with learning to read, even when administered to students who know little English.

The Practice Guide recommends that districts should collect "progress monitoring data," or conduct assessments more than three times a year for English learners who are at risk for reading difficulties. Progress should be monitored more frequently for students with severe reading difficulties, but the guide acknowledges that testing frequency would depend on district resources.

When assessing English learners, teachers should present two or three practice items before the actual test administration. They should model the task for the child and provide corrective feedback, giving English learners the opportunity to understand what the task requires of them. Ideally, these instructions should be given in the language the student knows best.

Although the benefits of following this recommendation are obvious, assessing and monitoring progress is a labor-intensive and expensive task. Nevertheless, it might be more feasible if managed by computer. A computer-delivered test can be just as friendly (or more so) than a hand-administered test. Students tend to

prefer computer-delivered assessments; and there is an actual tendency to do better on a computer-delivered test than on the same test, delivered manually (Florida Department of Education, 2006). Computer tests can be administered without requiring teacher delivery and have the additional advantage of providing immediate results.

Imagine Learning's assessment is used primarily to gather information for placing students inside the various curriculum strands (vocabulary, conversation, literacy, etc.). Because the courseware addresses a broad range of skills in both literacy and oral language development, the test must be adaptive—otherwise the test would be unbearably long. Items are selected dynamically based on students' responses with the goal of determining the appropriate level of difficulty for each student to begin in the courseware.

While most of the test is in English (since it measures English language ability and literacy), each subtest includes a sample item presented in the student's first language, and students receive feedback to their responses to the sample items, so the task is clear. During the actual test, students receive no feedback or translation in their first language. Performance results are available immediately, and teachers can see where the student has been placed within each curriculum strand. Vocabulary words are re-taught if students do not master them.

Figure 3: Practice item from "Recognize Letters" subtest

Practice Item from "Recognize Letters" Subtest

Instructions (translated in first language):

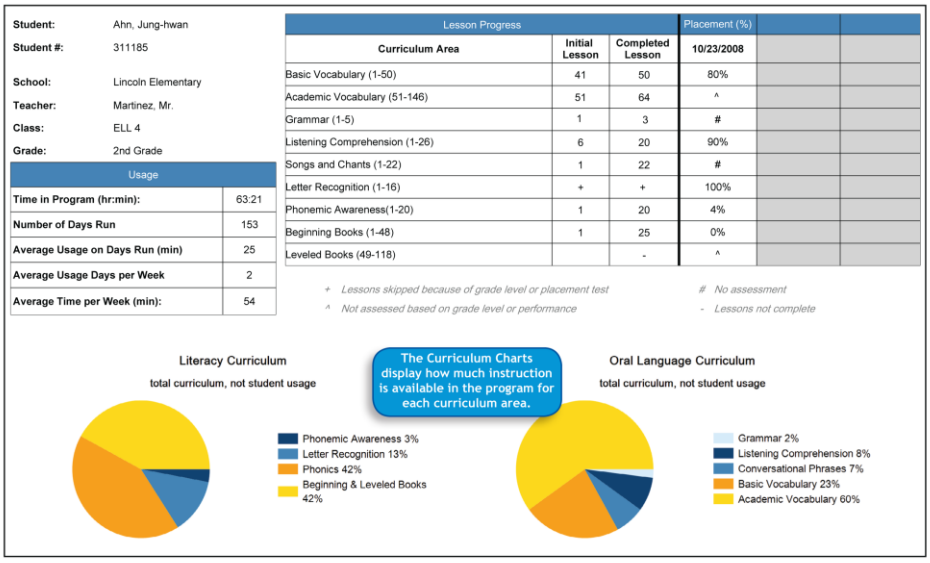
It's time to see how much you know. Do your best! First you're going to practice. Look at this letter. Is this a p? Click Yes or No.

If student answers incorrectly,

You should have clicked "no." Let's try another one. Look at this letter: Is this a "d"? Right. Now you're ready to answer questions on your own.

Note: "yes" and "no" icons are animated—nodding or shaking back and forth.

Figure 4: An Imagine Learning Individual Summary Report



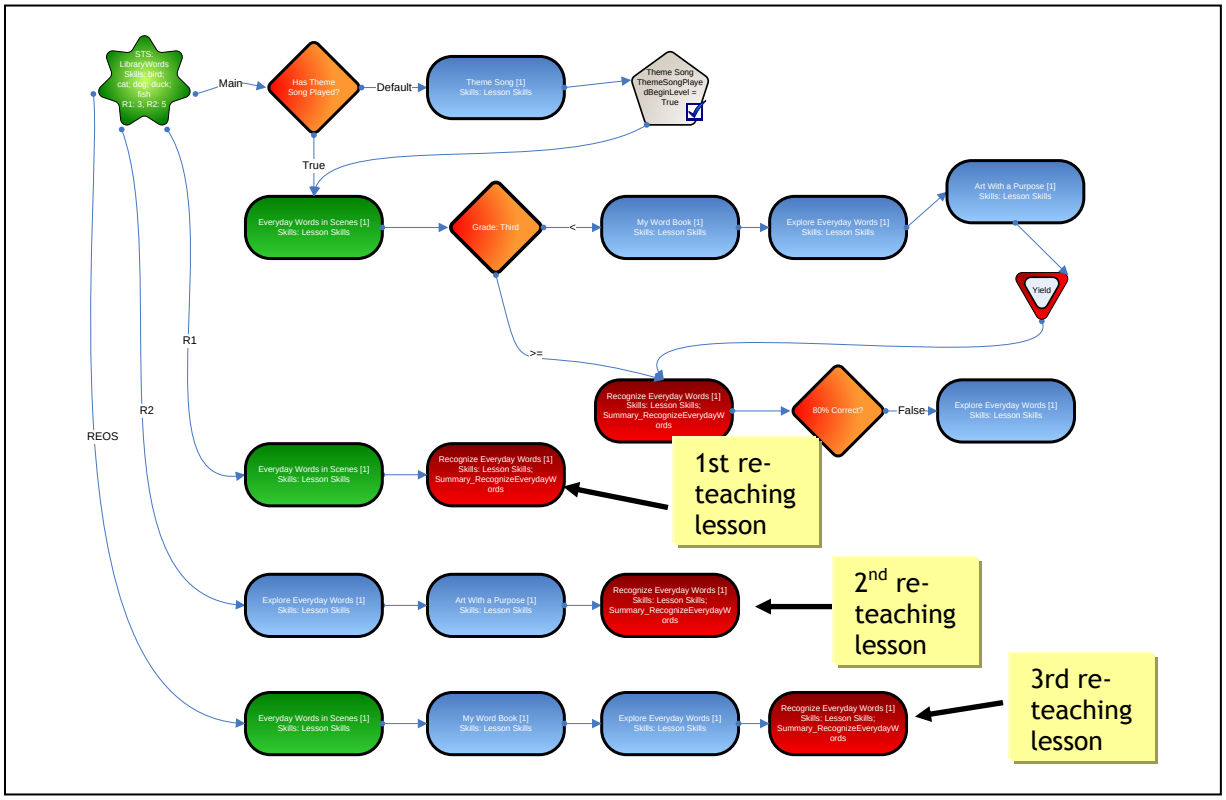
Student:	Ahn, Jung-hwan
Student #:	311185
School:	Lincoln Elementary
Teacher:	Martinez, Mr.
Class:	ELL 4
Grade:	2nd Grade

Usage	
Time in Program (hr:min):	63:21
Number of Days Run	153
Average Usage on Days Run (min)	25
Average Usage Days per Week	2
Average Time per Week (min):	54

Lesson Progress			Placement (%)		
Curriculum Area	**Initial Lesson**	**Completed Lesson**	**10/23/2008**		
Basic Vocabulary (1-50)	41	50	80%		
Academic Vocabulary (51-146)	51	64	^		
Grammar (1-5)	1	3	#		
Listening Comprehension (1-26)	6	20	90%		
Songs and Chants (1-22)	1	22	#		
Letter Recognition (1-16)	+	+	100%		
Phonemic Awareness(1-20)	1	20	4%		
Beginning Books (1-48)	1	25	0%		
Leveled Books (49-118)		-	^		

+ Lessons skipped because of grade level or placement test
 # No assessment
^ Not assessed based on grade level or performance
- Lessons not complete

Figure 5: The Activity Sequence, Including Re-teaching



Student progress is readily monitored via the scored activities included within a lesson and reported on the individual report. Instruction is adjusted automatically based on student progress, requiring no teacher intervention. For example, if students are unable to master vocabulary words in a lesson, they may need to be re-taught.

The logic that allows the computer to assemble the needed activities is illustrated in the flowchart above. The red ovals represent assessment activities, in which a student's knowledge of a set of basic vocabulary words is measured. If the student gets less than 80 percent of the words correct, the words are re-taught (see R1, the first re-teaching lesson). If the score for the words is still below 80 percent, they are re-taught again, using different activities (see R2, the second re-teaching lesson). If the words are failed again, then they are re-taught one last time (see REOS), at the end of the strand (in this case the vocabulary strand). These decisions take place behind the scenes, and the program selects the appropriate instructional activity, based on the student's success (or lack of success). In this way, assessment immediately informs and modifies instruction.

Recommendation #2: Provide explicit instruction

Explicit instruction refers to "task-specific, teacher-led instruction that overtly demonstrates how to complete a task." (Linan-Thompson & Vaughn, 2007). The task might be a basic, discrete skill or it might be higher order reading skill—it doesn't matter; both can and should be taught explicitly. Elements of explicit teaching include the following:

1. Setting and describing learning goals

2. Demonstrating or modeling how to complete a task
3. Assessing students' understanding as well as their ability to complete the task on their own (Tikunoff, 1983).

For English learners, explicit teaching provides clear, specific, and easy-to-follow procedures which facilitate learning a new skill or strategy. It has a very important additional benefit: when skills are taught explicitly, English learners also learn the language associated with them. (Calderon, Hertz-Lazarowitz & Slavin, 1996; Edelsky et al., 1993: Hernandez, 1991; Muniz-Swicegood, 1994; Saunders et al., 1996).

For English learners who are at risk for reading difficulties, we cannot make assumptions about what they already know. As Dr. Torgesen pointed out in an interview for the *Florida Reading Quarterly*, "we cannot assume that they will be able to figure out our complex alphabetic writing system on their own. We must carefully teach them everything they need to know to become good readers, and that requires systematic and explicit instruction" (Stanley, 2004).

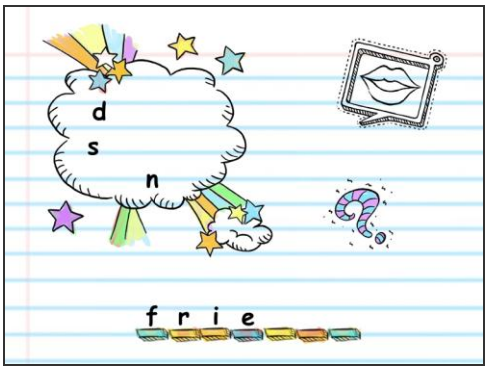
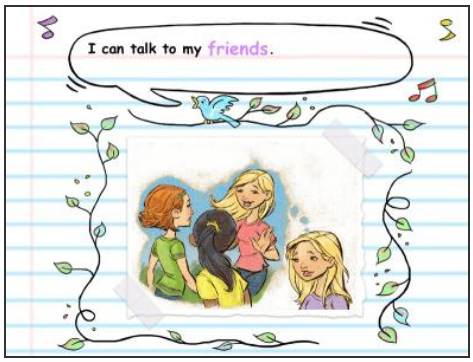
The following are some useful guidelines for explicit instruction (Hall, 2002):

1. Be explicit about big ideas. Find a middle ground between no objectives and endless objectives.
2. Make strategies conspicuous. All students, but particularly diverse learners, benefit from having important strategies made clear and conspicuous.
3. Provide mediated scaffolding. The scaffolding that supports learning should be adjusted as the abilities of the learner change; in other words, the scaffolding is dynamic or responsive to student progress.
4. Require that students respond frequently. The more active students are in their learning, the greater their success.
5. Give feedback for both correct and incorrect responses—immediately.

When English learners are in the beginning stages of learning to decode English texts, explicit instruction allows them to acquire phonemic awareness and decoding skills at about the same rate as monolingual English speakers (Linan-Thompson & Vaughn, 2007).

In the early literacy strand of Imagine Learning, each reading word is clearly and explicitly taught. Sight words, for example, are spelled, spoken, and used in a context-rich sentence. See Figure 6 below.

Figure 6:

Meet New Sight Words	
The sight word, *friends*, is spoken, spelled and translated in students' first language.	The student hears and sees the sight word in a sentence, on a page taken from the decodable book.
	

Notice that students are required to be active throughout this activity: they drag the letters to spell the word (receiving feedback immediately as to correctness), they click on the mouth to hear it spoken, and they click on the question mark to hear a translation. After studying the sight words in the activity shown above, students will play two games—an automaticity game designed to build recognition speed, and another that measures their recognition accuracy (an assessment) prior to reading the decodable story.

More complex skills, such as answering an inferential question about a story, are also taught explicitly, relying on insights developed by Raphael (2006).

Figure 7:

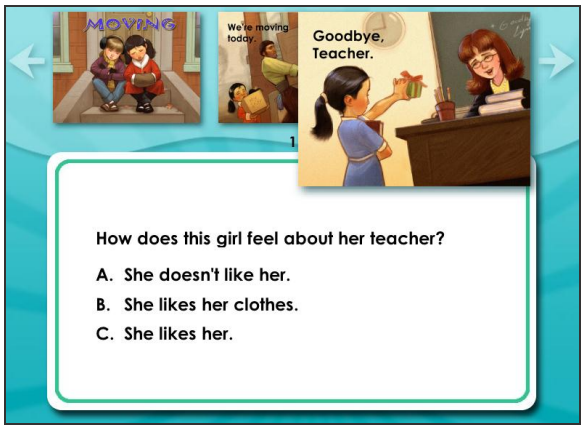
Answering Inferential Questions

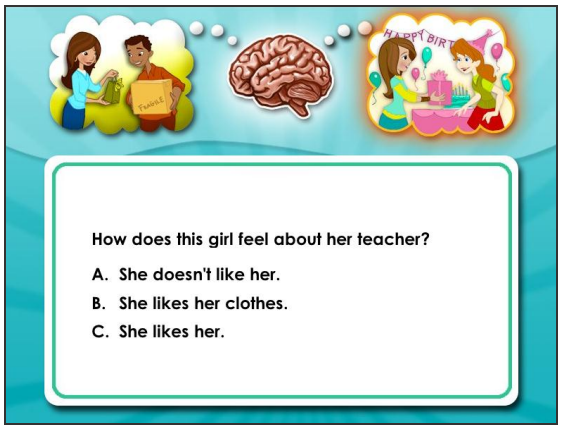
A student (in left-side video below) tries to answer inferential questions, but is confused. Alex, an Imagine Learning character, demonstrates the strategy: When you answer an inferential question, she explains, you must do two things: look in the book and use your head.

Figure 8:

A Demonstration of How to Draw an Inference—a Strategy Made "Conspicuous"

Alex demonstrates how to answer the question: (1) find the page in the story that talks about the "teacher," then (2) Alex "uses her brain"—relies on her own background experience: she gives gifts to people for their birthday or when she is saying good-bye to someone she likes. Students then answer additional reading questions, with Alex at their side, guiding and providing feedback.





Recommendation #3: Differentiate Instruction

When a teacher differentiates instruction, she tailors it to fit the learners' needs: she reacts responsively to individuals. She recognizes students' varying background knowledge, readiness, language, preferences in learning, and interests and responds accordingly (Hall, 2002).

> Differentiation is simply attending to the learning needs of a particular student or small group of students rather than the more typical pattern of teaching the class as though all individuals in it were basically alike (Tomlinson, 2000).

The purpose of differentiation is to take the students where they are and move them forward in the learning process. It is a powerful tool, but one that teachers struggle to use as they face a classroom full of learners—typically spanning five years in reading ability (as mentioned above).

Differentiation is rooted in educational theory and research many years old. It is grounded in the work of Vygotsky (1978), who developed the notion of "the zone of proximal development" (ZPD). This is the range where the best learning takes place, the place slightly ahead of the student's current level of mastery—where the student is able to profit from instruction as opposed to being either bored or overwhelmed. Researchers believe that in classrooms where students are performing at about 80 percent accuracy, they learn more and feel better about themselves and the subject they are studying (Tomlinson, 2000).

Assessment can aid differentiation when it is used for more than just merely measuring instruction. It can identify a students' "ZPD" and, when the assessment is computer-delivered, it can then identify appropriate curriculum.

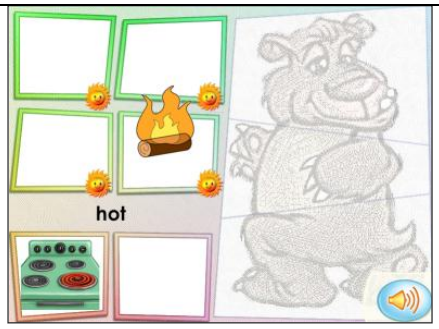
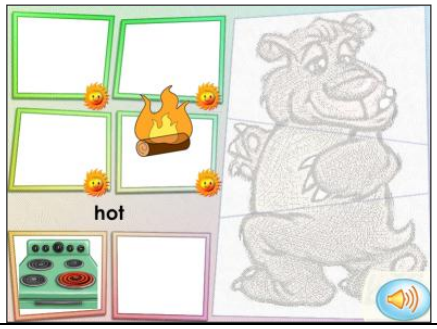
Imagine Learning differentiates students' instruction in at least four ways:

1. The placement test determines separate starting points in vocabulary instruction, literacy instruction, and oral language development.
2. The Imagine Learning program itself regulates or sequences instruction based on students' performance. If, for example, a student has mastered a set of vocabulary words, three lessons in a row, the program will accelerate instruction, streamlining activities. On the other hand, if a student is not mastering a concept, the program will re-teach it.
3. The student can receive first language support which is strategically withdrawn as they become more familiar with each activity.
4. Students receive informative feedbacks tailored to their responses.

This ability to differentiate instruction is important to schools with English learners, as their classrooms include learners with diverse experiences and abilities.

Silly Animals is a vocabulary activity that teaches verbs and adjectives (Tier 1 words, or BICS), and provides instructive feedback for both the correct and incorrect responses. (Note the engaging interaction involved in identifying the correct meaning for each English word.)

Figure 9:

Differentiated Feedback in "Silly Animals"
The student is invited to click on two things that are hot. In #1, the student moves the drink down to the empty box. The incorrect feedback audio is, "In this picture the drink is cold." Then the student clicks on the bubble in #2; again a similar response: "In this picture the bubble is round." Then finally in #3 the student picks both examples of "hot." When the correct object is placed in the empty box, they receive the positive feedback: "The stove is hot." At the end of 3 or 4 words, the student has created a monster of his own choosing
1.  2.  3.  4. 

Another way to view how Imagine Learning differentiates instruction is by observing a conversation between Imagine Learning and an imaginary student named Miguel (Figure 10).

Figure 10: Differentiating Instruction for Miguel

Name: Miguel
Grade: 1st
1st Language: Spanish

I'll assign a test for Miguel providing sample items in his first language with feedback, then the rest in English.

Student input on adaptive test: Answers questions

Based on Miguel's answers, I adaptively select the most informative questions.

I'll select Miguel's diet of instruction—assigning starting points in each strand, based on his responses to the adaptive pre-test.

Can get assistance: click on words, replay video or audio, reread, compare recording with model, etc.

I'll clarify tasks (if cognitively demanding), using his first language.

Responds incorrectly to a question

That's wrong. I'll explain (in Miguel's first language) how to get to the right answer. If he answers incorrectly again, I'll show him the right answer.

…or gets it right!

I'll adjust Miguel's pace based on his performance:

- Normal
- Normal + reteach
- Accelerated

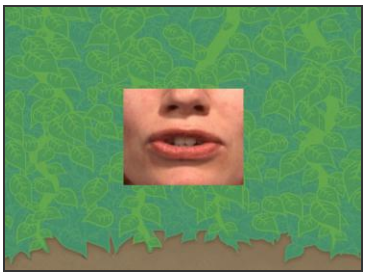
Performance over time alters pace

Keeping track—I'll summarize Miguel's performance in a report for him and his teacher.

Recommendation #4: Develop the same five basic reading abilities (as identified by the National Reading Panel to be valuable for native speakers)

1. Phonemic awareness is one of the best predictors of how well children will learn to read during their first two years of school (Learning First Alliance, 2000; National Reading Panel [NRP], 2000; National Research Council [NRC], 1998). If students have phonemic awareness in their first language, they can transfer that knowledge to a second language quite readily (Gersten & Geva, 2003). However, if the new language they are learning has new phonemes—phonemes that may not exist in their home language—then they will need explicit instruction in producing these sounds (Linan-Thompson & Vaughn, 2007).

One of the phonemic awareness activities in Imagine Learning shows students that both English and Spanish have the /s/ phoneme. Another activity, "Meet New Sounds," teaches Spanish speakers a new phoneme—/sh/.

Meet New Sounds		
1.	Students with Spanish as their first language learn that English also has the phoneme /s/, which they know in Spanish—silla, soap, stop and sun in an activity called "Discover Similar Sounds"	
2.	Then students learn a new phoneme. They hear the sound in shoes, ship, sheep, and shell.	
3.	Students can see how /sh/ is spoken by watching a video; then they are invited to imitate it.	
4.	Then they identify pictures that begin with /sh/.	

2. Phonics Instruction refers to teaching the structure of English beginning with letter/sound correspondences through the reading of connected text. It gives students a framework for making sense of English orthography. Daily integrated lessons that include explicit introduction of letter-sound relationships and provide opportunities to blend the sounds to read words, to build words, to read decodable texts, and to practice spelling words will enhance students' beginning reading experience (Blevins, 1998). The IES Practice Guide warns about delaying phonics instruction in order to "wait and see" if English learners will overcome their reading difficulties as they become more proficient in English. Rather, if English learners are experiencing difficulty decoding words, they should receive explicit, systematic, and intensive phonics instruction (Gersten, et al., 2007). And since it takes longer to read in English than it does in most languages (Quioroga, et al., 2002), phonics instruction should not be withheld.

Effective instruction in phonics includes these practices (Linan-Thompson & Vaughn, 2007):

- Letter-sound correspondences should be taught explicitly and in isolation at the start, then they should be reinforced with daily efforts at applying this knowledge while reading and writing.
- Provide opportunities to work with word families and spelling patterns. Analogy-based phonics is useful, once the letter sounds are mastered.
- Provide ample opportunities to apply the knowledge of letter-sound relationships in reading.

Phonics Instruction in Imagine Learning
Letter sounds are taught explicitly at the start then students work on recognizing spelling patterns.  
Students learn to decode words using their knowledge of letter sound correspondences then practice reading words in books.  

3. Vocabulary development is perhaps the most needed element of literacy instruction for English learners. Without an understanding of key story vocabulary, it is impossible to comprehend the story. Despite this reality, the amount of vocabulary instruction in US classrooms is only about five to ten percent of classroom

instructional time. Many lessons don't give any attention to word meanings. With the expanding English learner population, this neglect is troubling (Francis, et al., 2006).

Five important principles should guide vocabulary instruction:

1. Teach both the definition and the context, so that students get the definitional information as well as hear the word used in multiple contexts (Stahl, 1985).
2. Provide a first-language translation for the word to help students draw directly on familiar experience and expedite learning (Nation, 2001).
3. Encourage deep processing—engage students in thinking about words and in making links to other words (Beck, I., & McKeon, M. G., 2002; Stahl, 1985).
4. Provide students multiple exposures to the target words (Stahl, 1985).
5. Choose high utility academic words (such as analyze or frequent) or important function words (Francis, et al., 2006).

When students read leveled text in Imagine Learning, they have an opportunity to explore key vocabulary words in *Discover Story Vocabulary.* In this activity, they can listen to the word and definition in English and, if they choose, hear a translation of the word and definition in their first language. Students then choose, from four pictures or words, two items that are related to and examples of the target vocabulary word. Finally, they choose the sentence that fits the target word; dragging the word to the blank. In this way, they are able to see a definition and a context as well as process the word more deeply.

Figure 11: Prior to reading, students discover story vocabulary.

4. Reading fluency is more than speed and accuracy; it also includes phrasing, prosody, and inflection. Each of these is considered an indicator of comprehension, as readers must understand the meaning of a sentence in order to give it the right expression (Francis, et al., 2006).

Several critical elements have been documented to improve the reading fluency of English learners (Linan-Thompson & Vaughn, 2007):

1. Provide an explicit model of fluent reading.
2. Give students multiple opportunities to read the same text.

3. Assist English learners in obtaining word meaning and background for the passage before and during reading.
4. Be mindful about engaging English language learners in oral reading practices that are too challenging or embarrassing.

One of the ways to provide an "explicit model" is through echo reading. In echo reading, students read text aloud after listening to a model. Typically teachers read part of the text (usually just one or two sentences at a time, depending on students' oral language proficiency). Then students echo read the same text, trying to imitate their teacher's rate and expression (University of Texas Center for Reading and Language Arts, 2002).

When students echo read in Imagine Learning, they record a page, using the recording buttons on the far right of the screen. When they finish, their recording is automatically played back for them, followed by the model. Students can record again until they are satisfied with their fluency. Final recordings are saved for teachers, who can listen to it at their convenience.

Figure 12:

Echo Reading Activity in Imagine Learning

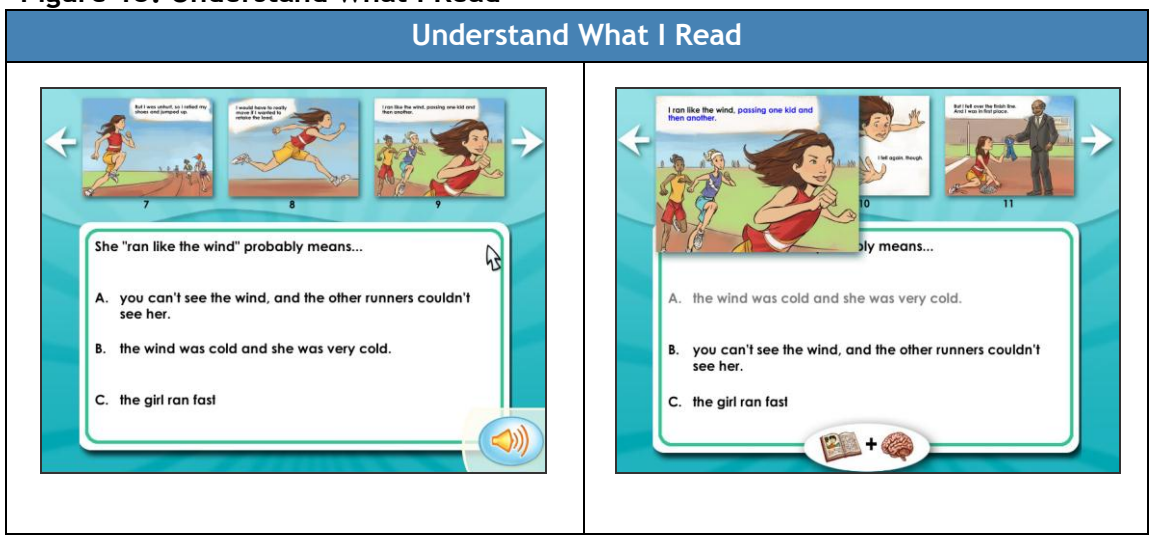
5. Comprehension is particularly important with English learners. There is considerable research showing the foundational skills in reading are acquired by English learners, but there is often a breakdown with reading comprehension (Linan-Thompson & Vaughn, 2007). One likely cause of this difficulty is English learners often encounter more unfamiliar English words and fewer familiar topics while reading than their monolingual English peers (Garcia, 1991; Jimenez, et al., 1996). When Garcia compared fifth and sixth grade monolingual English speakers with their Spanish speaking peers, he observed that Spanish speaking students did significantly worse on the scriptally implicit questions, or those question that required them to use background knowledge. The low and average performing Spanish speakers did not know when they were supposed to rely on background knowledge to answer some of the test questions and instead attempted to answer them through a literal interpretation of the text.

For this reason, the Imagine Learning activity "Understand What I Read" was designed to explicitly show how to answer questions that require background knowledge (similar to "Author and Me," a question-answering strategy described by Raphael, 2006). If students answer inferential questions incorrectly, they are shown the page of the story containing the partial answer. If they answer incorrectly again, the background knowledge and reasoning are supplied.

For example, this inferential question requires students to identify the meaning for a simile, "runs like the wind." If a student answers incorrectly, the narrator explains that this is an "inferential question" (indicated

by the icon at the bottom of the screen) and takes the student to the supporting page (enlarged) in the story. Then it explains the logic behind drawing the appropriate inference: "The story says she passed the other runners, so she is going fast." If the teacher has selected first language support, this explanation is provided in the students' home language. Then if the student still answers incorrectly, the feedback explains, "When you 'run like the wind,' you run fast."

Figure 13: Understand What I Read



Recommendation #5: Add important modifications (to developing the five reading components) for English learners

Clearly focusing on the five elements of reading is very important, but insufficient. English learners need help in building their background knowledge. They need scaffolding for discussing and reading in the content areas. They need safe opportunities to engage in structured, academic talk. All agree that academic language is important for student achievement and that limitations in academic language development are the root of most English learners' academic difficulties. There is a pressing need to attend to the role of academic language and to support its development (Gersten, et al., 2006).

The glossary developed by the Center for Research on Education, Diversity and Excellence (CREDE, 2002) defines academic language proficiency as the language skill level needed for mastering academic material, including both written and oral language. TESOL defines academic language as:

> *Language used in the learning of academic subject matter in formal schooling context; aspects of language strongly associated with literacy and academic achievement, including specific academic terms or technical language, and speech registers related to each field of study* (TESOL, 2000).

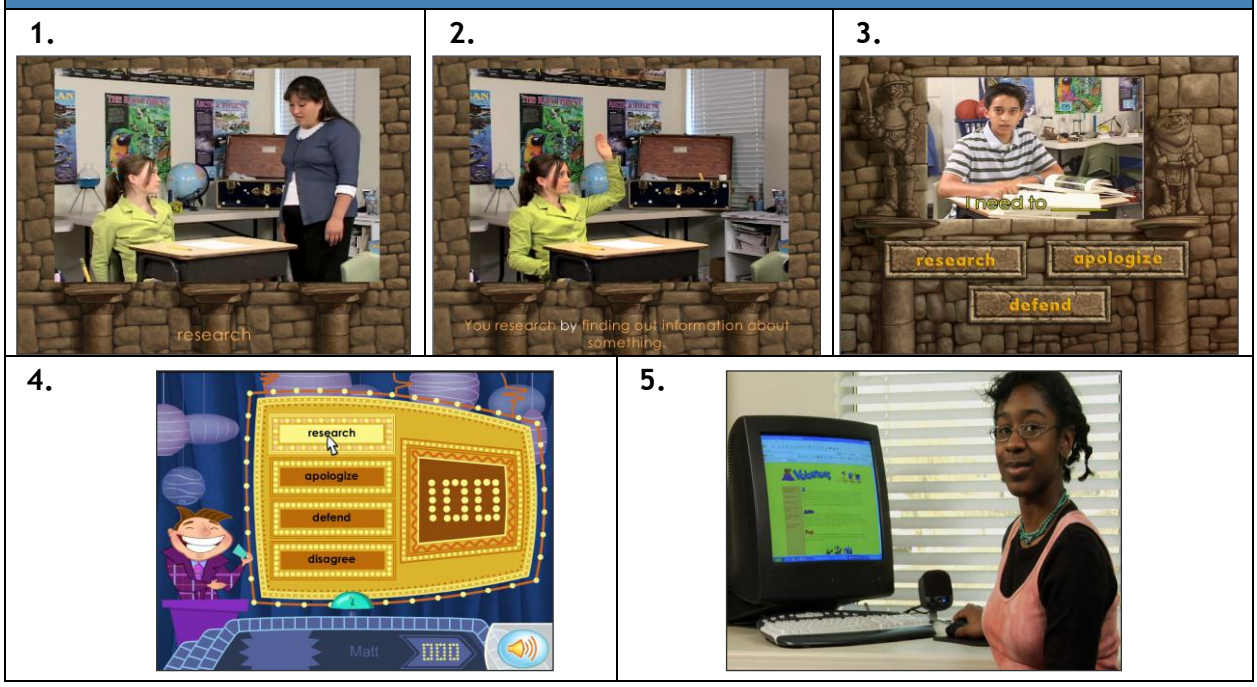
Often ignored are the words used during instruction, in exams, and in textbooks because they are commonly perceived as words with which students should not have difficulties. However, these words are very important and need to be explained (NCELA, 2007).

Research studies paint a rather bleak picture: English learners' speed of acquiring English vocabulary seems in many cases not to be adequate to bring them up to native speaker levels by first or even fourth grade. English learners do learn English vocabulary at a steady pace similar to that of their English-only (EO) classmates, with the result that they remain on average about one standard deviation below EO children on vocabulary assessments. Given that vocabulary is one key predictor of reading comprehension outcomes, it seems clear that the consequences of this vocabulary deficit in terms of English learners' capacity to learn the content presented in textbooks, are quite severe (Snow & Kim, 2007).

Imagine Learning has a series of activities designed to build academic vocabulary. For example, here is how the word *research* is taught and elaborated upon (see Figure 16): In the first video, a student asks her teacher how to do research, which she explains in detail. Then the word is presented in a sentence that is displayed. Students see this video multiple times. Then students play a game, *Go for the Gold*, in which they can click on videos to determine the correct word for the cloze sentence (the video character is researching in order to write a report). Students practice their understanding of the word by listening to clues and trying to identify the word correctly with the fewest clues in *Name that Word*. Finally, students demonstrate their understanding in a test, *Show What You Know*. Throughout these activities, there are conversations including the target word, illustrating correct usage in multiple contexts.

Figure 14:

"Go for the Gold"—Teaching the Word *Research*



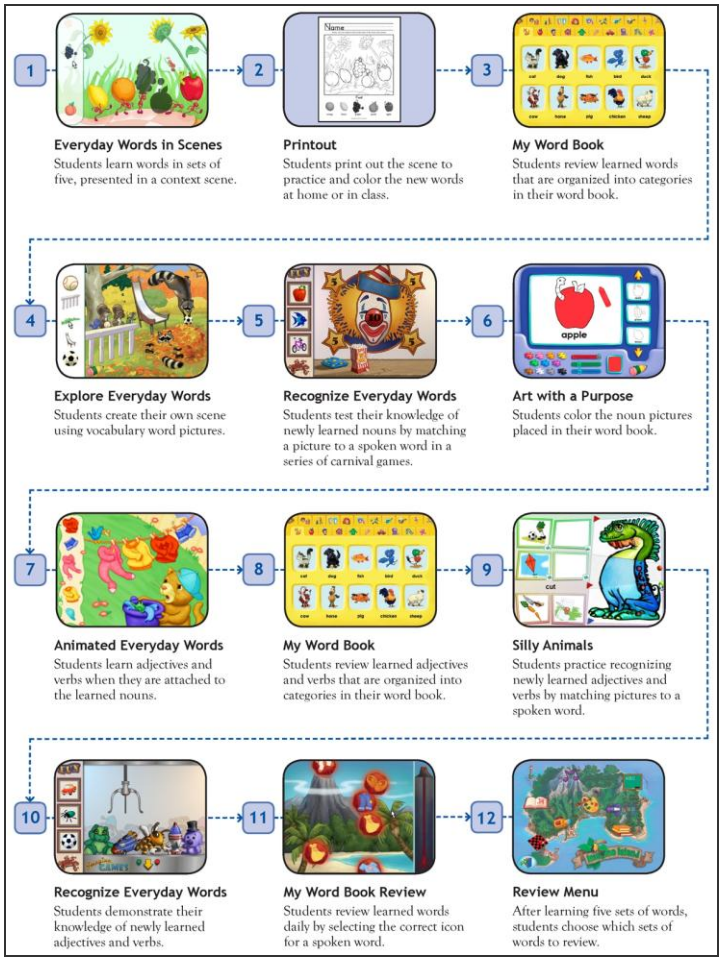
Recommendation #6: Provide opportunities to practice

All students, but particularly English learners, need many and varied opportunities to practice their language and literacy skills, including feedback and assistance from the teacher (or computer) as well as independently (Graves, Gersten & Haager, 2004; Haager, Gersten & Graves, 2003; August & Hakuta, 1997; Jensen, 2005; Francis, et al., 2006; Linan-Thompson & Vaughn, 2007). "Many" and "varied" are key features of valuable practice and are often identified by brain researchers, who assert that practice should be interesting, not just repetitive. They also add it should be "active" (students must respond frequently) and include "feedback" (Jensen, 2005).

English learners benefit from repeated exposure and use of content words scaffolded with support and feedback. One way to achieve this is through reading aloud, which provides an opportunity for practicing effective language use. When English learners are paired with a fluent model (could be a narrator on the computer), they have an opportunity to practice appropriate expression with support. Structured experiences with academic language are typically only given "minimal focus" (Francis, et al., 2006).

Certainly schools seek to provide as many of these practice opportunities as possible, but they are limited in terms of time, materials, and number of trained ESL teachers.

Figure 15: Sample Vocabulary Lesson for Tier 1 Words



For this reason, Imagine Learning provides multiple and varied interactions with vocabulary words. Note, for example, the repetition provided for Tier 1 vocabulary words (Figure 15). A single set of nouns, verbs, and adjectives are introduced and practiced through as many as twelve activities—more if students forget (automatic re-teaching) and fewer if students are successful. Students hear each target word, are prompted to repeat it, see an illustration of the word's meaning, place the word in an online dictionary, take home a printout of the word to practice at home, and more. This method is based on the premise that "what is reviewed will be remembered." (Jensen, 2005).

In addition, students have many opportunities (see Figure 16) to practice speaking in a low-risk environment by recording conversations (after listening to a video model) and by singing (karaoke style). Teachers can access student recordings to evaluate progress in each student's "speech portfolio."

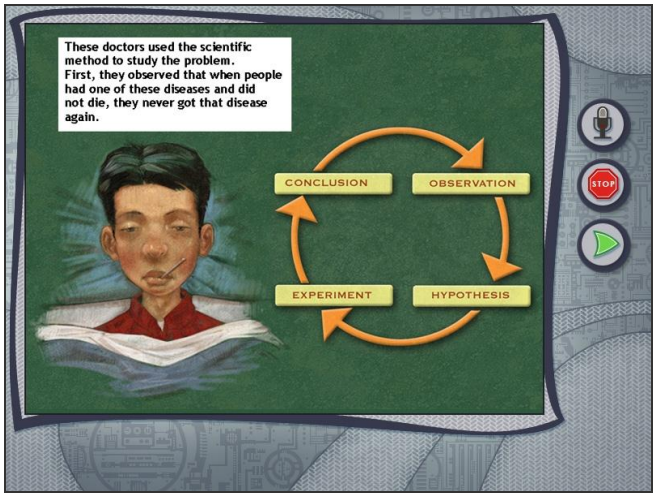
Figure 16: Opportunities to Practice Speech

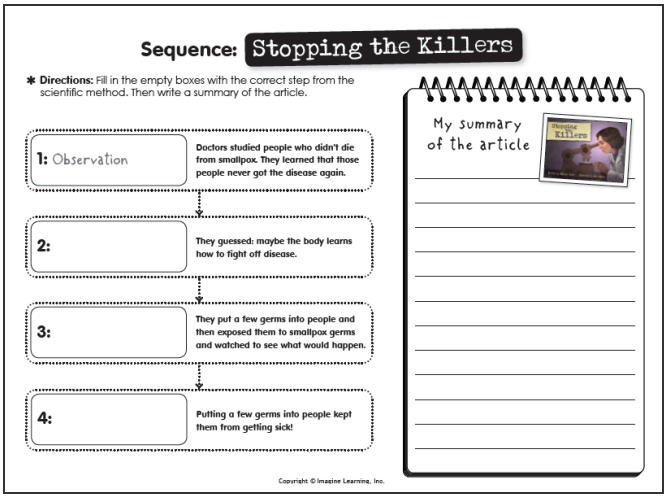
Opportunities to Practice Speech	
	Students hear songs, nursery rhymes, and chants. The text of each song and chant is highlighted as the words are sung or said. Students sing along karaoke style.
	Students practice and record conversational phrase like “How’s the weather?”

Imagine Learning provides opportunities to listen to and to read content area selections, providing practice with academic language. For example, before students read one of the leveled articles about the development of vaccines (Figure 17), they study key vocabulary words (*observe* and *hypothesize*); interacting as they determine related words and appropriate context for the target vocabulary word. Then they listen to a fluent model read the article. As students record their own reading, they are able to practice language related to the scientific method. For additional support, they are able to click on any word and hear its pronunciation before recording. Each article is additionally supported by a paired article on the topic (building background knowledge); plus each story has two versions (simplified and advanced).

When students finish reading the article, they receive a printout, requiring them to complete a graphic organizer about the scientific method. This graphic organizer also serves as a prompt for composing a summary. The printout could be completed with a more fluent peer, allowing for additional “structured” academic talk.

Figure 17: Students Record the Selection, *Stopping the Killers*, and Then Complete a Printout





Is It Working?

English learners are faced with a daunting task; they have the responsibility of learning a second language and content in that language at the same time. Research centers and educational leaders suggest that English learners will experience more success if teachers had the resources to assess and monitor progress, provide explicit instruction, differentiate teaching, and develop the five basic reading abilities as well as build academic language. However, the realities of classrooms—the influx of English learners, the shortfall of resources—make meeting these recommendations difficult, but not impossible.

The Educational Alliance suggests that schools rely on technology to support reading instruction. They identify four general capabilities that computers can provide to support students learning to read:

1. Present information and activities to students
2. Assess students' work
3. Respond to students' work
4. Provide scaffolds (access to word pronunciation and definitions that help students read successfully)

We believe they are right. Technology can help schools realize NCLB's purpose and provide more opportunity for English learners to succeed. The best way to determine whether technology can be an effective tool is to look at its impact on students' scores, the same scores that are used to determine AYP.

Initial studies of Imagine Learning's impact are encouraging. Two studies conducted by an independent evaluation group (Clear Vue Research, Inc.) looked at students in both Illinois and California. In the 2006–07 school year, English learners in Illinois that used Imagine Learning significantly outperformed their peers on the Illinois Snapshot of Early Literacy (ISEL). That same year, kindergarten students in California outperformed their peers on the California English Language Development Test (CELDT). Figures 18 and 19 below illustrate the power of technology to help close the gap between English learners and their English only peers. There is reason to believe that technology offers a promising solution for developing L2 literacy.

Figure 18: Illinois Students Using Imagine Learning Comparison

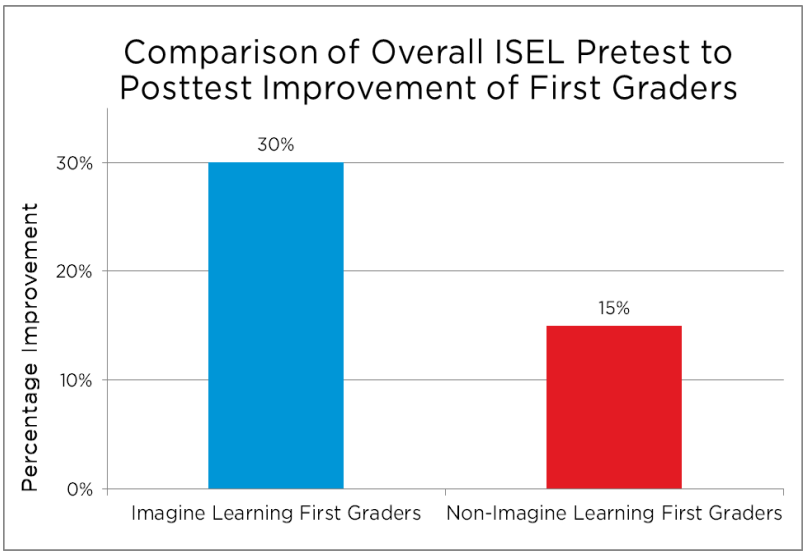
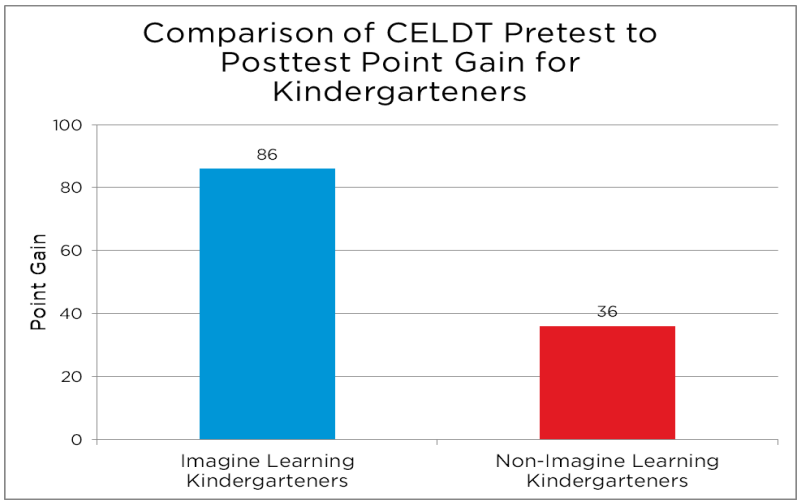


Figure 19: California Students Using Imagine Learning Comparison



References

August, D., & Hakuta, K. (1997). *Improving schooling for language-minority children: A research agenda.* Washington, DC: National Academy Press.

ASCD's comments on Title I of the NCLB Reauthorization draft. (September 2007). Available at: http://www.ascd.org/ASCD/pdf/newsandissues/ASCD percent20Comments percent20on percent20NCLB percent20Discussion percent20Draft--FINAL.PDF

Beck, I. L., McKeown, M. G., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction.* New York: Guilford Press.

Blevins, W. (1998). *Phonics from A to Z: A practical guide.* New York: Scholastic Professional Books.

Bork, A. (1997, June). The future of computers and learning. *Technology Horizons in K–12 Education (T.H.E.) Journal, 24* (11), 69–78.

Brewer, D., Garcia, M. & Aguilar, Y. F. (2007, September 2). English learners left behind: The current No Child Left Behind Law sets up non-native speakers for failure. *The Los Angeles Times*: Opinion. Available at: http://www.latimes.com/news/opinion/la-oe-brewer7sep07,0,3275728.story?coll=la-opinion-center

Calderon, M. E., Hertz-Lazarowitz, R., & Slavin, R. (1996). *Effects of bilingual cooperative integrated reading and composition on students transitioning from Spanish to English reading.* Unpublished paper for the Office of Educational Research and Improvement, U.S. Department of Education, Washington, DC.

Capps, R., Fix, M. E., Murray, J., Ost, J., Passel, J. S., Hernandez, S. H. (2005). *The New Demography of American Schools: Immigration and the No Child Left Behind Act*. Washington, DC: The Urban Institute. http://www.urban.org/UploadedPDF/311230_new_demography.pdf

Davies, G. (2007). *Computer assisted language learning: Where are we now and where are we going?* Keynote Address from Conference: E-learning and Japanese Language Education: Pedagogy and Practice, Oxford Brookes University, 31 March to 1 April 2007.

De Cohen, C. C., Deterding, N., & Clewell, B.C. (2005). *Who's Left Behind? Immigrant children in high and low LEP schools.* Program for Evaluation and Equity Research. Washington, DC: The Urban Institute.

Edelsky, C., Casanova, U., Guzzetti, B., Hudelson, S., Kansy, H., & Y Serna, I. (1993). Lost & found, review of E. Hoffman, "Lost in translation." *Review of Education,* 15, 307–315.

Education Alliance at Brown University. (n.d. [a]) Meeting the Literacy Needs of English Language Learners. Retrieved from The Knowledge Loom website October 22, 2007. Available at: http://knowledgeloom.org/elemlit/ English learners_meetnds.jsp

Education Alliance at Brown University. (n.d. [b]) Reading Instruction, Grades K–3. Retrieved from The Knowledge Loom website October 22, 2007. Available at: http://knowledgeloom.org/practices3.jsp?t=1&location=1&bpinterid=1409&spotlightid=1393&testflag=yes

Florida State Department of Education (2006). *What do we know about choosing to take a high-stakes test on a computer?* Prepared by CTB/McGraw-Hill under contract to the Florida Department of Education, September 4, 2006. Available at: http://www.fldoe.org/asp/k12memo/pdf/WhatDoWeKnowAboutChoosingToTakeA HighStakesTestOnAComputer.pdf

Francis, D. J., 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.* Center on Instruction: Portsmouth, NH.

Gandara, P, Maxwell-Holly, J and Driscoll, A. (2005). Listening to Teachers of English Language Learners: A Survey of California's Teachers' Challenges, Experiences and Professional Development Needs. The Center for the Future of Teaching and Learning: Santa Cruz, CA. Available at: http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/29/de/68.pdf

Garcia, G. E. (1991) Factors influencing the English reading test performance of Spanish-speaking Hispanic children. *Reading Research Quarterly,* 26, 371–392.

Garcia, G. E. (2003). The reading comprehension development and instruction of English-language learners. In A. P. Sweet & C. E. Snow (Eds.), *Rethinking Reading Comprehension Sweet*, pp. 30–50. New York, NY: The Guilford Press.

Gersten, R., Baker, S.K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R. (2007). *Effective Literacy and English Language Instruction for English Learners in the Elementary Grades: A Practice Guide* (NCEE 2007–4011). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee

Graves, A., Gersten, R., & Haager, D. (2004). Literacy instruction in multiple-language first grade classrooms: Linking student outcomes to observed instructional practice. *Learning Disabilities Research and Practice,* 19, 262–272.

Haager, D., Gersten, R., Baker, S., & Graves, A. (2003). The English-language learner classroom observation instrument: Observations of beginning reading instruction in urban schools. In S. R. Vaughn & K. L. Briggs (Eds.), *Reading in the classroom: Systems for observing teaching and learning* (pp. 111–114). Baltimore: Paul H. Brookes.

Hall, T. (2002). *Differentiated instruction.* Wakefield, MA: National Center on Accessing the General Curriculum. Available at: http://www.cast.org/publications/ncac/ncac_diffinstruc.html

Herrell, A. (2000). Fifty strategies for teaching English language learners. Upper Saddle River, NJ: Prentice-Hall.

Hernandez, J. S. (1991). Assisted performance in reading comprehension strategies with non-English proficient students. *The Journal of Educational Issues of Language Minority Students,* 8, 91–112.

Jensen, E. (2005). *Teaching with the brain in mind.* Alexandria, VA: ASCD.

Jimenez, R. T., Garcia, G. E., & Pearson, P. D. (1996). The reading strategies of bilingual Latina/o students who are successful English readers: Opportunities and obstacles. *Reading Research Quarterly,* 31, 90–112.

Jimenez, R. T. (1997). The strategic reading abilities and potential of five low literacy Latina/o readers in middle school. *Reading Research Quarterly,* 32, 224–243.

Kame'enui, E., & Carnine, D. (1998). Effective teaching strategies that accommodate diverse learners. Upper Saddle River, NJ: Prentice-Hall.

Kindler, A. (2002). *Survey of the states' limited English proficient students and available educational programs and services.* Washington, DC: National Clearinghouse for English Language Acquisition and Language Instruction Educational Programs. Retrieved November 4, 2002. Available at: http://www.ncela.gwu.edu/ncbepubs/seareports/99-00/sea9900.pdf

Kinsella, K. (2005) Teaching Academic Vocabulary. Sonoma County Office of Education Publication. Available at: http://www.scoe.org/aiming_high/docs/AH_kinsella2.pdf

Learning First Alliance (2000). *Every child reading: A professional development guide*. Washington, DC.

Lecker, W. (2005, September). The Promises and Challenges of the "No Child Left Behind Act." For the National Access Network, Teachers College, Columbia University. Available at: http://www.schoolfunding.info/federal/NCLB/nclb_brief.php3

Linan-Thompson, S., & Vaughn, S. (2007). Research-based methods of reading instruction for English language learners, Grades K-4. Alexandria, VA: ASCD.

Mathes P.G., Torgesen, J.K., Menchetti, J.C., Santi, K., Nicholas, K., & Robinson, C. A. (2003). Comparison of Teacher-Directed versus Peer-Assisted Instruction to Struggling First-Grade Readers. *Elementary School Journal,* 103, 459–479.

Muniz-Swicegood, M. (1994). The effects of metacognitive reading strategy training on the reading performance and student reading analysis strategies of third-grade bilingual students. *Bilingual Research Journal,* 18, 83–97.

Nation, I.S.P. (2001). *Learning Vocabulary in Another Language*. Cambridge, UK: Cambridge University Press.

National Clearinghouse for English Language Acquisition (2007). *English Language Literacy, Academic Language, and Content Area Literacy: Introduction to the Issues.* Washington, DC: Tartir, S. A., 2007. Available at http://www.ncela.gwu.edu/resabout/literacy/intro/index.html

National Reading Panel (NRP). (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. Reports of the subgroups. (NIH Publication No. 00-4754).* Bethesda, MD: National Institutes of Health, National Institute of Child Health and Human Development.

The Nation's Report Card: Reading 2007. Available at: http://nationsreportcard.gov/reading_2007/r0015.asp?tab_id=tab1&subtab_id=Tab_1#chart

National Research Council (NRC). (1998). *Preventing reading difficulties in young children.* Washington, DC: National Academy Press.

Padolsky, Daniel. 2005. *How Many School-Aged English Language Learners (English learners) Are There in the U.S.?* Ask NCELA No. 1. Revised May 2005. Washington, DC: National Clearinghouse for English Language Acquisition and Language Instruction Educational Programs. Available at: http://www.ncela.gwu.edu/expert/faq/01leps.htm.

Quiroga, T., Lemos-Britton, Z., Mostalapour, E., & Berninger, V. (2002). Phonological awareness and beginning reading in Spanish-speaking ESL first graders. Research into practice. *Journal of School Psychology,* 40, 85–111.

Rapahel, T. E., K. Highfield, et al. (2006). *QAR now: A powerful and practical framework that develops comprehension and higher-level thinking in all students.* New York: Scholastic.

Saunders, W., O'Brien, G., Lennon, D., & McLean, J. (1996). Making the transition to English literacy successful: Effective strategies for studying literature with transition students. In R. Gersten & R. Jimenez (Eds.), *Effective strategies for teaching language minority students.* Monterey, CA: Brooks Cole.

Stahl, S. (1986). Three principles of effective vocabulary instruction. *Journal of Reading,* 29, 662–668.

Shanahan, T., & August, D. (2006). *Report of the National Literacy Panel: Research on teaching reading to English language learners.* Mahwah, NJ: Erlbaum.

Snow, C. E., & Kim, Y. (2007). Large Problem Spaces: The Challenge of Vocabulary for English Language Learners. In *Vocabulary Acquisition: Implications for Reading Comprehension*, Edited by Wagener, R. K., Muse, A. E. & Tannenbaum: The Guilford Press.

Stanley, N. (2004). An Interview with Joe Torgesen: Reading Instruction with Sense and Sensibility. *Florida Reading Quarterly* Volume 41, No. 2, December 2004.

Tomlinson, C. A., & Allen, S. M. (2000). *Leadership for Differentiating Schools and Classrooms.* Alexandria, VA: ASCD.

Tikunoff, W. J. (1983). *Compatibility of the SIF features with other research instruction of LEP students.* San Francisco: Far West Laboratory.

TESOL (Teachers of English to Speakers of Other Languages, Inc). (n.d.) ESL Standards for Pre-K-12 Students: Glossary. Retrieved October 22, 2007 from: http://www.tesol.org/s_tesol/sec_document.asp?CID=113&DID=317

University of Texas Center for Reading and Language Arts (2002). *Effective fluency instruction and progress monitoring.* Austin, TX: Texas Education Agency.

Vygotsky, L. (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

