



Mastering Mathematics: Best Teaching Practices for Success

Dear Subscriber,

Thank you for joining our math community! Welcome to the October edition of our newsletter - a special issue focused on “Best Practices in Mathematics Education.”

We will explore some of the essential characteristics of the “**Best Practices**” of teaching mathematics, which include techniques and strategies to enhance the learning experience, foster student engagement, and promote effective knowledge retention. These best teaching practices cater to diverse learning styles, encourage critical thinking, and cultivate a supportive learning environment that includes all learners.

The following are examples of “Best Practice” strategies that can be used to empower math teachers with the necessary skills and knowledge for effective instruction:

Explicit Instruction

- ✓ Begin lessons with a clear statement of the lesson’s goals and expectations.
- ✓ Give step-by-step instructions.
- ✓ Call on different students to write out the steps to multi-faceted problems.
- ✓ Ask questions as information is presented to check for understanding.
- ✓ Provide examples and non-examples.
- ✓ Identify and teach prerequisite skills.
- ✓ Provide guided and supported practice.
- ✓ Monitor students as they work.
- ✓ Provide immediate affirmative and corrective feedback.
- ✓ Give students multiple opportunities to practice skills over time.

Emphasize Vocabulary

- ✓ Say each expression, equation, or problem as you model them.
- ✓ Use the appropriate vocabulary based on the concept taught.
- ✓ Require students to verbalize numbers, expressions, and problems. Such as $4 > 3$, four is greater than three, or $3 < 4$, three is less than four. (Don’t describe these as an alligator’s mouth. Say, these symbols remind me of the mouth of an alligator when it’s opened or a sideways V. We use these symbols to compare two numbers. If the grade level is greater than Grade 2, then inequality is the correct word, which means not equal).
- ✓ Encourage students to communicate their ideas orally, in writing, and by using a variety of representations.
- ✓ Say an expression verbally and have students write an appropriate representation. Have 2 or 3 students display the expression they wrote using numbers and symbols on the board.
- ✓ Make sure students can say fractions and decimals names correctly.
- ✓ Encourage students to use different words to describe the four basic operation symbols. (i.e., sum, add, subtract, minus.)

Effective Questioning

- ✓ Call on every student in the class. If not possible to call on all, have students write steps to a solving a concept.
- ✓ Ask guiding, probing, and clarifying questions; ask questions to check for understanding. Ask questions that include vocabulary such as $10 + 4$. (What is the value of the sum of ten and four?), $4 + 10$ (What is the value of the sum of four and ten?), $14 = \underline{\quad} + 10$ (Fourteen is equal to the sum of what number and ten.)



Use Models, Manipulatives, Drawings, and Technology

- ✓ Have students draw pictures and then write an equation or expression that can be used to solve a problem.
- ✓ Help students learn number sense and mental math with drawings and technology.
- ✓ Allow students to use models to reason through problems.
- ✓ Drawings can be substituted for commercial models.

Connect Concepts to Real World Problems

- ✓ Provide mixed strategy and mixed situation problems so that students' problem-solving skills become automatic.
- ✓ Have students solve problems related to their life experiences. (Mary bought ____ pencils and Sally bought some too. Together they had ____ pencils. How many pencils did ____ buy?)
- ✓ Make a copy of an item from a grocery ad. Give students a fill-in-the blank sheet to complete using numbers from the ad. Difficulty level depends on grade.

Guided Discovery

- ✓ **"We cannot impose our sophisticated rote version of a mathematics concept on our students; sometimes they need to construct their own meaning of concepts." Then clarify.**
- ✓ Students construct their own understanding of a concept by actively participating in discovery learning. Many vocabulary words can be introduced by giving examples and non-examples. i.e., Introduce the word congruent by giving examples of objects in the classroom that are congruent and some that are not congruent to the identified objects. Then, ask students to formulate a meaning of the word congruent. Guide students to construct an appropriate class definition after students share what they think congruent means.

Effectively training math teachers is a multifaceted challenge requiring specialized knowledge, pedagogical skills, and practical experience. Our Common Core Math Activity Book and AIRR: A Book of Practical TEKS Books provide extensive activities specifically crafted to support this comprehensive teaching approach. These invaluable resources have equipped our customers with the essential skills for exceptional math education. However, the persistent challenge lies in the preparedness of new teachers, who often enter the classroom without adequate training.

To address this gap, districts need to take proactive measures. Apart from adopting innovative teaching techniques, districts should promote collaboration among educators. Implementing peer learning initiatives, offering mentorship programs, and developing training modules covering advanced math concepts are essential. By combining these efforts, educators' skills will be significantly enhanced, fostering a more effective and inspiring learning experience for students. This comprehensive approach sets the stage for students' academic success. It ensures that every educator receives the necessary training to excel in the classroom, bridging the gap in math education.

Thank you for your continued support; see you next month when we focus on **Unconventional Options for Bell Ringers!**

Warm regards,

Hazel

Texas teachers can find our products at www.teksairr.com, all other states, www.ccmathactivities.com.

[Click here for more examples.](#)



Implementing best practices in teaching methodologies can make a significant difference in how students absorb and retain.

| <p>1 more than 51 is the same as 1 less than ____.</p> <p>10 less than 52 is the same as 1 more than ____.</p> | | <table border="1"> <tr> <th>1 More than and 1 less Than</th> <th>10 More than and 10 less Than</th> </tr> <tr> <td>What is 1 more than 50?</td> <td>What is 10 more than 42?</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>What is 1 less than 50?</td> <td>What is 10 less than 50?</td> </tr> <tr> <td></td> <td></td> </tr> </table> | | 1 More than and 1 less Than | 10 More than and 10 less Than | What is 1 more than 50? | What is 10 more than 42? | | | What is 1 less than 50? | What is 10 less than 50? | | |
|--|-------------------------------|--|--|-----------------------------|-------------------------------|-------------------------|--------------------------|--|--|-------------------------|--------------------------|--|--|
| 1 More than and 1 less Than | 10 More than and 10 less Than | | | | | | | | | | | | |
| What is 1 more than 50? | What is 10 more than 42? | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| What is 1 less than 50? | What is 10 less than 50? | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

There are multiple ways to add and subtract multiples of tens; hundred boards, drawings. Then have students verbalize the answers.

| | |
|---|---|
| <p>Find the sum of ____ & ____.</p> <p>Find the total of ____ & ____.</p> <p>Estimate the total of ____ & ____.</p> <p>What do you think the best estimate of ____ & ____?</p> | <p>Rhianna scored 483 points on Monday. If Rhianna scored a <u>total</u> of 810 points on Monday and Tuesday, how many points did Rhianna score on _____.</p> |
| <p>Find the difference between ____ & ____.</p> <p>What is ____ minus ____?</p> <p>Estimate the difference of ____ & ____.</p> <p style="text-align: right;"> $\begin{array}{r} 511 \\ - 187 \\ \hline \end{array}$ </p> | <p>Carson has 187 apple trees on his farm. Ms. Little has 511 apple trees on her farm. What is the <u>difference</u> between the number of apple trees on these farms?</p> |
| <p>Use multiple vocabulary words to have students verbalize the actions in problems.</p> | |
| <p style="text-align: center;">Expressions</p> <p>1. $11 \times 6 - 3$</p> <p>2. $9 + 8$</p> <p>3. $2(32 + 18) \div 4$</p> <p>4. $\frac{2}{5} + \frac{4}{5}$</p> | <p style="text-align: center;">Equations</p> <p>1. $11 \times 6 - 3 = 63$</p> <p>2. $9 + 8 = \underline{\quad} + 9$</p> <p>3. $2(32 + 18) \div 4 = 25$</p> <p>4. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5}$</p> |

Use guided discovery to help students understand the difference between an expression and an equation. Possible questions.

- What is the difference between an expression and an equation?
- What is the value of each expression?