What is STEM education? According to Wyatt Dalton of Pearson Accelerated. Com says, it can simply be defined as a "teaching philosophy " that integrates Science, Technology, Engineering, and Math "together into a single, cross-disciplinary program". The acronym STEM was reportedly first used in 2001 by the U.S. National Science Foundation in this source. The article continues by stating that in the early 2000’s, reports came out stating that the students in the United States were not as proficient in the STEM subjects as those of other competing countries. This fear has been a driving force in the development of educational programs across the United States in mathematics and science as well as engineering and technology for many decades.

Some argue the roots of STEM education go back all the way to the middle of the cold war. In this argument, a key moment in the space race, the beginnings of STEM can be traced to the launch of Sputnik in 1957. In his article, Alvin Powell suggests that the launch of Sputnik helped highlight the need for better education in the fields of science and mathematics in the United States. This heightened understanding and the urgency created by our need to compete in the global race for technological advancement would go on to create the first of many math and science schools. These schools would later prove to be the foundation for the new philosophy of STEM education.

So, what sets STEM apart from other forms of education? How is it different from traditional education? Simply put it's the philosophy. In a tedx talk posted March 11th, 2014, nationally recognized educator, Robert Stephenson lays out his point of view on this new teaching philosophy. In his presentation, he explained how the philosophy of STEM focuses on the innate desire for children to think "outside the box" to problem solve. And that when you give them a task with minimal rules and no concrete model to follow, they will become engaged and persevere in search of a solution. STEM fosters the child’s imagination and desire to learn. This coupled with another aspect of STEM, community integration, where businesses engage with the schools and students encourages the students even more.

STEM education is thought to be the solution for the U.S. to become more competitive in this global Market. STEM philosophy has shown signs of flexibility. There is much to be explored about STEM. Scholars have considered incorporating Arts into the STEM model "STEAM". Some suggest adding Reading. "STREAM". This open-ended philosophy of integrating Science, Technology, Engineering, and Mathematics and possibly other subjects is what’s making STEM sought out as potentially the next teaching philosophy of the 21st century. Perhaps STEM will be the future of education not only in the U.S. but worldwide.

As you can see, STEM can mean different things to different people depending on one's perspective. The view of STEM can range from a hardline stance of being the only chance for our country's economic survival to the opposite end of the spectrum being unnaturally and unnecessarily forced upon a society. In my analysis of three articles written on STEM you will begin to see some examples of individual perspective being displayed through the writings from three different authors.

In the first article[, the (Hays article) written by Alistair Cox](https://social.hays.com/2018/02/26/young-people-stem/), entitled, “Why we need more young people in STEM- and how we can do it", the author argues that the economy of STEM is advancing faster than there are people perusing STEM careers. In the beginning of the article, he paints a grim view of our future, using numerous emotional arguments to drive his point. He attempts to create fear by saying that the statistics are "incredibly worrying". He uses statements of urgency, saying as early as 2024 America stands to see "a deficit of 1.1 million STEM jobs". He then attempts to create a sense of ownership and team by suggesting that we all have a "Duty" to not only encourage but to inspire the next generation to pursue STEM careers. He ends his opening argument with a statement of impending doom. He suggests that if we fail at our task to encourage and inspire that "all the progress made in innovation could falter'.

At this point the author seems to transition from a position of fear to one of encouragement and inclusiveness explaining how different sectors of the community all can participate in the task of encouraging more STEM involvement. Whether it's parents, friends, schools, businesses, or government, we all need to come together and play our part. The author finalizes his argument with another appeal to fear and urgency by restating his opinion that if we don't succeed in producing a larger STEM workforce, our progress will "splutter and stall".

The second article ["why STEAM is so important to 21st century education" by Joseph Latham](https://onlinedegrees.sandiego.edu/steam-education-in-schools/) PhD (referred to as the "USD" article), continues support for the need of STEM education. He also introduces one of the more modern augmentations of STEM, STEAM. Here he suggests the importance of incorporating the arts to STEM. He argues that STEAM isn't just adding a subject to STEM. STEAM adds a dynamic focus on creating a more diverse student with more creativity and better communication skills than those studying under the STEM system.

Throughout this article, the author doesn't make strong emotional appeals as did the author of the "Hays" article, rather he stays on a more intellectual theme. He uses facts and figures as the bases of his arguments and once explained moves on. He doesn't take a strong personal stance on the STEAM approach vs STEM. This becomes apparent as the article progresses and the reader sees the author using STEM and STEAM as relatively two interchangeable disciplines. Another major difference between this article and the "Hays" article is the willingness of the author to recognize that education In STEM or STEAM can be beneficial to students choosing non-STEM/STEAM career paths.

The [third article entitled "stop pushing STEM" by Dana Albert](https://www.albertnet.us/2019/10/stop-pushing-stem.html) makes an extreme departure from both the more pro STEM “Hays" article and even the more open and inclusive "USD" article. In this article Dana Albert expresses his strong opinion that the focus on STEM education is misplaced.

He starts off with a very strong emotionally charged argument, pointing out what he sees as hypocrisy from current elected officials. He questions if they think of themselves as "special". He asks if they believe they can have careers outside of STEM while deeming the next generation "doomed" if they don't go into STEM jobs. After that heated introduction the author transitions into a more fact driven format. He lays out piece by piece his argument why STEM education is no more needed now than it has been in the past and in the projected future. He uses charts and logic-based arguments to show that differences in income between STEM and non-STEM jobs are not as large as others have argued.

As the article continues the author begins to focus on how pushing all children into STEM doesn't consider the individual child's personality and interests. He equates forcing a child who doesn't have the aptitude, personality, or desire for STEM to forcing a cat to accept a leash.

Each of these three authors used emotional argumentation to one degree or another to direct their readers. In doing so they helped demonstrate that each person has a unique understanding of the world around them. It is this uniqueness that creates such diverse opinions on a subject. This one in particular: STEM education.

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| **Project Portion** | **Ideal Criteria** | **Overall Feedback** |
| Introduction | * Engaging * Shows importance of question * Indicates major parts and content |  |
| Background | * Uses credible, neutral sources * Effectively and sufficiently explains essential information * Written objectively in own words * Well organized and focused paragraphs with transitions * Minimal error |  |
| Analysis | * Smooth transition from background * Summarizes accurately and in own words two opposing answers and one objective answer to the question * Recognizes bias * Reasonable observations about how all sources make their arguments impactful * Well-organized and focused paragraphs with transitions * Minimal error | Excellent analytical points. With the exception of that one article, you’ve done especially well blending summary with analysis. |
| Response | * Smooth transition from analysis * Incorporates strong points from sources * Draws a reasonable and well-supported conclusion, answering the question * Provides satisfying conclusion to the project * Good transitions between focused paragraphs * Minimal error |  |