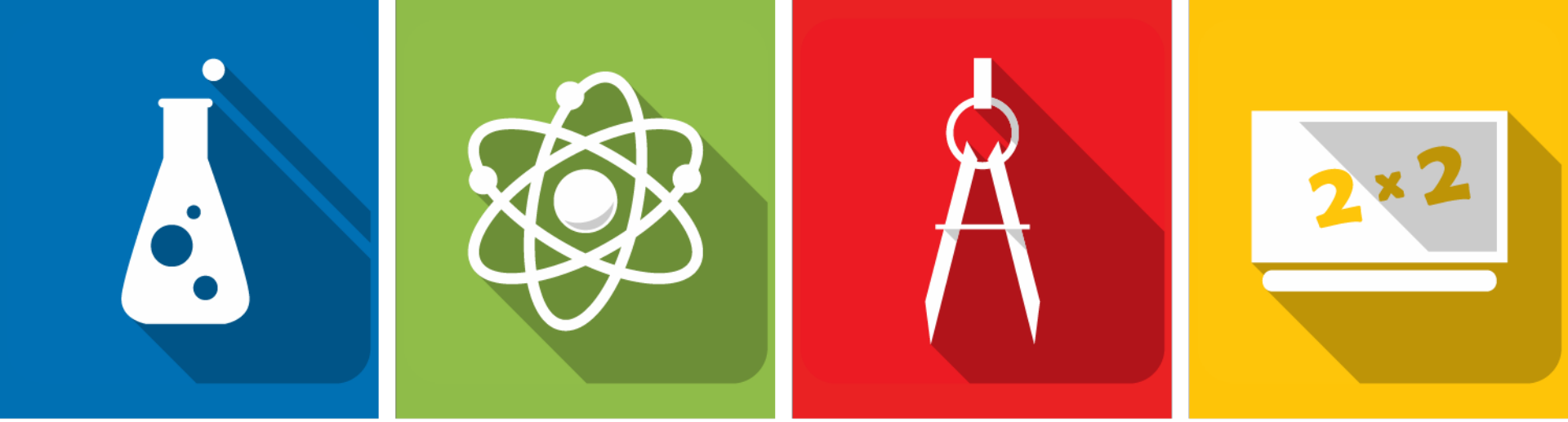

5E Instruction Model

STEM Education

INTRODUCTION

No one doubts that science and technology play a major role in sustaining our 21st century lifestyle, but the educational system hasn't always emphasized this fact. In recent years an educational movement has arisen that aims to introduce young students to the various aspects of STEM (Science, Technology, Engineering, Mathematics). Let's take a closer look at the STEM education movement.

STEM is an acronym for Science, Technology, Engineering, and Mathematics. Devised in 2001 by Dr. Judith Ramaley, the term has won widespread acceptance as a convenient way of referring to these academic disciplines.

The Need for **STEM Education**

The demand for reliable workers with **STEM**-related skills will only increase with time. According to the National Science Foundation, approximately 80% of jobs that will be created over the next decade will demand the use of math and/or science skills.

5E Instruction Model: Engage

The purpose of this introductory stage, engage, is to capture students' interest. Here you can uncover what students know and think about a topic as well as determine their misconceptions. Engagement activities might include a reading, a demonstration, or other activity that piques students' curiosity

5E Instruction Model: Explore

In the explore stage, you provide students with cooperative exploration activities, giving them common, concrete experiences that help them begin constructing concepts and developing skills.

Students can build models, collect data, make and test predictions, or form new predictions. The purpose is to provide hands-on experiences you can use later to formally introduce a concept, process, or skill.

5E Instruction Model: Explain

In the explain stage, learners articulate their ideas in their own words and listen critically to one another. You clarify their concepts, correct misconceptions, and introduce scientific terminology.

It is important that you clearly connect the students' explanations to experiences they had in the engage and explore phases.

5E Instruction Model: Elaborate

At the elaborate point in the model, some students may still have misconceptions, or they may understand the concepts only in the context of the previous exploration.

Elaboration activities can help students correct their remaining misconceptions and generalize the concepts in a broader context. These activities also challenge students to apply, extend, or elaborate upon concepts and skills in a new situation, resulting in deeper understanding.

5E Instruction Model: Evaluate

In the evaluate phase, you evaluate students' understanding of concepts and their proficiency with various skills. You can use a variety of formal and informal procedures to assess conceptual understanding and progress toward learning outcomes.

The evaluation phase also provides an opportunity for students to test their own understanding and skills.

Cycle of Learning

The 5Es are listed above in linear order—engage, explore, explain, elaborate, and evaluate—but the model is most effective when you use it as a cycle of learning.

Cycle of Learning

Exapmle

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