Effective methods of teaching math in primary school

Maqsimova Sarvinoz Valijon qizi
University of Economics and Pedagogy,
Iqtisodiyot vaijtimoiy fanlar kafedrasi assistenti.
Asqarova Vasila
University of Economics and Pedagogy,
2nd year student ***Tel:*** *+998934171620*
E-mail*: hayitova20@gmail.com*

Abstract*: In this article, we will be listing down some of the approaches and strategies of teaching mathematics. These mathematical teaching strategies will help them understand how to teach maths in an interesting way to students. Hence, moving forward to some of these mathematical teaching strategies.*

Key words: conceptual understanding, visual strategies, *class learning, cooperative learning strategies, strategic questioning*

As a mathematics teacher, it's easy to dream about the dynamite lessons you could plan and deliver if only you had a little more time up your sleeve.

But we don't live in a perfect world. With time at a premium, it's not always possible to prepare cutting-edge resources and coordinate lengthy student-focused activities. Here are 6 simple yet effective instructional strategies for mathematics that you can weave into your daily practice.

1. Make conceptual understanding a priority

For students to use mathematics flexibly and grapple with complex problems, they need more than facts and procedures.

They need a deep understanding of mathematical *concepts* themselves.

Here's how you make conceptual understanding a priority in your classroom:

Use visual strategies. Making a concept visual allows students to see how an abstract concept translates to a physical scenario. Use illustrated problems or hands-on activities, and encourage students to use visual methods of their own (e.g. drawing) when solving problems.

Seeing a problem in different ways also builds the brain's neural networks, increasing understanding and retention.

Use the schema approach. The schema is the underlying pattern behind a mathematical concept. All subtraction problems, for example, revolve around a certain amount of something being taken away from an original amount. Once students grasp the schema, they'll be able to notice it in a diverse array of different problems. To do this, put similar word problems (e.g. addition ones) side by side and help students discover what they have in common. See if they can express this in words that might apply to other problems of the same type.

Explicitly teach the mathematics vocabulary of a concept. Show the different ways a concept might be expressed in words. Addition, for example, might be expressed as two quantities "together" or a "combined amount". Once they broaden their math(s) vocabulary, they'll be able to use concepts much more flexibly.

- Here are some fun ways to build mathematical vocab:
- Display words on posters around the classroom.
- Have students bookmark a mathematics dictionary on their browser
- Have students write down a mathematical word, which they then describe to a partner without using the word itself. The partner has to guess which mathematical concept it is.

2. Set meaningful homework that builds on class learning

You hear the bell ring and – in a last-minute panic – yell out an order to complete exercise 15.2, odd number questions, and every second column.

We've all been there. After all your lesson planning, meaningful homework sometimes slips through the cracks.

But if you **integrate homework into your lesson plans**, you'll find it much easier to set activities that build deep understanding and engage students that much more.

Think about how your students might reflect on or connect new knowledge at home, rather than just blindly practicing a process.

For example, they could:

- Teach someone else in the family about what they've learned
- Find a real-life application of the lesson's concept somewhere in the home
- Put theory into practice with a hands-on activity (e.g. creating a timetable, cooking)
- Ask qualitative or 'value' questions of family members where appropriate.

3. Use cooperative learning strategies

Cooperative learning has three major benefits in mathematics:

1. It encourages students to express their mathematical thinking, which in turn gives them greater clarity of thought and self-awareness of their own problem-solving strategies.

2. Communicating with others exposes students to different mathematical approaches, which they can use to think more flexibly.

3. It mirrors the way mathematics is done outside the classroom, where people with different strengths work together to solve challenging real-world problems.

Here's how you can use cooperative learning strategies effectively in your classroom:

The "puzzle pieces" approach to group work. Use the "puzzle pieces" approach, where each learner is given a unique piece of information to share with the rest of the group to solve a problem. That way every student has to get involved, and everyone has something to contribute regardless of ability level.

4. Use strategic questioning

Strategic questions can help turn a regular 'chalk and talk' lesson into a deep learning experience, or scaffold learning acting as students advance into more challenging territory. Try using open-ended questions such as:

"Tell me how you solved that"

Instead of congratulating a student when they get an answer correct and moving on, ask them to communicate their approach. This achieves two things:

- The student is encouraged to reflect on their own thought process in detail. Instead of just "doing the math(s)" automatically, they'll understand exactly the steps they took – and begin to see how these might be adapted to future, more challenging problems.
- Other students get the opportunity to see how they could have solved the problem, even if they struggled to do so originally.

"Does this problem remind you of anything else we've done before?"

Before students start shrugging their shoulders in response to an unfamiliar problem, ask them if it reminds them of anything they've done before.

They'll start to notice previously encountered concepts underneath the surface. This habit of checking for familiarity is what produces flexible and agile mathematical thinkers. Where could you use this…" or "where would you see this used in the real world?". These questions drive home the relevance of the learning. Instead of procedural knowledge alone, students will also come away with an understanding of how to *apply* that knowledge. 5. Focus on *real* problem-solving and reasoning. In the world beyond the classroom, mathematics takes the form of complex problems as opposed to straightforward questions with just one answer. For this reason, the most effective instruction equips students with the problem-solving and reasoning skills they'll need for real life. That means they:

- Are open-ended. Instead of funnelling students to a particular solution, keep it open to different approaches.
- Approximate relevant real-world scenarios, or (even better) invite students to get hands-on with real items.
- Encourage students to collaborate and explore different perspectives.
- Don't spell out exactly what students need to do. Let them trial different procedures until they settle on a strategy that works instead.

6. Use mixed modes of assessment

A variety of formative and summative assessment types will allow you to:

- Assess conceptual learning, as well as fact recall
- Build on what students know, instead of just assessing what they don't
- Notice gaps in the learning *before* the final test

Here are some assessment types that provide an alternative to standard timed testing:

- Reflections
- Portfolios
- Peer assessments
- Interviews
- "Teach the class" activities

References:

1. Math Enrichment Activities | How to Take Advanced Learners to the Next Level - 3P Learning

2. 3 Great Examples of Problem-Solving and Reasoning Questions (and One Bad One) - 3P Learning