



STREAM Education: A Pedagogical Revolution in Multilingual India

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Abstract

In the 21st century, the world is going through its digital revolution. People live in a world where Science, Technology, Engineering, and Mathematics play a major role. In such a condition, the children cannot be taught different subjects individually. Instead of teaching children each subject separately, teachers should try to integrate all the elements into one subject. Integration is the most important aspect of the STEM (Science, Technology, Engineering, Mathematics), STEAM (Science, Technology, Engineering, Arts, Mathematics), and STREAM (Science, Reading & Writing Technology, Engineering, Arts, Mathematics) program. Lessons should be well-rounded, project and inquiry-based, with a focus on interdisciplinary learning, as opposed to teaching subjects in separate subject silos. The ways one operates and solves problems in daily life are aligned with STEM, STEAM, and STREAM, making these superb teaching and learning approaches. Teachers of today need to adapt from traditional classroom settings to open, interactive, active learning scenarios. Along with serving as a guide, they are also required to serve as a facilitator, mentor, assistant, leader, inspiration, and role model for the students. A teacher should model honesty, ethics, and

values for his pupils and guide them in these directions. In today's educational scenarios, a teacher must educate learners in the manner in which they will function in the workplace and in everyday life.

Key Words: STEM, STEAM, STREAM, Multilingualism

Introduction

According to legend, India is home to a big, unusual sociolinguistic giant. Multilingualism is this giant's brain. With about 1600 mother tongues that may be reduced to 200 languages for a population of roughly 1.27 billion, India has a massive amount of multilingualism, with the populations of several linguistic minorities being bigger than many European nations (Annamalai, 2001). India has been a multilingual country since the beginning of time. The linguistic families that co-existed for more than four millennia interacted with one another continuously and developed a pan-Indian character that is distinct in and of itself, first in the area of sentence structure and then in the number of shared vocabulary items (Prasad, 1979). In truth, bilingualism and multilingualism are increasingly commonplace due to the globalization that the globe has undergone.

School as a medium for Language Inclusion and Multilingualism

India's history and the country's many cultural traditions are both reflected in its multilingualism. Schools are essential for both preserving multilingualism and modifying its characteristics. In order to theoretically allow for the continuation of the multilingual foundation, planning for the development of Indian languages begins at the school level. The benefits that might serve as incentives for studying more and more languages drive students to want to learn many languages. These



benefits include having better employment, going to different movies, reading periodicals, and traveling.

One characteristic that sets minority children apart is the distinction between the language they use at home and the language they use in school. They develop an inferiority complex if the child's language is mocked and stigmatized in the classroom and no academic method is used to help such children become proficient in the school's language so they can study on par with the students who speak the majority language. Their personality is then impacted by this. Therefore, language is both the root of and a symptom of an ineffective educational system. In the latter sense, language only serves as an indirect contributor to prejudice by lowering opportunities and social standing (Pattanayak, 1981).

Multilingualism practice tends to create the development and general acquisition of cross-cultural communication skills. In this regard, people tend to learn different skills of the languages in place especially speaking, reading, and even writing. These cross-cultural communication skills enable one to gain both the communicative and discourse Competencies.

STEM, STEAM, and STREAM

Descartes, an educational philosopher, was the first to make meaningful statements that strengthened the STEM movement. In the early seventeenth century, his vision and ideals included the goal of education to “examine all things” to make the concept clear. Froebel also introduced a layer of discipline to the learning concept. “Education, as well as Science, would benefit from a more human, related, affiliated, connected treatment and comprehension of the



themes of education,” he said, encouraging a linkage between the two fields of science (as cited in Sochacka, Guyotte, & Walther, 2016). This placed a greater focus on approaches rather than information and prepared students for the actual world. The student must be aware of technology and problem-solving skills in order to do this. In India, STEM education has a very broad scope. By stating that a child’s critical thinking is positively impacted by a learning environment that is built on discovery and analysis in schools, NEP 2020 (National Education Policy) has created the groundwork for the future, pointing out that it is crucial to implement the STEM program in schools from early to Higher levels of education. STEM education is positioned to be the next significant transformation in the Indian educational system because the NEP 2020, also acknowledges the need for a system that promotes creativity, hands-on learning, and critical thinking. In the modern world, the approach of teaching and learning process towards education is increasing, which has led to the formation of STEM, STEAM, STREAM. A holistic and multidisciplinary approach is essential in the education system as India makes substantial advancements in science and technology globally. In addition to enabling students to shape the workforce of the future, real democratization of education would also spur so far for the unheard developments in India’s educational scenario.

Benefits

According to Rath, (2019), the new STREAM lab combines Science, Technology, Reading, Engineering, the Arts, and Mathematics into one space where students are encouraged to be creative and express themselves while still learning important educational and life skills. Likewise, by including “Reading” into the equation, STREAM adds another dimension to STEM and STEAM. Critical



thinking and creativity are aided by reading or literacy. STREAM delivers a well-rounded learning experience by emphasizing reading as a key component of obtaining new information. Similarly, STEAM techniques are a valuable addition to standard pedagogy and training methodologies in the sciences, when allowing the reading and writing with this will allow trainees to exercise creativity and innovative thinking, which is often lacking in academia. In the same way Foti, (2021) focussed on Reading, according to ‘STREAM’ supporters, is an important aspect of education. “We have lost sight of one critical part of our education and all occupations, high-tech, low-tech, and no-tech alike”. There is no STEM or STEAM vocation that can be fulfilled without the ability to read and write; Writing, like any other art, aids in teaching a broad spectrum of cognitive capacities that are necessary to be innovative in any domain.

One can now wonder if the distinction between reading and writing is still necessary. Ewing, (2018) pointed out that, despite their differences, STEM, STEAM, and STREAM all benefit from multidisciplinary teaching techniques. Badmus, & Omosewo, (2020) investigated the popularity of STREAM education as well. Educators and educational philosophers, he believes, made the right choice when they transformed STEM into STEAM and subsequently STREAM to develop a comprehensive set of contemporary curricula. Teachers and students no longer live in the confines of a single classroom. They acquire the necessary materials, whatever route is chosen—STEM, STEAM, or STREAM—these are the techniques that must be implemented.

Challenges

NEP-2020 focuses on multidisciplinary and holistic education for the learner. This aim can only be achieved through teachers who are well-trained and equipped with content knowledge as well as pedagogical knowledge. To achieve



this goal teachers are expected to perform and deliver as per expected professional standards. According to Anspoka this process of teaching-learning have to be related to the whole 'which envisages not only the acquisition of learning content as a whole by a specific age group but also ensures that "a holistic approach to personality development promotes a pupil's intellectual, emotional and social development within correlations' (as cited in Helmane & Briška, 2017, p-8). Teachers need to play the role of facilitator so that learners can build or construct their own knowledge. This approach to learning requires collaborative skills and teamwork so the teacher also needs to know the ways by which learners collaborate and work in a team to solve the problem creatively and thus knowledge building could be done well. Therefore, for this to be done teachers required training and mentoring. Hence, they need the training to look at any concept through a multidisciplinary approach, for this, they need to know to use different disciplines in that particular concept as well as should have command of different disciplines. Similarly, they need to know how to construct different activities and problems based on a multidisciplinary approach for the learner on a given topic. Hence extensive training is required for teachers to be ready to use this approach to learning.

Conclusion

Though it is remarkable to see how organizations all around the world are recognizing the STREAM/STEAM/STEM. All these learning approaches would encourage 21st-century abilities such as cooperation, communication, creativity, critical thinking, and problem-solving. The teachers had a broad perspective and a positive attitude about it. STREAM lab combines science, technology, reading, engineering, the arts, and mathematics into one space where students are encouraged to be creative and e themselves while still learning important

educational and life skills. Educators and educational philosophers should make the right choice when they transformed STEM into STEAM and subsequently STREAM to develop a comprehensive set of contemporary curricula. Teachers also need the right amount of training through different means to prepare themselves for this approach to learning. This will enable the teacher to enhance his lessons with activities from Science, Technology, Reading and Writing, Engineering, and Mathematics, encouraging active participation, critical thinking, collaboration, creativity, and the development of skills important for tomorrow's citizens. STREAM-based curriculum for STEM-focused programs would encourage 21st-century abilities like teamwork, communication, creativity, and critical thinking.

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