

# USING SCIENCE NOTEBOOKS WITH ELL STUDENTS- MAKING CONTENT COMPREHENSIBLE



Northwest Educational  
Service District 189

*Together We Can*

ELL & Science Collaboration



Lynden Middle School – Pride in Excellence

# Workshop agenda

- Welcome! 😊
- Introductions
- Goals of workshop
- Science notebooks and ELL students
- Make/take activity
- Review/reflection/

# Workshop goals

- ❑ Identify benefits of science notebooks to ELL students and teachers
- ❑ Understand what comprehensible input and output are and how they relate to content
- ❑ Create a SIOP science notebook to use in your classroom

# Why use science notebooks with ELL students??

“We believe that all children can learn and be successful in science and in our nation must cultivate and harvest the minds of ALL children and provide the resources to do so” (NSTA, 2000)

“The purpose of contemporary education is to prepare all students for life in the world, including those learners who enter schools with a language other than English” ( TESOL, 1997)

# Why use science notebooks with ELL students??

By using effective notebook strategies, we can help students strengthen content knowledge and develop critical thinking skills

# Why use science notebooks with ELL students?

- In the past, language and content area instruction followed distinct, separate paths. The large influx of students along with increased rigor in standards, has created amazing opportunities for integration of the two.

# Interesting facts about ELL students and science

- 60 % of the top science students (38% of the U.S. Physics team and 25% of the Intel Science Talent Search) are children of immigrants
- The above shows that ELL students ARE capable of excelling if provided with good educational opportunities and the best instructional practices (Science for English Language Learners, 2006)

# ELL Student benefits of using notebooks

- Reinforces student understanding of subject
- Helps develop clear thinking
- Allows for the “integration” of language arts, and the use of the WA ELD standards



# ELL student benefits of using notebooks

- Provides risk free communication with teacher
- Can be used as a resource for open book tests
- Format lends itself to assessment preparation

# Teacher benefits for using notebooks with ELL students

- Ties to best research practices- SIOP, Marzano, How People Learn, Science For English Language Learners
- Provides insight into students understanding of content and language skills
- Provides insight into students thinking process

# Teacher benefits for using science notebooks with ELL students

- Provides an opportunity for reflection of your best instructional practices
- Provides opportunity for collaboration with colleagues about topic, skill, concept or instructional or assessment technique
- Provides assessment accountability and reflects student growth
- Provides an opportunity to provide content to students to make the content comprehensible

# Comprehensible Input

- **Comprehensible Input**
- Language is not “soaked up.” The learner must understand the message that is conveyed. *Comprehensible input* is a term first proposed by Stephen Krashen.
- (Krashen, 1981) He purports that ELLs acquire language by hearing and understanding messages that are slightly above their current English language level. (Comprehensible Input +1)

# Comprehensible Output

- **Comprehensible Output**
- According to research, learners need opportunities to practice language at their level of English language competency. This practice with English-speaking peers is called *Comprehensible Output*. Many researchers feel that comprehensible output is nearly as important as input. Output can be both oral and written.

# Thinking about notebooks

- What are the implications that this information might have for your instruction?
- What are the implications that this information might have on your students?

# Sheltered instruction

- Sheltered instruction is a means for making content comprehensible for English learners while they are developing English proficiency
- Grade level academic content is taught using instructional techniques that foster development and understanding of both content and language

# Sheltered instruction

- ❑ SIOP is an acronym for sheltered instruction observation protocol
- ❑ The program has 8 instructional components, with 30 features embedded within the components
- ❑ The program includes lesson plan formats as well as a lesson plan observational protocol that teachers and administrators use as a collaborative tool to improve instruction



# How note booking and SIOP work together

- The use of SIOP techniques to adapt and modify instructional techniques during instruction and modifying resources while using the notebook allow ELL students to be able to have comprehensible input and output of content and language concepts and skills

# What the research says – 3 Key findings from How People Learn

- # 1- Students come to the classroom with preconceptions about how the world works. If their initial understanding is not engaged, they may fail to grasp the new concepts and information being taught, or they may learn for purposes of a test but revert back to their preconceptions after a test

# What does this mean?

- Children begin building deep understanding of a concept or skill at preschool age , based on their beliefs from experiences they have had. Students who may not have had many experiences or who have had experiences that may not be as accurate, or in depth, may have more preconceptions that are inaccurate . It is important to understand these preconceptions when teaching a new concept or skill.

# Key finding # 2

To develop competency in an area of inquiry, students must have :

- A deep foundation of factual knowledge
- Understand facts and ideas in the context of a conceptual framework
- Organize knowledge in ways that facilitate retrieval and application

# What does this mean?

- Marzano's research indicates that what students *already know* about the content is one of the strongest indicators of how well they will learn new information relative to the content.
- With this in mind, it is critical that an explicit link be made between a student's prior knowledge and what we as teachers want them to learn.

# Key finding # 3

- A “metacognitive” approach to instruction can help students learn to take control of their own learning goals and monitoring their progress in achieving them.

# What does this mean?

- Promoting metacognition through instructional activities and assessment provides ELL students opportunities to practice this skill. Having students write or draw their thinking in their most familiar language and then transferring it to the new language can be a valuable way to help them make important connections and become aware of misconceptions or important differences between their familiar culture and their new culture. At the end of a unit, students could compare their drawings/writings to their current thinking and explain how their thinking has changed.

# Types of notebook entries

- Drawings- scientific illustrations, technical drawings, sketches
- Tables graphs and charts
- Graphic organizers
- Notes and practice problems
- Reflective and analytical entries
- Inserts
- Investigation formats
- Writing frames



# Instructional adaptations using SLOP

- What kinds of instructional techniques would we be using while adapting a science notebook lesson?
- Why?

# Resource modifications using SIOP

- What would modifications for the science notebook look like in the classroom?
- Why?

# Review

- Content must be made comprehensible (input) through the use of instructional techniques and the variety of science notebook entries
- Students need opportunities to have comprehensible output (language production) both orally and in written form to “practice” their English language skills and practice the vocabulary, skill and concept being taught

Reflections (write in your science notebook) Please create a line of learning under each learning inquiry question

What was one thing you learned today that you did not know before that perhaps was an “aha” or an eye opener?

What was something you already knew that was reviewed today – can you think of a way that you can use it from another perspective (ex: you might be familiar with comprehensible output but maybe “forgot” that it is both written and verbal)

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