



STEM: Pros and Cons

Definition of STEM Education: NSTA or National Science Teachers Association defines this as: *an interdisciplinary approach to learning where rigorous academic concepts are coupled with real-world lessons as students apply science, technology, engineering, and mathematics in contexts that make connections between school, community, work, and the global enterprise enabling the development of STEM literacy and with it the ability to compete in the new economy.*

Let's look at the pros and cons to this initiative:

Pros:

1. Promotes equality in education. It benefits both male and female students equally.
2. Teaches independent innovation
3. Allows students to explore subjects at greater depth
4. Helps students develop critical and creative thinking skills
5. Allows for an integrated curriculum
6. Gifted students have high interest in these areas

Cons:

1. The initiative does not provide clear-cut guidelines for educators to follow.
2. Few elementary teachers are qualified to teach in the areas of math or science.
3. No national standards
4. No teacher certification
5. Can be costly
6. Comes at the expense of other subject matter
7. Most school systems do not teach integrated curriculums, therefore teachers do not know how to integrate

Now let's look at these lists. The Pros list shows that overall, a STEM curriculum or initiative is meant to engage all students in learning by allowing investigative and hands on activities. The Cons list shows that due to lack of teacher expertise, lack of curriculum and money, the STEM initiative falls short.

HMM! Sound familiar!



Over decades of educational initiatives, most haven't survived due to the same lists of pros and cons. Many of these initiatives have been recycled over and over. The names have been changed to mask the obvious. The STEM Initiative is an integrated curriculum that will not survive, just like the integrated curriculum did not survive. We need to address the lists of Cons before change can happen!

Before we bring to the table another initiative that teachers aren't fully prepared to implement, we need to address the ones that are already here and make them work.

So how do we do this in order for the STEM Initiative to survive? Here are some possibilities:

1. Schools, school systems, state and federal education departments need to come together to create a template for teachers to use in order to design an integrated unit of study
2. Units of study need to be clear
3. Well developed and useful teacher in-services need to be conducted to teach educators how to:
 - Design an integrated curriculum
 - Classroom management techniques for providing a hands on activity
4. Individual schools need to provide:
 - resources and materials
 - collaborative planning time for educators to share and develop units
 - A lab and/or storage area for equipment and materials

Now that you've got the information, are you ready to start planning, designing, and integrating your curriculum based on the STEM initiative?

I've designed a one page template that can be used to start a unit of study. I've designed a behavior management plan to help you manage student accountability. I've designed small projects that can be used as ideas for your STEM program to help you get started in the process.

References:

1. Debbie Dailey. A Focus on STEM Education, A Response to Pros and Cons of STEM Initiatives for Gifted Learners. <http://www.nagc.org/focus-stem-education>
2. Grace Chen. October 19, 2018. The Rising Popularity of STEM: A Crossroads in Public Education or a Passing Trend? <https://www.publicschoolreview.com/blog/the-rising-popularity-of-stem-a-crossroads-in-public-education-or-a-passing-trend>

