

# What's The Difference Between STEAM and STEM?

Most people are aware of what STEM is, which is science, technology, engineering and maths. STEM is regarded as one of the most important topics to know and teach because it shapes the way our world works and will continue to shape how our future infrastructure would be. However, not many people are aware of what STEAM is. In essence, it is very similar to STEM, except for the extra addition of arts involved. Arts, in this case, encompasses ideas such as language, visual art, dance, drama, music, design and anything that includes creativity.

As similar as they are, both of these approaches widely differ. STEM is grounded in more of axiomatic truth, meaning there are minimal requirements for creativity.  $1+1$  is 2, Na + Cl is salt. The answers in STEM are mostly unarguable truths.

STEAM on the other hand, ties all of the rigid information STEM has to offer into a creative package. In a sense, STEAM encourages students to think through a logical and analytical perspective, but approach problems with out-of-the-box creativity.

## Why Is STEAM so important?

By incorporating art and creativity into science, technology, engineering and maths, students are able to truly visualize concepts that have not been realized yet. Without creativity, there is very minimal innovation.

As the technical aspects of the topic serve as tools for students to build upon their ideas, art serves as a canvas as to what they can imagine it to be.

To put it simply, most of the inventions that we use daily such as handphones, computers and the internet did not exist a few decades ago. These things we use every day were created by teams and individuals who had a very solid foundation in STEM, they were able to theorize a product and have the means of building it. However, it was because of creativity and art that these everyday products were able to be imagined, thought up, blueprinted, and designed.

The point is that STEM is incredibly important for students, especially if they have big ambitions and desires to make the world a better place. However, art and creativity is an absolute requirement for them in order to conceptualize inventions of their own. While many things are labeled as STEM, the a for arts is still always present.

## How can I incorporate art into STEM?

As surprising as it sounds, art is inherently a part of STEM, but it is usually overlooked. Science has its roots deeply planted in creativity. Likewise, art is also a type of science. For example, as previously mentioned, most innovations we know and love were thought up through creativity. Inventions and new innovations happen because an individual identified a problem, and came up with a creative solution for it.

In the case of art being a type of science and math, it is often overlooked how technical most forms of art are. Music theory is highly linked to mathematics, in fact, most music IS maths! The circle of fifths, beats per minute, the Pythagoras ratios on guitar frets, chords are essentially triangles. As another example, in the case of visual art, architecture and design, many professionals rely on mathematical equations and ratios to get their creations right on the first try. In fact, this is not even something new. Ancient paintings and artifacts have been seen to follow the golden ratio. Monuments such as the Great Pyramids of Egypt have also baffled modern professionals as to the exact measurements are incredibly close to the golden ratio too.

In a sense, STEM and creativity have always come hand-in-hand, however, due to the required syllabus and institutionalized education, it has been separated into their own categories, making it logistically more streamlined.

By being aware of the fact that creativity and art bring STEM to life, and opens up doors to endless opportunities, you are already taking the first steps of incorporating it. As you learn about STEM and grow your knowledge, you will also start to realize how important it is to have a certain level of creativity in order to really push your boundaries and do your very best.

## **Creativity Is Key To Excelling In STEM**

Some students may study STEM for years and still not fully realize the power that creativity and art can bring to the subject. However, as you become more aware of the true potential of STEAM, and hold to the value that art is part of science, maths and technology, you will be able to dream up innovations that nobody else has ever been able to dream up.

Keep on working hard to master your STEM subjects, but always keep an open heart and open mind on being unique and doing something new. You might find yourself being the next scientific savior of this world!