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# Case Study and Demonstration: NEARStar English as a Second Language Application

International Workshop on Mobile Learning  
for Expanding Educational Opportunities

16-20 May 2005, Tokyo, Japan

David C. Brauer, Director of Information Technology,  
PREL

Tony Tung, Director of NEARStar Program, PREL



Pacific Resources for Education and Learning



# Take Away...

## ✦ OUTPUT

- ✦ Presentation, demonstration and paper

## ✦ OUTCOME

- ✦ Clearly define educational objectives
- ✦ Include development of research-based curriculum
- ✦ Incorporate assessment and evaluation

## ✦ IMPACT

- ✦ Successful mLearning initiatives



# What is ?

NEARStar, Network for English Acquisition and Reading, Star Schools program.

An interactive, Web-based multimedia program designed for students who are in the beginning stages of both oral English language development and reading.

Its unique teaching method merges reading skill instruction with early English language development, specifically linking what students can understand, to what they are presented with in print.

Engaging activities, animated chants and songs, and interactive online books that provide repeated exposure and focused practice to learn the featured vocabulary words and phonics skills.

Real-time monitoring and assessment that provides teachers with the data and resources they need to help students succeed.



# NEARStar Awards

EDDIE Award: 2003 Best Early Elementary ESL  
(English as a Second Language) Website



Distinguished Achievement Award:  
2004 Best Educational Software-Reading



BESSIE Award: 2003-04 Best Early Elementary ESL  
(English as a Second Language) Website



Pacific Resources for Education and Learning

Distinguished Achievement Award:  
2005 Finalist Best Educational Technology



# NEARStar's Success is due to ...

- ✦ Emphasis on curriculum before technology
- ✦ Research-based curriculum
  - ✦ Merged pedagogies of reading and English Language Development
  - ✦ For the first time!
- ✦ Technology choices driven by content rather than “cool technology”



# Research-Based Principles

✦ Developed by internationally recognized reading expert

✦ Dr. Elfrieda Heibert

✦ Key discovery

✦ “Critical Word Factor”

✦ Lower the rate of introduction of new words

✦ Increase the rate of new word repetition

	Unique Words /100	Singletons (words used once)	High Frequency Words
Harcourt (2001)	21	37	11
Houghton-Mifflin (2000)	38	66	7
McGraw -Hill (2001)	19	38	11
Open Court (2000)	21	43	10
<b>NEARStar Level 1</b>	<b>7</b>	<b>0</b>	<b>44</b>
<b>NEARStar Level 2</b>	<b>10</b>	<b>14</b>	<b>32</b>
<b>NEARStar Level 3</b>	<b>11</b>	<b>10</b>	<b>35</b>



# Other Key Research Findings

- ✦ Successful Texts for ELLs learning to speak and read English require:
  - ✦ High-meaning words with high imagery ratings
  - ✦ Phonetically regular words
  - ✦ High-frequency words
- ✦ Songs, chants and poems greatly enhance phonemic awareness.



# Five BIG Design Ideas



# First BIG Idea

 ***Active engagement*** and immediate participation in a supportive environment accelerates learning.



# Second BIG Idea

✦ The ***content of proficient reading for English Language Learners consists of the same five domains as that of English speakers***: phonemic awareness, word recognition, fluency, vocabulary, and comprehension.



# Third BIG Idea

✦ English Language Learners need ***repeated exposures to content, especially vocabulary***, for consistent and steady language development.



# Fourth BIG Idea

✦ Books *within the appropriate instructional level* and with engaging, pertinent content are a primary source for English Language Learners' acquisition of English *vocabulary, background knowledge, and syntax.*



# Fifth BIG Idea

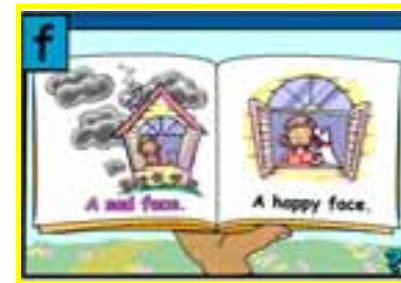
*✦ Technologies provide opportunities for English Language Learners to experience **models of English and different concepts and gain various means of access.***



Let's Begin



Vocabulary Builder



Story Time Book



Make a Book



Alpha Fun



Word Builder



# Principles of Interactive Learning

## ✎ Situated Learning

- ✎ My Self
- ✎ My School and My Friends
- ✎ My Community and My World

## ✎ Practice and Feedback

- ✎ Vocabulary Builder
- ✎ Alpha Fun
- ✎ Word Builder

## ✎ Learning by Doing

- ✎ Make a Book
- ✎ Storytime

## ✎ Learning from Mistakes

- ✎ Individual Pacing
- ✎ Animated Helpers

## ✎ Tell me, Show me, Let me do it

- ✎ Lesson Structure
- ✎ Introduce - Let's Begin and Sing a Song
- ✎ Practice - Vocabulary Builder and Storytime
- ✎ Review – Make a Book and Alpha/Word Fun



# Technology as a Solution

- ✦ Multimedia (audio+visual) is more effective than visual alone (e.g. silent reading)
- ✦ Multimedia helps students with “low prior knowledge” (e.g. ELLs)
- ✦ Computer software helps students who struggle with reading difficulties
- ✦ Allows students to be active, self-directed learners
- ✦ Impetus for engagement and motivation
- ✦ Acts as an additional teacher
- ✦ Facilitates the collection of data



# Teacher Assessment Tools and Resources





NEARStar.org - Elementary ESL Reading Program - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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Address [http://www.nearstar.org/v2/member/teacher\\_myhome.asp](http://www.nearstar.org/v2/member/teacher_myhome.asp) Go Links

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## Welcome Tony Tung!

NEARStar website continues to expand!

Visit our **Teacher Guide** to find NEARStar lesson plans and preview each NEARStar student component - including student activities, books, games, and songs. This is an easy way for you to see what your students are up to. We will continue to update this section as new NEARStar lessons are released.

Browse our **Teacher Resources** section and find hundreds of activities, designed to support the NEARStar curriculum.

We would love to hear from you. [Tell us what you think!](#)

### My School

**PREL**

Administrative Liaison:  
**Rayna Beck**  
[beckr@prel.org](mailto:beckr@prel.org)

Teacher Liaison:  
**Amy Nicholson**  
[nicholsa@prel.org](mailto:nicholsa@prel.org)

Technical Coordinator:  
**Tony Tung**

### NEARStar awarded a 2003 EDDIE!

The Network for English Acquisition and Reading Star Schools project (NEARStar) has been awarded a 2003 EDDIE award in the category of Early Elementary - Best ESL Website. The purpose of the EDDIE is to recognize innovative and content-rich programs and websites which provide parents and teachers with the technology tools to foster educational excellence, including augmenting the classroom curriculum and improving teacher productivity. Selection is based on academic content, potential for broad classroom use, technical merit, subject approach and management system.

NEARStar joins the ranks of such titles and publishers such as Lightspan, Scholastic, Riverdeep, and eSytran.

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**Class: Period1** [Edit Class Profile](#)  
[Delete Class](#)

**Profile:**

Grade Level: **K**  
Students: **7**

Assessment: [Level 1](#) [Level 2](#)

**Students in Period1:** [Register New Student\(s\)](#)  
[Add/Remove Students](#)  
[Change Students' Grade Level](#)


	Name	User name / Password	Grade	Last Login	Progress	Assessment
1.	<a href="#">Kaira</a>	Kaira / 1234	K	9/23/2003	Level 2; L9	Level: <a href="#">1 2</a>
2.	<a href="#">kanzler</a>	maya / 1234	K	-	Level 2; A2	Level: <a href="#">1 2</a>
3.	<a href="#">Midian</a>	Midian / midian	B	8/28/2003	Level ;	Level: <a href="#">1 2</a>
4.	<a href="#">Ruth Kirk</a>	kirkr / toodles	K	9/11/2003	Level 1; L4	Level: <a href="#">1 2</a>
5.	<a href="#">Scooter</a>	scooter / roxy427	K	4/29/2003	Level 2; L3	Level: <a href="#">1 2</a>
6.	<a href="#">shipley</a>	kristin / 1234	K	-	Level 2; A1	Level: <a href="#">1 2</a>
7.	<a href="#">TonyName1</a>	Tony1 / richardfeynmann	K	6/5/2003	Level 2; L2	Level: <a href="#">1 2</a>

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NEARStar.org - Elementary ESE Reading Program - Microsoft Internet Explorer

Period1 Class Assessment - Microsoft Internet Explorer

Class Assessment Report 

Period: September 25, 2003

Teacher: Tony Tung

Level 1: All About Me

		Assessment 1		Assessment 2		Assessment 3		Assessment 4		Assessment 5	
		L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
<a href="#">TonyNaraj</a>	L	67%	78%	75%	25%	83%	83%	86%	100%	83%	100%
	S	67%	0%	100%	33%	67%	100%	100%	100%	100%	75%
	P	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<a href="#">Kaira</a>	L	-	-	-	-	-	-	-	-	-	-
	S	-	-	-	-	-	-	-	-	-	-
	P	-	-	-	-	-	-	-	-	-	-
<a href="#">Scooter</a>	L	100%	67%	75%	100%	100%	100%	71%	100%	67%	67%
	S	33%	0%	100%	100%	0%	33%	33%	0%	0%	0%
	P	-	-	100%	100%	-	-	100%	75%	100%	100%
<a href="#">shipley</a>	L	83%	100%	100%	100%	100%	100%	86%	50%	100%	100%
	S	0%	0%	0%	0%	33%	0%	0%	0%	0%	0%
	P	100%	100%	100%	100%	100%	100%	88%	100%	100%	100%
<a href="#">kanzler</a>	L	83%	100%	100%	100%	78%	100%	100%	100%	83%	67%
	S	0%	0%	67%	67%	67%	67%	67%	100%	50%	50%
	P	100%	100%	100%	100%	-	-	100%	100%	100%	0%
<a href="#">Ruth Kirk</a>	L	100%	100%	-	-	-	-	-	-	-	-
	S	67%	100%	-	-	-	-	-	-	-	-
	P	88%	100%	-	-	-	-	-	-	-	-
<a href="#">Midan</a>	L	-	-	-	-	-	-	-	-	-	-
	S	-	-	-	-	-	-	-	-	-	-
	P	-	-	-	-	-	-	-	-	-	-

Class: Per

Profile:

Grade Level: K  
Students: 7

Assessment: 1

Students in Pe

Name
1. <a href="#">Kaira</a>
2. <a href="#">kanzler</a>
3. <a href="#">Midan</a>
4. <a href="#">Ruth Kirk</a>
5. <a href="#">Scooter</a>
6. <a href="#">shipley</a>
7. <a href="#">TonyNaraj</a>

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Student(s)

Students

Grade Level

Assessment

el: 12

el: 12

el: 12

el: 12

el: 12

el: 12

el: 12

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Scouter's Level 1 Student Assessment - Microsoft Internet Explorer

Student Assessment Report

Student Name: Scooter

September 25, 2003

Class: Period 1

Teacher: Tony Tung

Level 1, All About Me

	5/20/2003 Assessment 1		1/21/2003 Assessment 2		5/27/2003 Assessment 3		2/6/2003 Assessment 4		2/11/2003 Assessment 5		
	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	
<b>P Phonemic Awareness</b> Assessed in Spin the Wheel	0%										
Face	- map	- dad	✓ radn	✓ table	- cake	- baby	✓ snal	- pan	✓ ladder	67%	
fan	- milk	- desk	✓ rain	✓ teacher	- candy	- bed	- seven	✗ penny	✓ lamp		
feet	- mirror	- dime	✓ rake	✓ teeth	- cap	- bell	- sink	✗ pepper	✓ leaf		
fish	- mom	- dish	✓ rat	✓ telephone	- car	- bird	- six	✓ pie	✓ legs		
flag	- money	- dog	✓ rice	✓ ten	- cat	- book	- soap	- pig	✓ lemon		
fly	- moon	- doll	✓ ring	✓ tires	- clock	- box	- socks	- pin	- lion		
fox	- mop	- door	✓ robot	✓ top	- cookies	- boy	- spoon	- pizza	- lock		
frog	- mouth	- duck	✓ rug	✓ turtle	- cup	- bun	- sun	- jet	✓ log		
	0%	0%	100%	100%	0%	0%	33%	33%	67%	67%	67%
<b>V Vocabulary</b> Assessed in Balloon Pop and Balloon Fill	100%										
ears	✓ arms	✓ brother	✗ baby	✓ bedroom	ball	✓ fish	✗ eat	jump	✓ pants	✓ fat	
hair	✓ hands	✗ grandpa	✓ bedroom	ball	jump rope	✓ rat	✗ juice	✗ jump	✓ shirt	✗ little	
nose	✓ legs	✓ mom	✗ living room	train	✓ turtle	✓ rat	✗ meat	✗ walk	✓ shoes	✗ long	
eyes	✓ feet	✗ dad	✓ bathroom	doll	✓ bird	✓ frog	✓ rice	✓ drink	✓ dress	✗ big	
face	✓ head	✓ family	✓ kitchen	✓ kite	✓ frog	✓ rabbit	✓ eggs	✓ sit	✓ jacket	✓ short	
mouth	✓ me	✓ grandma	✓ kitchen	yo-yo	✓ rabbit	✓ rabbit	✓ milk	✓ sit	✓ socks	✓ thin	
	100%	67%	75%	100%	100%	83%	71%	100%	67%	67%	83%
<b>S Sight Word Recognition</b> Assessed in Pinball	33%										
face	✗ feet	✗ dad	✓ bed	✓ new	✗ cat	✗ bun	✗ go	✗ pocket	big	✗	
happy	✗ hands	✗ love	✓ me	✓ old	✗ dog	✓ jam	✓ stop	✗ toy	✗ cat	✗	
sad	✓ me	✗ mom	✓ room	✓ toys	✗ sad	✗ love	✗ van	✗ toy	✗ dog	✗	
	33%	0%	100%	100%	0%	33%	33%	0%	0%	0%	30%
	39%	22%	90%	100%	33%	33%	47%	44%	59%	53%	
	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	

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Resources Support Center

Period 1 Student List

- [Kaira](#)
- [kanzler](#)
- [Midian](#)
- [Ruth Kirk](#)
- Scooter**
- [Scooter](#)
- [shigley](#)
- [TonyName1](#)

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[Lesson Plans](#) | 
 [Scope & Sequence](#)

**Level One: Lesson One: Parts of the Face**

**New Skills Taught** > [Lesson Preview](#) > [Opening the Meaning Door](#)

<b>Phoneme:</b>	<b>/f/</b>	
<b>Reading Words:</b>	Key Sight words:	face, happy, sad
	High Frequency words:	a, and, my, yes
	Collocative words:	happy/sad
<b>Vocabulary (Aural):</b>	Concept words:	eyes, nose, mouth, ears, hair, face
	Phoneme words:	face, fan, feet, fish, flag, fly, fox, frog
<b>Language Patterns &amp; Structures:</b>	Commands:	Choose the (concept word). Choose a happy/sad face. Find the (phoneme word).
	Questions:	What's in the box?
	Statements:	Yes, a face.
	Greetings:	Hi, I'm ____.
	Feedback:	Wow! Good job!

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Lesson Plans **Scope & Sequence**

### Decoding and Word Recognition

Lesson Number	1	2	3	4	5	6	7	8	9	10
<b>Theme</b>	Parts of the Face	Parts of the body	Family members	Rooms in a house	Toys	Pets	Food items	Action words	Articles of clothing	Adjectives (size)
<b>Phoneme</b>	/f/	/m/	/d/	/r/	/t/	/k/	/b/	/s/	/p/	/l/
<b>Key Sight Words</b>	face happy sad	me hands feet	dad mom love	room bed	toys old new	cat dog	ban jam	stop go van	pocket	big little
<b>High Frequency Words</b>	a and my yes	an I in me no out see	is to	for the	here this you	can down up	not on	go into stop	goes	we

### Vocabulary

Lesson Number	1	2	3	4	5	6	7	8	9	10
<b>Theme</b>	Parts of the Face	Parts of the body	Family members	Rooms in a house	Toys	Pets	Food items	Action words	Articles of clothing	Adjectives (size)
<b>Concept Words</b>	ears eyes face nose mouth hair	arms feet hands head legs me	baby brother dad family grandma grandpa mom sister	bedroom kitchen living room bathroom	ball doll jump rope kite train yo-yo	bird fish frog rabbit rat turtle	eggs juice meat milk pizza rice	drink eat jump runs t walk	dress jacket pants shirt shoes socks	big fat little long short thin

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[Resource Database](#) [Glossary](#)








## Welcome to the NEARStar Resource Database!

Here you'll find easy access to a wide-range of resources that support strong literacy instruction to meet the needs of today's diverse learners. This compilation is organized around the key components of reading and features:

<p><b><u>Phonemic Awareness and the Foundations of Literacy</u></b> <a href="#">Phonology</a>, <a href="#">Phonological Awareness</a>, <a href="#">Phonemic Awareness</a>, <a href="#">Print Concepts</a>, <a href="#">Letter Recognition</a></p> <p><b><u>Decoding and Word Recognition</u></b> <a href="#">Phonics</a>, <a href="#">Structural Analysis</a>, <a href="#">High-Frequency Sight Words</a></p> <p><b><u>Fluency</u></b> <a href="#">Speed and Accuracy</a>, <a href="#">Phrasing and Expression</a></p>	<p><b><u>Vocabulary</u></b> <a href="#">Word and Concept Knowledge</a>, <a href="#">Distinct Word Meanings</a>, <a href="#">Morphology</a></p> <p><b><u>Comprehension</u></b> <a href="#">Background Knowledge</a>, <a href="#">Active Reading Strategies</a>, <a href="#">Sentence Structure</a>, <a href="#">Text Structure</a></p>
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Resource Database Glossary

**Resource Types:**

	<a href="#">Classroom Practices</a>	(17)
	<a href="#">Professional Development</a>	(35)
	<a href="#">Children's Literature</a>	(25)
	<a href="#">Teacher 'Make It' Ideas</a>	(1)
	<a href="#">Blackline Masters</a>	(12)
	<a href="#">Songs, Chants, and Poetry</a>	(20)

**Learn about Phonological Awareness...**

Phonological awareness is the general metalinguistic ability to understand the sound structures of spoken language at the word, syllable, and phoneme levels. Developing phonological awareness in young children focuses on skills that help them build awareness of the sound structure of the language they are going to need to learn to read.

At the phoneme level, phonemic awareness refers to knowledge that spoken words are made up of a series of individual sound units or phonemes. This awareness also includes the insight that phonemes can be manipulated to form the words of a language. Phonemic awareness is a way to link spoken language to written language.

**Why is it important?**

Some degree of phonological awareness comes indirectly from exposure to songs, rhymes, books, and language play with adults. However, it is challenging for young learners to naturally develop a complete and necessary conscious awareness of how spoken language can be broken down to units of speech sounds. Adams (1990) explains why:

Although babies become attuned to the phonemes of their native language, this knowledge is at the subattentional rather than the conscious level. When listening, we hear a continuous stream of sounds, a burst of acoustical energy, with no clear breaks between or within words. As we communicate, we listen to speech, and pay attention to meaning, not to the specific sounds of the language being spoken. For those who are listening to speech in a language they do not know, this is even more evident.

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# Putting it All Together

## “What works for ELLs”

### ✦ NEARStar

- ✦ Proven effective technology ***designed for*** K-3 ELLs
- ✦ Addresses reading and language development needs using a combination of:
  - ✦ Interactive technology
  - ✦ Online printable books
  - ✦ Traditional print materials

- ✦ Curriculum that is carefully crafted around the language and literacy needs of ELLs
- ✦ Carefully sequenced lessons
- ✦ Ongoing assessments
- ✦ Printable progress reports

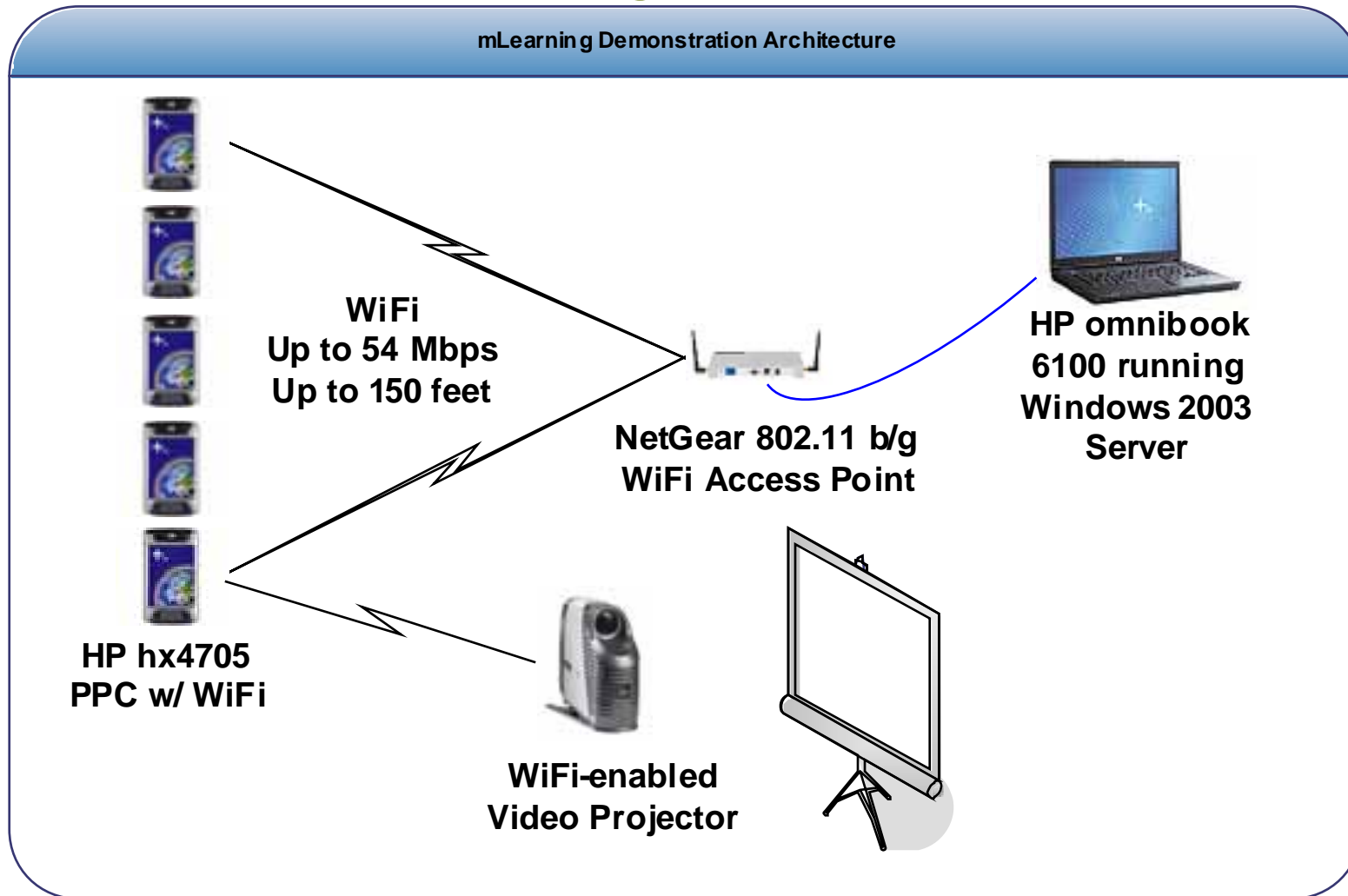


# NEARStar Development Considerations

- ✦ Web-based delivery
- ✦ Macromedia Flash™
- ✦ XML for communication with database
- ✦ Flash™ for Pocket PCs
  - ✦ 640x480 resolution
  - ✦ Audio Quality
- ✦ Wireless Communication
  - ✦ WiFi for now
  - ✦ WiMax in the very near future



# mLearning Architecture



# NEARSTAR

# DEMO



# NEARStar Demo Setup - Wireless



# NEARStar Demo Setup – Wireless Configuration



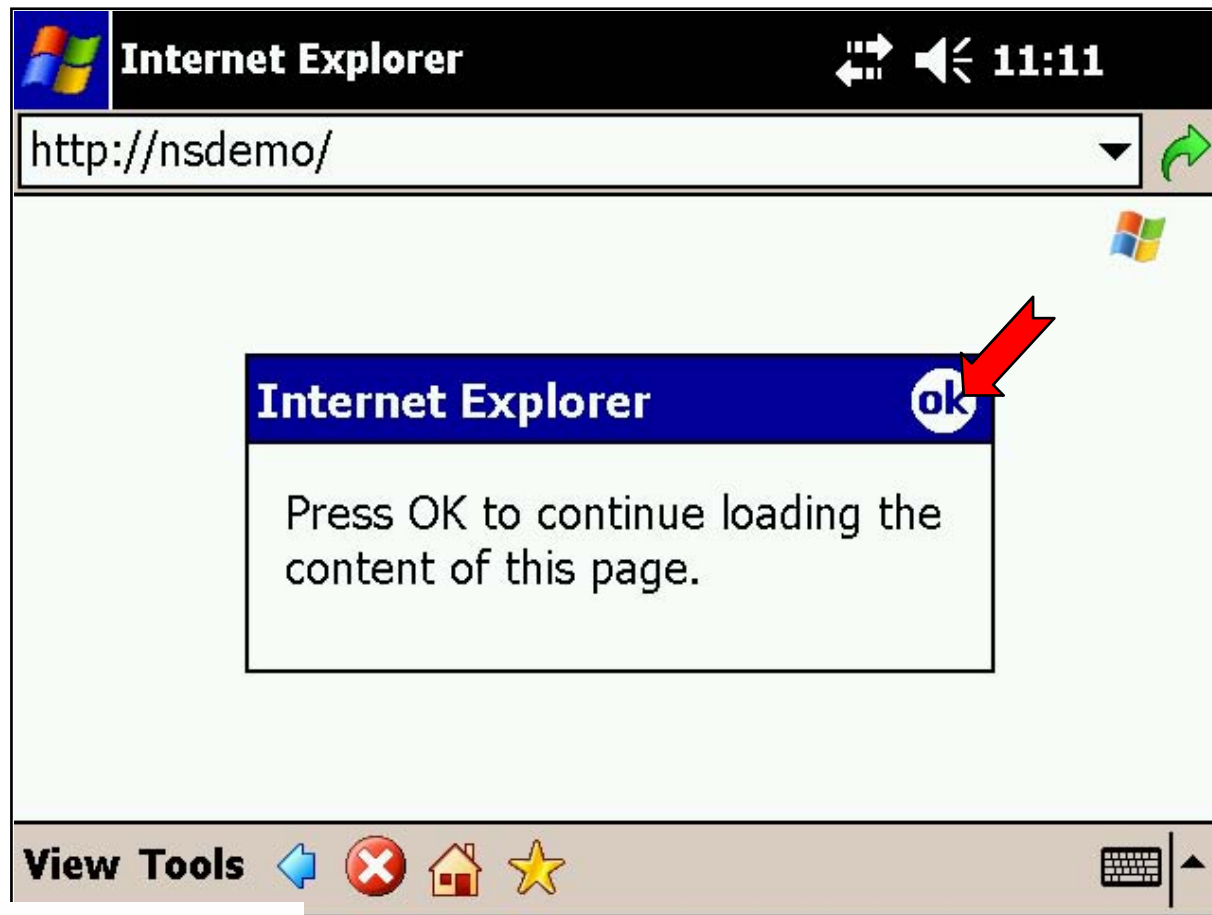
# NEARStar Demo Setup – Landscape Orientation



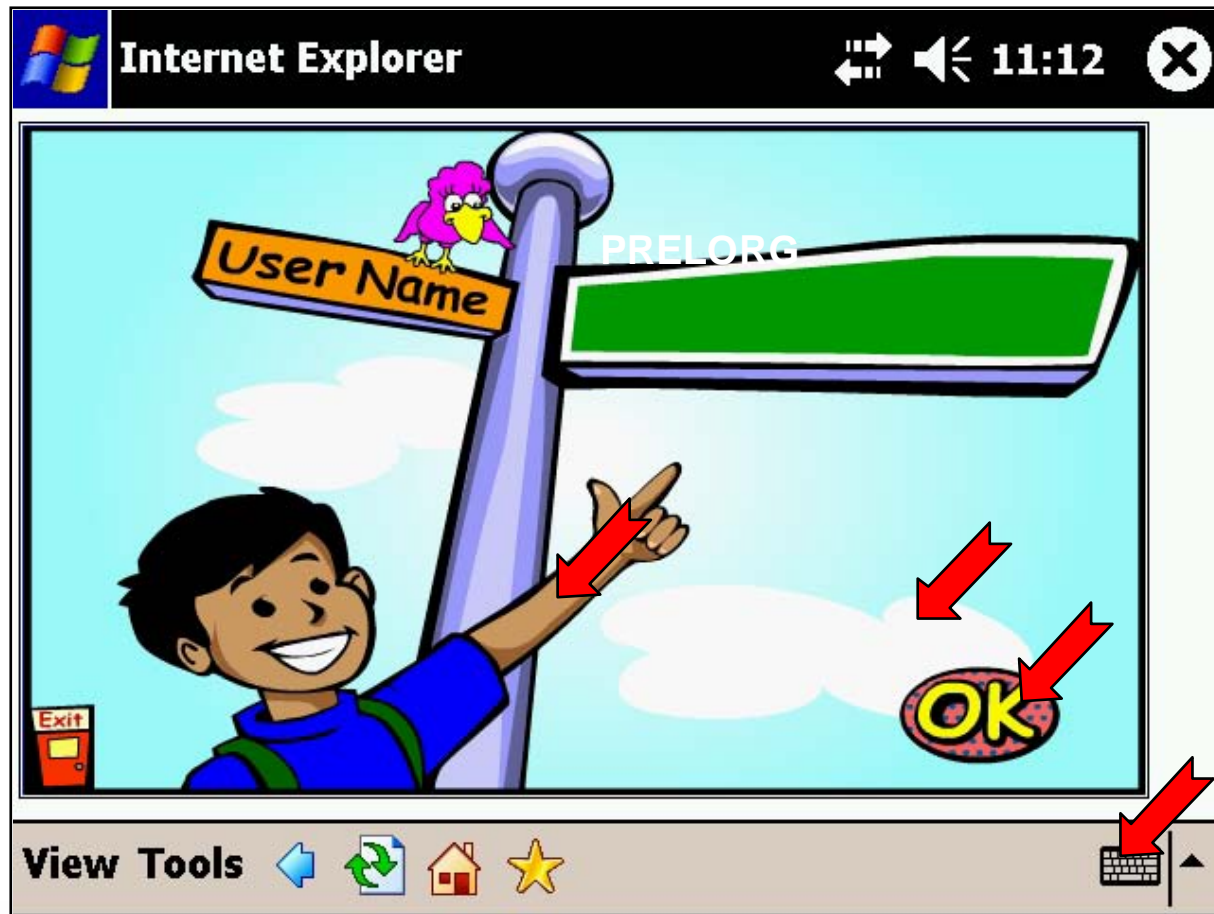
# NEARStar Demo Setup – Internet Explorer and Web Site



# NEARStar Demo Setup – NEARStar Startup



# NEARStar Demo Setup – NEARStar Login



# Evaluation of NEARStar

- ✦ Increasing emphasis on empirical evaluation
- ✦ NEARStar Evaluation, Quasi-Experimental Design
  - ✦ Criteria based selection of treatment and control sites
  - ✦ Key Language groups, geographic distribution, urban/suburban/rural setting, socioeconomic group
- ✦ Multiple Methods of Assessment
  - ✦ Individual and group standardized assessments of reading and language acquisition
  - ✦ Faculty surveys
- ✦ Significant sample, 7,500 students over 3 years



# Evaluation Results

- ✨ ELLs using NEARStar increased their sight word recognition by more than twice the control group
- ✨ Texts with good Critical Word Factors had a significant positive impact on reading speed, accuracy and comprehension
- ✨ Content was found to be culturally relevant and age appropriate
- ✨ Software interface was found to be effective when used independently by ELLs
- ✨ Teachers and principals consistently identified NEARStar as a high-quality educational resource for ELLs



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