Big Ideas

Big Ideas of Instructional Practices

Teachers continuously use their professional judgement to

1. foster a positive mathematical classroom culture,
2. create opportunities for observations, conversations, and other forms of assessment, and
3. design and implement responsive instruction

in order to develop student conceptual and procedural understanding of mathematics.

These Big Ideas are developed below for a better understanding of Instructional Practices.

Big Idea 1:

Teachers continuously use their professional judgement to foster a positive mathematical classroom culture.

Classroom culture encompasses the behaviors, beliefs, values, that are agreed upon in the classroom. A positive classroom culture promotes trust and respect, encourages communication and discourse, and enhances student engagement. It includes how you organize your classroom, the ways tasks are given to the students, how groups are formed for group work, the students' work spaces (pen & paper vs. vertical whiteboards), etc.

According to the Alberta Mathematics K-9 Program of Studies, "The learning environment should value and respect the diversity of students' experiences and ways of thinking, so that students are comfortable taking intellectual risks, asking questions and posing conjectures. Students need to explore problem-solving situations in order to develop personal strategies and become mathematically literate. They must realize that it is acceptable to solve problems in a variety of ways and that a variety of solutions may be acceptable." Source

Fostering a positive classroom culture increases student engagement, risk taking, collaboration and participation.

1.

Setting up a positive classroom culture

Here is a short video about this topic.

2.

Developing a Culture of Perseverance

Students should be provided with many opportunities to problem solve. When they productively struggle with the mathematics, they will develop perseverance.

3.

Normalizing Error

It's extremely important that students understand that making mistakes is normal and, in fact, expected. Research (Moser et al., 2011) shows that when we make a mistake, there is increased electrical activity in our brain whether or not we recognize that we made a mistake. If we become aware of the error, there is a second jolt of electrical activity that leads to the need to fix the error. Regardless of whether we are aware of the error, our brain sparks and grows.

Furthermore, regardless of their mindset, all students' brains spark when a mistake is made. However, students with growth mindsets are more aware of mistakes than students who have a fixed mindset. Therefore, students with growth mindsets were more likely to go back and correct the mistakes. This is why it's so important to build a culture of mistake making in the classroom. All students need to be aware that their brains grow the most whenever they make a mistake.

4. Fostering a Growth Mindset

Students and educators who demonstrate a growth mindset, understand that intelligence can be developed. Students focus on improvement, take risks and work hard to learn more and get smarter. Based on years of research by Stanford University's Dr. Dweck, Lisa Blackwell Ph.D., and their colleagues, we know that students who learn this mindset show greater motivation in school, better grades, and higher test scores.

Check out the Resource section for specific ideas on the above topics.

Big Idea 2:
Teachers continuously use their professional judgement to create opportunities for observations, conversations, and other forms of assessment.

For information on Assessment, please visit the Assessment section of the EMPL Learning Guide.

Big Idea 3:

Teachers continuously use their professional judgement to design and implement responsive instruction.

What is Responsive Instruction?

Responsive instruction is the result of ongoing formative assessment. It involves adjusting instruction as needed, providing support to students who need to develop a better understanding and challenges to those who are ready for more.

1.

Selecting Instructional Strategies

An instructional strategy is a method used in teaching to engage the students in learning. Some examples of instructional strategies are (but not limited to) math centres, flipped classroom, direct instruction, inquiry, and project based learning.

"Instructional approaches and strategies are evidence- and research-based and are adaptable and diverse to provide appropriate learning experiences, challenges, and supports to all students." (Ministry of Education, Saskatchewan) (Source)

When designing a lesson or unit plan, teachers use their professional judgement to select the most appropriate strategies for the lessons with the students in mind.

Check out the Resource section for a list of possible strategies and why a teacher should use them.

2.

Choosing Instructional Resources

Instructional resources can be defined as anything which is read, listened to, manipulated, observed or experienced by students as part of the instructional strategy. Resources may be consumable or non-consumable.

There are many resources available for a teacher to choose from. For a list of criteria on how to choose a good resource, see the following document: Resources