

# Teaching LEP Students in Science and Mathematics Classrooms

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U.S. Department of Education • Teacher to Teacher Initiative • Supporting Success



# Outcomes

**In this session teachers will be able to:**

- Articulate the process of second language learning and develop empathy for LEP students' experiences
- Identify strategies for assisting LEP students in mainstream science and mathematics classes
- Apply these strategies to multiple grade levels and students of all ages



# Relevant Research

- Pinker, Steven. 1994. *The Language Instinct*. New York: William Morrow & Co. (now published by Harper Collins)
- Lightbown, Patsy & Spada, N. 2003. *How Languages are Learned*. Oxford: Oxford University Press.
- Gibbons, Pauline. 2002. *Scaffolding Language, Scaffolding Learning*. Portsmouth, NH: Heinemann.



# Understanding content in a second language

- Demonstration of science lecture in a second language (15 minutes)
- Material
  - Science et la gravité
  - Les mathématiques
- Take notes on lesson
- Test of material



# Post Lesson Debriefing

- How did you feel during the lesson?
- What did you do to escape?
- What helped you understand one or two things?
- What more could the teacher have done to help you?
- How did you feel taking the test?



# Important terms

- ESL vs EFL
- TESOL, TESL, TEFL
- ESOL
- L1, L2, L3
- LEP
- ELL
- SLA



# Suggestions for Assisting Students Master Content

- The following strategies will serve to assist LEP students to manage better the content in science and mathematics classes
- The following strategies are worthwhile suggestions to assist ALL students in learning content and mastering study skills. The strategies apply to all teachers, all content areas, and all levels of education K – 12.



# Suggestions for Assisting LEP Students—Lecturing

- Write on the board
  - Write difficult words
  - Pre-teach new vocabulary
  - Write names
  - Provide vocabulary lists (before or after)
- Write numbers and dates on the board/powerpoint
- Speak clearly and use standard language



# Suggestions for Assisting LEP Students—Lecturing

- Do not use slang; if you need to, explain slang expressions
- Use visual aids, maps, hands-on material to aid comprehension
- Be patient—“Turn to page 135 in your texts”—write p. 135 on the board
- Use graphic organizers
- Ask students to point to pictures and material; if the lecture is interactive, include the students



# Suggestions for Assisting LEP Students--Writing

- Allow students to use a dictionary when writing essays and taking tests during the first year in US
  - English spelling is difficult and doesn't always make sense
  - ghoti
- Be patient with writing; it takes years to learn to write like a native speaker
- Work on both content and form



# Suggestions for Assisting LEP Students—the student's part

- Allow students to tape lectures
- Check LEP students' notes and notebooks—sometimes spend a couple minutes at the end of class or after school
- Understand students' hesitancy to speak—it is cultural and linguistic; be patient



# Suggestions for Assisting LEP Students--Outreach

- Speak with ESL teachers; student advocacy is part of their job
- Communicate with the Foreign Language Department
- Partner student with a “buddy” in class
- Be aware of pronunciation problems—don’t overcorrect at first
- Avoid statements like, “This student doesn’t belong in my class. He/she can’t do anything.”



# Suggestions for Assisting LEP Students--Outreach

- Use community outreach programs—see if they have tutoring programs
- Create “reading buddies” with older adults
- Contact senior citizen centers/universities to see if there are volunteers to work with ESL students



# Second Language Information

- Some errors in second language stay with people for many years—fossilization
- It takes 7 – 10 years to master a language
- When asked a yes or no question, the usual response is, “Yes.” Does that mean your students understand?
- Little children will progress faster than older children; the cognitive load is less.



# Reading is more than decoding letters: we don't read words by letters

I'm working on my presentation for the Tchr-t-Tchr workshops this summer and wanted to write a paragraph about reading to show that it is more than just learning letters. I wanted to show that you can read material even when there are gaps in the information being provided. How the brain processes things is really interesting.



# Reading is possible when you have all the letters

Nwo try to raed tihs scenod txet taht I woret. As yuo cna see, I haev scarmbeld mnay of teh lettres in ecah wrod, eecxpt taht I haev ktep teh frsit lteter of ecah wrod in ist porepr palce. In smoe csaes, I haev aslo ktep teh frsit adn lsat ltetres in tiehr ogirnail palce. Yte, yuo weer siltl albe to porsecs teh ifnmatoirn adn udrsaaentnd waht I wsa tyirng to sya.



# Reading doesn't need all the information

The purpose of this exercise is to show you that content is more important to read and understand than spelling. Confusion can occur. But meaning is more important than form. So, if you LEP students make lots of spelling mistakes when they start learning English but have good content knowledge, you need to ask yourself, when are you graduating your students on?



# Lecture preparation—Group presentation

- Prepare a 5 minute lecture on a subject in science or mathematics.
- Choose a topic and prepare what you are going to say
  - Write out vocabulary
  - Make a visual aid, graphic organizer
- Demonstrate with two groups, one in each subject.



# Assessment modifications

- Allow dictionaries
- Simplify directions or simplify the wording on the test
- Read directions allowed; read questions aloud
- Provide word banks
- Allow the Foreign Language Department to translate the exam
- Use computer translation programs; beware of strange translations



# Assessment modifications

- Give one grade for content, one grade for structure
- Vary the type of testing: matching, multiple choice, one sentence answers, essays
- Allow students to rewrite their essays for higher structure grade
- Provide extended time



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# More Implementation Activities

- Take a test that you have given and modify the language and directions so that it will help LEP students
- Choose material that you have taught and create vocabulary sheets for LEP students
- Find a translation program on the web and try translating directions into another language

