

how to write eld standards in a math lesson plan

how to write eld standards in a math lesson plan requires a deliberate approach that integrates language acquisition goals with mathematical content. This article will guide educators through the process of effectively incorporating English Language Learner (ELL) standards into their mathematics lesson plans, ensuring that all students have the opportunity to succeed. We will explore the foundational principles of supporting ELLs in math, identify key ELL standards relevant to the subject, and break down practical strategies for their implementation. From vocabulary development to communicative tasks, understanding how to bridge language barriers in math is crucial for fostering a truly inclusive learning environment. By the end of this guide, you will be equipped with the knowledge to create robust lesson plans that cater to the unique needs of your English Language Learners, making mathematics accessible and engaging for everyone.

Understanding the Importance of ELD Standards in Math

Integrating English Language Development (ELD) standards into mathematics lesson plans is paramount for creating equitable learning experiences. Mathematics, while a universal language of numbers and operations, is often taught and assessed using specific English terminology and academic language. English Language Learners (ELLs) face the dual challenge of understanding mathematical concepts while simultaneously navigating the complexities of a new language. Therefore, explicitly addressing ELD standards ensures that these students are not only exposed to mathematical content but also given the linguistic tools necessary to comprehend, discuss, and demonstrate their understanding.

When lesson plans are crafted with ELLs in mind, they move beyond simply presenting math problems. They actively build the necessary vocabulary, grammatical structures, and discourse patterns that are essential for academic success in mathematics. This proactive approach prevents ELLs from falling behind due to language barriers, allowing their mathematical abilities to flourish. It recognizes that language proficiency is a key component of mathematical literacy and that supporting this development directly impacts overall academic achievement.

Key ELD Standards Applicable to Math Instruction

Several key ELD standards, often categorized by proficiency levels, are particularly relevant to mathematics instruction. These standards focus on developing the language skills necessary for academic engagement, including listening, speaking, reading, and writing within the context of mathematical concepts. Understanding these specific standards allows teachers to target language development strategically.

Listening and Speaking Standards for Math

For mathematics, listening standards often involve comprehending instructions, explanations, and peer discussions related to mathematical tasks. This includes understanding mathematical vocabulary, number names, operational terms (add, subtract, multiply, divide), and geometric shapes. Speaking standards encourage ELLs to articulate their mathematical thinking, explain their problem-solving strategies, and participate in mathematical discourse. This might involve using sentence frames like "I think the answer is ___ because ___" or "To solve this, I need to ___."

Reading and Writing Standards for Math

Reading standards in math require ELLs to interpret word problems, analyze charts and graphs, and understand mathematical symbols and notation. This involves deciphering the meaning of quantitative information presented in text. Writing standards focus on students' ability to express their mathematical reasoning through written explanations, justifications, and solutions. This could range from labeling diagrams to writing a step-by-step solution for a word problem.

Strategies for Integrating ELD Standards into Math Lesson Plans

Successfully weaving ELD standards into math lesson plans requires intentionality and a variety of pedagogical approaches. The goal is to make mathematical content comprehensible while simultaneously building the language skills necessary for deeper engagement.

Vocabulary Development and Pre-teaching

A cornerstone of supporting ELLs in math is the explicit teaching of mathematical vocabulary. This involves introducing new terms before they appear in lessons, providing definitions, visual aids, and opportunities for practice. Pre-teaching key vocabulary for a unit or lesson can significantly improve comprehension.

- Identify essential vocabulary words for the math concept.
- Use visuals (pictures, diagrams, realia) to define and illustrate words.
- Create vocabulary journals or word walls.
- Engage students in activities that require using the new vocabulary in context.
- Connect new vocabulary to familiar words or concepts.

Utilizing Visuals and Manipulatives

Visual aids and hands-on manipulatives are invaluable tools for making abstract mathematical concepts concrete and accessible to ELLs. They provide a visual anchor for understanding, reducing reliance on complex language.

Manipulatives such as base-ten blocks, fraction tiles, geometric shapes, and number lines help students visualize operations and relationships. Similarly, using charts, graphs, diagrams, and anchor charts reinforces concepts and provides a reference point for language.

Scaffolding Instruction and Providing Sentence Frames

Scaffolding involves providing temporary support to help ELLs access and participate in learning activities. Sentence frames are a powerful form of scaffolding that provides a grammatical structure for students to express their mathematical ideas.

Examples of sentence frames for math include:

- "The problem asks me to ____."
- "I know that ____ because ____."
- "To find the answer, I will ____."
- "The difference between ____ and ____ is ____."
- "The sum of ____ and ____ is ____."

These frames help students organize their thoughts and construct grammatically correct responses, thereby meeting speaking and writing ELD standards.

Promoting Collaborative Learning and Peer Interaction

Opportunities for ELLs to interact with peers in low-stakes environments are crucial for language acquisition and deepening mathematical understanding. Collaborative activities allow students to practice using mathematical language in authentic communication.

Think-pair-share activities, group problem-solving, and math talks encourage students to articulate their thinking, ask questions, and learn from each other. Carefully structured group work ensures that ELLs are actively engaged and supported by their peers, fostering both language and mathematical development.

Differentiating Instruction and Assessment

Recognizing that ELLs are at varying levels of language proficiency and mathematical understanding is key to effective instruction. Differentiated instruction ensures that all students receive appropriate support and challenges.

This might involve providing simplified instructions, offering a choice of tasks, or adjusting the

complexity of word problems. Similarly, assessment should be differentiated, allowing ELLs to demonstrate their understanding through various means, such as drawings, oral explanations, or a combination of written and visual responses, in addition to traditional written tests.

Putting It All Together: A Math Lesson Plan Example Framework

When designing a math lesson plan that incorporates ELD standards, a structured framework is beneficial. This ensures that all necessary components are addressed to support ELLs effectively.

Lesson Objective(s)

Clearly state what students will know and be able to do, including both mathematical content and language objectives. For example, "Students will be able to solve two-digit addition problems with regrouping and explain their strategy using the phrase 'carry over the one'."

Materials

List all necessary materials, including manipulatives, visuals, vocabulary aids, and any differentiated resources.

Procedure

Outline the lesson steps, ensuring that each step includes strategies for ELD support.

1. **Introduction/Hook:** Engage students with a relatable scenario or visual, introduce new vocabulary with visuals.
2. **Direct Instruction:** Present the mathematical concept using clear language, visuals, and manipulatives. Model thinking processes aloud.
3. **Guided Practice:** Work through problems collaboratively, using sentence frames and providing opportunities for verbal responses.
4. **Independent Practice:** Students work on problems individually or in small groups, with options for support or extension.
5. **Closure:** Review key concepts and vocabulary. Students can share their learning through writing or speaking.

Assessment

Describe how student learning will be assessed, including both mathematical understanding and language use. This could involve observation of participation, review of written work, or oral responses.

Differentiation

Detail specific modifications and accommodations for ELLs at various proficiency levels, ensuring that ELD standards are met.

Frequently Asked Questions

What are ELD standards and why are they important in a math lesson plan?

ELD (English Language Development) standards are guidelines that outline the language proficiency levels English learners (ELs) need to achieve in academic contexts. They are crucial in math lessons to ensure ELs can access mathematical content and participate meaningfully, as math often relies on specific vocabulary, sentence structures, and conceptual understanding that require language support.

How can I identify the specific ELD standards relevant to my math lesson?

You need to analyze the mathematical content and skills in your lesson and then consider the language demands. For instance, if your lesson involves comparing fractions, relevant ELD standards might focus on comparative language ('greater than,' 'less than'), using precise mathematical vocabulary, and explaining reasoning in written or spoken form.

What are some common ELD standards categories to consider for math?

Common categories include: Listening (understanding instructions, explanations), Speaking (explaining solutions, asking questions, using vocabulary), Reading (interpreting word problems, understanding definitions), and Writing (showing work, writing explanations, labeling diagrams). Many ELD frameworks also categorize by proficiency levels (e.g., emergent, expanding, bridging).

How do I differentiate ELD standards based on student proficiency levels in a math lesson?

You'll need to assess your students' current ELD levels. For emergent learners, focus on basic vocabulary and simple sentence structures. Expanding learners can handle more complex sentences and a wider range of vocabulary. Bridging learners can engage in more sophisticated academic

discourse and explain complex reasoning. Tailor your language objectives and support accordingly.

What are 'language objectives' in a math lesson and how do they relate to ELD standards?

Language objectives are specific, measurable, achievable, relevant, and time-bound goals that focus on the language skills ELs need to learn content. They are directly derived from ELD standards. For example, if an ELD standard is about 'using comparative language,' a language objective could be: 'Students will be able to orally compare two fractions using the terms 'greater than' and 'less than' with 80% accuracy.'

How can I integrate ELD standards into the 'instructional strategies' section of my math lesson plan?

This involves planning specific scaffolds and supports. Examples include pre-teaching key vocabulary, using visual aids and graphic organizers, providing sentence frames for explanations, modeling mathematical language, using think-alouds, and offering opportunities for peer collaboration and structured conversations.

What kind of 'assessment' strategies can I use to measure students' progress on ELD standards in a math lesson?

Assessment should align with your language objectives. This can include observing students' participation in discussions, evaluating their written explanations and diagrams, using checklists to track vocabulary use, analyzing their responses to oral questioning, and assessing their ability to explain concepts using targeted language.

How do I ensure that ELD standards are not just an add-on but are seamlessly integrated into the math content?

The key is to view language and content as intertwined. Design activities where mastering the mathematical concept inherently requires using specific language. For example, a lesson on graphing could require students to describe the relationships shown in the graph using precise vocabulary and sentence structures that are tied to an ELD standard.

Can you give an example of a math lesson objective and its corresponding ELD standard and language objective?

Math Objective: Students will be able to solve word problems involving addition and subtraction of fractions. ELD Standard (example): Students will be able to explain their problem-solving process using sequential language. Language Objective: Students will be able to orally explain the steps they took to solve a fraction word problem using phrases like 'First, I...', 'Next, I...', and 'Finally, I...'.

What are some resources for finding appropriate ELD

standards for math instruction?

Many states and districts have their own adopted ELD standards, often based on frameworks like WIDA or CASAS. You can also find resources from organizations like Understanding Language at Stanford, which provides guidance on integrating language and content in various subjects, including mathematics.

Additional Resources

Here are 9 book titles related to how to write ELD standards in a math lesson plan:

1. *Integrating Language and Learning in Mathematics*: This book provides a comprehensive guide to embedding English Language Development (ELD) strategies directly into mathematics instruction. It offers practical frameworks for scaffolding academic language, promoting student discourse, and designing tasks that simultaneously build mathematical understanding and English proficiency. Readers will find examples of how to adapt existing math lessons to meet the needs of diverse learners.
2. *Scaffolding Academic Language for English Learners in Math*: This resource focuses specifically on the linguistic demands of mathematics and how to systematically support English Learners. It details various scaffolding techniques, such as providing sentence frames, graphic organizers, and visual aids, to help students access complex math concepts and articulate their thinking. The book emphasizes the importance of making mathematical language explicit and comprehensible.
3. *The Art of Math Discourse for English Learners*: This book champions the power of conversation in mathematics learning, particularly for English Learners. It explores strategies for fostering productive student-to-student and student-to-teacher dialogue in math classrooms, ensuring all students have opportunities to speak and be heard. The text offers practical tips for posing questions, facilitating group work, and using language-rich activities to deepen mathematical comprehension.
4. *Differentiated Instruction for English Learners in Mathematics*: This guide offers a toolkit for tailoring math instruction to the varied needs of English Learners. It delves into principles of differentiation, including content, process, and product adjustments, with a focus on how these modifications support ELD. The book provides concrete examples of how to modify lessons and assessments to ensure equitable access to mathematical learning.
5. *Visualizing Mathematics for English Language Learners*: This book highlights the crucial role of visual representations in making abstract mathematical concepts accessible to English Learners. It showcases various visual tools, manipulatives, and diagrams that can aid comprehension and communication of mathematical ideas. The text guides educators on how to intentionally incorporate visuals into lesson planning to bridge language barriers.
6. *Collaborative Learning Strategies for Math ELs*: This resource emphasizes the benefits of peer interaction for English Learners in math. It provides practical strategies for structuring collaborative learning activities, such as think-pair-share, jigsaw, and small group problem-solving, to maximize language development and mathematical engagement. The book explains how to manage groups effectively and foster a supportive learning environment.
7. *Bridging the Gap: Language Support in Mathematics*: This book addresses the common challenges

English Learners face in mathematics due to language barriers and offers effective solutions. It provides research-based strategies for building vocabulary, understanding mathematical terminology, and developing the fluency needed to succeed. The text offers practical guidance for designing lessons that explicitly support language acquisition alongside mathematical skills.

8. *From Words to Numbers: ELD in the Math Classroom*: This title focuses on the transition from English language development to mathematical understanding. It offers practical advice for educators on how to connect everyday language to mathematical concepts, making the learning process more intuitive for English Learners. The book provides examples of lesson activities that build both linguistic and mathematical competence.

9. *Explicit Language Instruction for Mathematics*: This book advocates for a direct and intentional approach to teaching the language of mathematics to English Learners. It outlines methods for explicitly teaching mathematical vocabulary, grammatical structures, and discourse patterns that are essential for academic success. The text offers strategies for identifying language demands in math tasks and providing targeted support.

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