Supporting English Learners in Secondary Science Education

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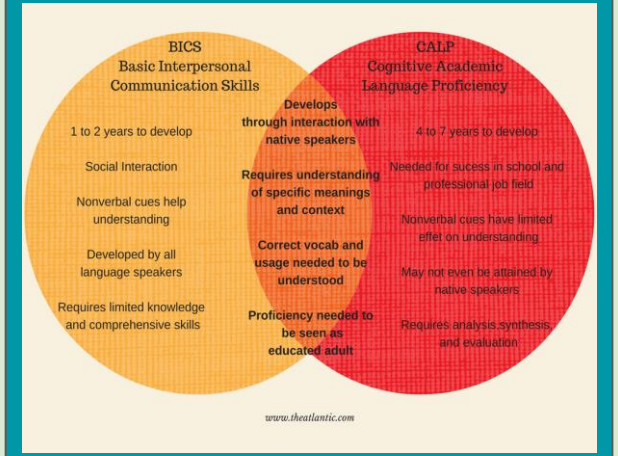
ENGLISH LANGUAGE LEARNERS NEED SUPPORT WITH THE ACADEMIC CONTENT AND LANGUAGE OF SCHOOL



9 Principles of ABC Language Teaching and Learning

(Levine & McCloskey, 2013)

1. Active Engagement
2. Cultural Relevance
3. Collaboration
4. Learning Strategies
5. Differentiation
6. Comprehensible Input
7. Prior Knowledge
8. Content Integration
9. Clear Goals/ Feedback

10th Grade Biology Lesson Plan:
Heredity and Gene Expression

TWO ELs IN A REGULAR EDUCATION BIOLOGY CLASS:

Sebastian: ELL Level 2

- Arrived in the U.S. less than 2 years ago.
- Making progress in his oral English to communicate socially (BICS).
- Needs support to acquire English academic language and literacy (CALP). .

Leo: ELL Level 4

- Although English is his dominant oral language, Leo struggles with academic content, language, and literacy.

Heredity Lesson Objectives:

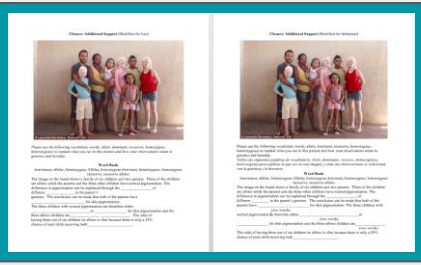
HS-LS3-3 Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

CELP 2: Participate in grade-appropriate oral and written exchanges of information, ideas, and analyses, responding to peer, audience, or reader comments and questions.

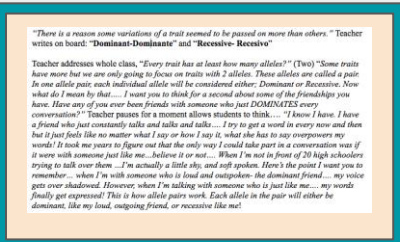
CELP 4: Construct grade-appropriate oral and written claims and support them with reasoning and evidence.

Examples of LESSON FEATURES:
Supports for Leo and Sebastian

CULTURAL RELEVANCE & COMPREHENSIBLE INPUT WITH SCAFFOLDING



PRIOR KNOWLEDGE & CONTENT INTEGRATION



"*There is a reason some variations of a trait seemed to be passed on more than others.*" Teacher writes on board: "**Dominant-Dominante**" and "**Recessive- Recesivo**"

Teacher addresses whole class, "*Every trait has at least how many alleles?*" (Two) "*Some traits have more but we are only going to focus on traits with 2 alleles. Those alleles are called a pair. In one allele pair, each individual allele will be considered either; Dominant or Recessive. Now what do I mean by that…… I want you to think for a second about some of the friends/dogs you have. Have any of you ever been friends with someone who just DOMINATES every conversation?*" Teacher pauses for a moment allows students to think…. "*I know I have. I have a friend who just constantly talks and talks and talks…. I try to get a word in every now and then but it just feels like no matter what I say or how I say it, what she has to say overpowers my words! It took me years to figure out that the only way I could take part in a conversation was if it were with someone just like me…believe it or not…. When I'm not in front of 20 high schoolers trying to talk over them …I'm actually a little shy, and soft spoken. Here's the point I want you to remember… when I'm with someone who is loud and outspoken- the dominant friend…. my voice gets over shadowed. However, when I'm talking with someone who is just like me…. my words finally get expressed! This is how allele pairs work. Each allele in the pair will either be dominant, like my loud, outgoing friend, or recessive like me!*

ACADEMIC LANGUAGE TO COLLABORATE WITH PEERS & TEACHER

When a heterozygous brown bear (Bb) is crossed with a homozygous black bear (bb), the outcome of the cross will be 50% heterozygous brown bear (Bb) offspring and 50% homozygous black bear (bb). Even though half of the bears have brown fur and the other half have black fur, all offspring have the chance of having offspring with black fur because they all carry the recessive allele.