STEAM Education Program Description

ST∑@M: Science & Technology, interpreted through Engineering & the Arts, all based in Mathematical elements.

A framework for teaching that is based on natural ways of learning, customizable for ALL types of students and programs and is FUNctional!

STEAM Framework Definition: Science and Technology are understood as the basis of what the world has to go forward with, to be analyzed and developed through Engineering and the Arts, with the knowledge that everything is based in elements of Mathematics. It is a contextual curriculum where the subjects are coordinated to co-support each other under a formal educational structure of how science, technology, engineering, mathematics and the broad spectrum of the arts, all relate to one another in reality. This framework, not only includes the art of aesthetics and design, but also the art divisions of the liberal, language, musical, physical and manual. The STEAM structure explains how all the divisions of education and life work together, therefore it offers a formal place in the STEM structure for the Language Arts, Social Studies, and the purposeful integration of the exploratory subjects including; the Arts, Music, CTE and Physical Education divisions of public education. Shifting to a STEAM perspective means understanding learning contextually; not only in terms of having a framework that illustrates where the subjects overlap, but also in providing a living and adaptable learning structure for ever-changing personal and unpredictable global development.

S-T-E-M with the A includes:
- sharing knowledge with communication and language arts, ‘voice’ – impact, power, legacy
- a working knowledge of manual and physical arts, including how-to and fitness,
- better understanding the past and present cultures and aesthetics through the fine arts,
- rhythmic and emotional use of math with the musical arts,
- understanding sociological developments, human nature and ethics with the liberal arts…

Programs:

STEAM is proving successful in schools all around the world to better teach academic and life skills in a standards-backed, realistic-based, personally relevant exploratory learning environment. It is adaptable, strong, benchmarked, measurable, and reinforces NCLB and state standards and integrates with the Common Core in unique and engaging ways. It is backed with the major educational philosophies, classroom management and assessment strategies. It promotes deeper understanding and transference of knowledge across the subjects. It is used for developing model educational programs to create functionally literate people by increasing the depth and breadth of proficiency in all students and educators and the communities they influence. It works by expanding a program’s current lesson plans into STEAM plans for more realistic discovery and innovation for all types of learners.

STEAM can help make good education better. The STEAM framework, like steam itself, can fit anywhere and take innumerable shapes, and if used purposely can be a very powerful and enjoyable tool for teaching and learning any level of any topic. It delivers high quality team-based education to all students. Preparing children for a growing variety of careers is important to advance the global society and economies. Careers, past, current and potential are organized to be taught with STEAM. Students are taught to evaluate needs, wants and opportunities in order to be informed users, responders & innovators. It prepares students to be life-long learners in pursuit of college, skilled trade programs, potentially yet unknown career paths and well-balanced lives.
STEAM is a whole-learner, community-involved and influenced learning environment. It has living-curriculum structure that is representative of the surrounding culture and aware and tolerant of all types of diversity, perspectives and changes.

Classrooms: Embedded in the framework is a system to establish well-balanced teams among educators and students based on a variety of characteristics. All participants have ways they are advanced and are challenged. With this system, their skills are used for leading in some areas while other areas are strengthened through observing and assisting. Educators instruct within their specialty with a co-planned thematic units that everyone contributes to in projects related to the required benchmark concepts and skills.. There are times when various groups of educators co-teach overlapping subject areas and assignments. Special times are designated for working on projects, so that as new concepts are learned they can be applied and built upon. The classrooms and common areas become a network of specialty topics in a living and growing discovery place.

Students: All learners further investigate and coordinate topics and tangents, learn and teach others for more perspectives in discussions and on projects. This results in an impressive variety of viable solutions and extensions to authentic problems. They soon start using knowledge and skills from across the subjects to back up their discussions and have deeper understanding and recall of concepts when reminded of related activities. Students develop an ability to recognize and respect their own and other’s varying skill sets and intelligences. They learn how to best fit into teams based on roles that they have a predisposition to do well at, and how they and others create society. They more naturally know how to use team dynamics help solve conflicts and side conversations are reported as being more on-topic. Students look forward to these activities and take more measures to prepare for missing work during these times.

Classroom and SPED teachers report that students with IEP’s and 504’s are more engaged. Special, ESL and advanced learners get more of what they need academically and interactively from the team-based approach and need fewer specialized pull-out sessions. Participants feel group identity and pride with fellow students and the school, something that is often under-cultivated. They feel a shift from ME (the singular student) to WE (an active participant in the global community.)

Educators: STEAM Educators report feeling rejuvenated by richer living work environments. They have the ability to use more diversification of teaching methods and be more of a facilitator to learners. It empowers educators to meet the guidelines in a variety of unique and engaging ways and meaningfully cross-reference concepts and vocabulary. They have the opportunity to teach collaboratively, exchange ideas, have easier preparations for substitutes and have more productive common planning times. The teachers report feeling the positive shift from ME to WE. They report more personal and student engagement with student self-direction for project-based, discovery learning. They state that through the structure of rubric-based portfolios and process work, they have a better (broader and deeper) understanding of what their students prove they know in different ways including what they can tangibly accomplish. Educators can better match their learning objectives and goals to the variety of learners they encounter.

STEAM teaches students by way of reality-based authentic units to synthesize, how to inter-relate, build systems, process acquired facts, and question information by manipulating & observing data in more complex situations. … Teachers can work together to provide in depth coverage of their areas of expertise while reinforcing what students are learning in other specific fields - Dr. Cameron – STEAM Principal UPES