

Mathematical Discourse Let the Kids Talk: Professional Resources to Foster Student Understanding

Mathematical discourse is an essential component of mathematics education. It is defined as the communication of mathematical ideas through words, symbols, and gestures. Through discourse, learners share their thinking, explore new mathematical concepts, and develop a deeper understanding of mathematics.

Despite its importance, mathematical discourse can be challenging to facilitate in the classroom. Teachers may be unsure of how to encourage students to participate, or they may find that the discussions are dominated by a few students. This article will provide professional resources to help teachers create a classroom environment that supports mathematical discourse and fosters student understanding.



Mathematical Discourse: Let the Kids Talk!

(Professional Resources) by Diana Trevouledes

★★★★☆ 4.6 out of 5

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Establishing Clear Expectations

The first step to facilitating effective mathematical discourse is to establish clear expectations. This includes defining what counts as "mathematical talk" and establishing norms for participation.

- **What Counts as "Mathematical Talk"?** Mathematical talk is not just about answering questions correctly. It is also about sharing ideas, asking questions, and making conjectures. When students are engaged in mathematical discourse, they are actively thinking about mathematics and making sense of it.
- **Norms for Participation** It is important to establish norms for participation so that all students feel comfortable sharing their ideas. These norms might include:
 - Respecting others' opinions
 - Listening attentively
 - Asking clarifying questions
 - Building on others' ideas
 - Taking risks and making mistakes

Providing Scaffolds

Once clear expectations have been established, teachers can begin providing scaffolding to support students' mathematical discourse. This scaffolding can take many forms, such as:

- **Sentence starters** Sentence starters can help students get started with their mathematical thinking. For example, teachers might provide sentence starters such as:

- "I think that..."
 - "I'm not sure, but I think..."
 - "I agree with..."
 - "I disagree with..."
 - "I have a question..."
- **Wait time** Wait time is the amount of time that teachers wait after asking a question or making a statement. Wait time gives students time to think about their responses and to formulate their thoughts.
 - **Academic language** Academic language is the language that is used in mathematics classrooms. It can be challenging for students to understand, but it is essential for mathematical discourse. Teachers can help students learn academic language by providing clear definitions of terms and by using it consistently in their instruction.

Engaging All Students

It is important to engage all students in mathematical discourse, regardless of their mathematical ability. This can be challenging, but it is essential for creating a classroom environment that is supportive of all learners.

- **Grouping students** Grouping students strategically can help to engage all students in mathematical discourse. Teachers should consider students' mathematical abilities, learning styles, and personalities when grouping them.
- **Asking open-ended questions** Open-ended questions encourage students to think critically and to share their ideas. When asking open-

ended questions, teachers should avoid questions that have only one right answer.

- **Using manipulatives** Manipulatives are concrete objects that can be used to represent mathematical concepts. They can help students to visualize and understand mathematical ideas.

Mathematical discourse is an essential component of mathematics education. By establishing clear expectations, providing scaffolds, and using strategies to engage all students regardless of their mathematical ability, teachers can create a classroom environment that supports mathematical discourse and fosters a deep understanding of content that will enhance student learning outcomes.

Professional Resources

- **The National Council of Teachers of Mathematics (NCTM)** NCTM is a professional organization for mathematics teachers. The organization provides a wealth of resources on mathematical discourse, including articles, lesson plans, and professional development opportunities.
- **The Mathematical Association of America (MAA)** The MAA is a professional organization for mathematicians. The organization provides a variety of resources on mathematical discourse, including articles, books, and online forums.
- **The National Science Teachers Association (NSTA)** The NSTA is a professional organization for science teachers. The organization provides a variety of resources on science discourse, which can be adapted for use in mathematics classrooms.

- **The Buck Institute for Education (BIE)** The BIE is a non-profit educational organization that provides resources on project-based learning. The organization's website includes a number of resources on mathematical discourse, including lesson plans and videos.
- **The Education Development Center (EDC)** The EDC is a non-profit educational organization that provides resources on mathematics education. The organization's website includes a number of resources on mathematical discourse, including lesson plans and professional development opportunities.

Mathematical Discourse in Action



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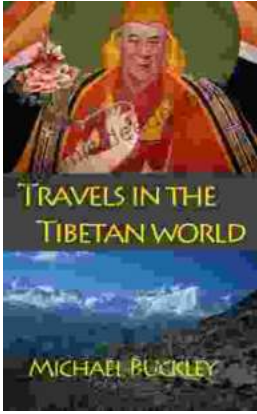
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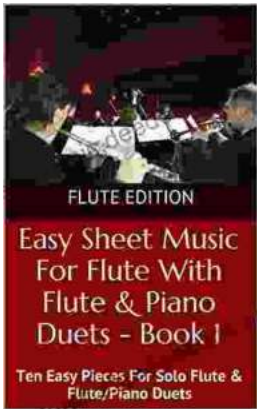
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