CHALLENGES OF IMPLEMENTING STEAM IN ENGLISH LANGUAGE CLASSES

Zarinabonu Ma'murjon qizi Khatamkulova
State Specialized Boarding School No. 3, Marhamat district, Andijan region

Abstract: Since language teaching is always a difficulty, teachers always seek easy and effective ways to instruct learners. While using various models or techniques there are some tough thing that should be considered. This paper purposes to explore significance of STEAM model in English language classes, its characteristics and also focuses on challenges in implementation which are faced by teachers and learners.

Keywords: STEM (Science, Technology, Engineering, and Mathematics), English class, STREAM (Science, Technology, Reading, Engineering, Arts, and Mathematics), challenges, inquiry-based learning, STEAM (Science, Technology, Engineering, Arts, and Mathematics)

The domain of education has realized more and more in recent years how important it is to integrate several disciplines in order to educate pupils for the complexity of the twenty-first century. The STEAM education model is a ground-breaking framework that aims to dismantle the conventional learning silos and enable a more comprehensive approach to education that fosters student cooperation, creativity, and critical thinking. The realisation that a complete, interesting, and relevant curriculum is necessary for future generations to address global concerns has spurred the adoption of STEAM programs in elementary schools throughout the globe. Additionally, integrating the arts into the STEM curriculum fosters students' creativity by pushing them to think creatively and approach issues from a variety of angles.

Educators recognize that fostering an integrative learning environment encourages children to develop competencies such as problem-solving, innovation, and adaptability, essential for navigating an ever-evolving technological landscape. Moreover, incorporating the arts within the STEM framework enhances students' creative capacities, encouraging them to think outside the box and approach problems from diverse perspectives.

According to investigations it is claimed that the next five years are determinant period for establishing sturdy STEAM model programs in primary curriculum. By focusing on contemporary topics and recent publications, we seek to highlight the advancements and challenges of implementing STEAM education in elementary schools. The study will summarize important ideas from recent research, offering teachers useful information as well as some difficulties in implementing STEAM in language classrooms. Raising awareness of the direction of STEAM education and its capacity to develop a new generation of students with the abilities needed to prosper in a complex, linked world is essential. The five important spheres of science, technology, engineering, the arts, and mathematics are integration within STEAM model. It arises in reaction to the conventional compartmentalised approach, which frequently restricts students' capacity to make connections between disciplines. By encouraging the critical thinking, creativity, teamwork, and problem-solving abilities necessary for success in contemporary society, STEAM education seeks to equip students for the challenges of the twenty-first century (Liao, 2019). Elementary school STEAM programs nowadays have a number of traits in common with

conventional teaching methods. First and foremost, STEAM education encourages the fusion of mathematics, science, technology, engineering, and the arts. Instead of seeing various disciplines as distinct and independent fields of study, this method enables pupils to identify and comprehend links between them. Students gain a more comprehensive understanding of information and learn how to utilise diverse viewpoints to tackle challenging issues by tying together different fields of study (Quingley et al., 2020; Bequette & Bequette, 2012).

The foundation of STEAM education is inquiry-based learning, which promotes students' curiosity, research, and exploration. Programs structured around this principle motivate students to actively seek explanations, design experiments, and find solutions to real-world problems. This practice-based approach encourages curiosity and thinking critically, as learners are aware of investigating their inquiries systematical order (Savery & Duffy, 1995; Hmelo-Silver, 2004). Also,the integration of the arts within the STEAM model is essential for nurturing students' creative and innovative development. Because,incorporating artistic tarining empowers students to show their thoughts in diverse and imaginative styles, which assists for raising incredible solutions to issues.In addition,according to scholars Yakman and Bequette by prioritizing thinking creatively among students, STEAM model equips students with the skills useful for innovative thinking and effective problem-solving skills (Yakman, 2008; Bequette & Bequette, 2012).

Project-based learning is the foundation of many STEAM programs, as students work on lengthy assignments that combine information from several fields. These assignments frequently entail real-world problems that call for students to put their knowledge to use in a real-world setting. By helping students realise the value of their education, this approach not only helps them grasp concepts more deeply but also strengthens their teamwork and communication abilities (Guyotte et al. 2015; Buck Institute for Education, 2018).Moreover, the interdisciplinary nature of STEAM programs in primary education, their support of inquiry-based learning, their emphasis on creativity, and their integration of project-based learning are what define them. When combined, these components provide a dynamic and captivating learning environment that equips students with critical skills for their future pursuits in addition to academic information. In order to meet the needs and interests of a varied student body, STEAM education has taken on many extensions and variants throughout the past 20 years. An expansion known as STEAM+C (for culture) emphasises the local culture and socioeconomic circumstances in STEAM instruction by fusing cultural studies with STEAM disciplines (Huo et al., 2020).

By adding the "R" for reading and the "W" for writing - often referred to together as "Reading and wRiting" - STREAM expands on the well-established STEM framework and helps pupils better grasp scientific ideas while also improving their language proficiency. In addition to engaging with technical knowledge, this dual emphasis fosters the development of critical literacy skills that help students successfully express and evaluate their views. According to Norris & Philips (2003), developing deeper scientific literacy - which goes beyond simple data memorization - requires the capacity to read and write critically about scientific subjects.

Another extension that adds robotics to conventional STEAM is called STREAM. This feature emphasizes how crucial it is to combine academic knowledge with real-world applications and programming abilities to provide students a hands-on experience with technology. It has

been demonstrated that integrating robots improves student engagement and makes STEM subjects more approachable and relevant (Leavy et al., 2023).

Teachers must overcome a special set of obstacles when integrating STEAM (Science, Technology, Engineering, Arts, and Mathematics) into English language education in order to establish a productive learning environment. Although these disciplines' synergy can foster creativity and critical thinking, there are a number of obstacles that prevent its application. Aligning the STEAM approach with current English language courses is one of the biggest obstacles. Grammar, vocabulary, and reading comprehension are frequently prioritized in traditional language training. STEAM, on the other hand, calls for a more multidisciplinary strategy that might not mesh well with preexisting frameworks. Teachers must modify their lesson plans to include STEAM activities without sacrificing language learning goals. This calls for a major overhaul of the curriculum, and stakeholders used to traditional teaching techniques could object.

The requirement for teacher preparation and training is another significant obstacle. It's possible that many English language teachers are undertrained in STEAM subjects, especially in project-based learning and technology integration. Lack of confidence in carrying out STEAM activities might be caused by this knowledge gap, which could result in shallow integration rather than deep participation. Providing teachers with the tools and resources they need to successfully lead STEAM-focused classes should be a top priority for professional development programs.The third issue that instructors often deal with is resource accessibility, which has a big impact on how feasible STEAM adoption is. Many schools are devoid of the supplies, equipment, and infrastructure required to facilitate interactive STEAM projects. Budgetary restrictions may make it more difficult to acquire cutting-edge equipment or software that is necessary for successful STEAM education.

As an outcome, educators could discover that they are able to design immersive learning environments that relate language acquisition to practical uses. Evaluation is a prevalent issue in education, and instructors in STEAM also deal with it. There are unique challenges in evaluating student learning in an English language course with a STEAM concentration. The abilities acquired through STEAM activities, such teamwork, creativity, and critical thinking, could not be sufficiently captured by conventional evaluation techniques like standardised testing. Teachers may find it tough to create tests that accurately measure students' success in a variety of subject areas, which might force them to rely on traditional evaluation techniques that don't capture the comprehensive essence of STEAM education.Lastly, even while STEAM seeks to improve student involvement, not all students may find the actual implementation to be appealing.

It might be difficult for students used to traditional language training to adjust to a more dynamic, project-based setting. Additionally, differences in student participation may result from differing degrees of interest in certain STEAM components. To encourage long-term motivation, teachers must carefully create activities that are both pertinent to language acquisition and appealing to a wide range of student interests.

In conclusion, incorporating STEAM into English language lessons has the potential to improve the learning environment, but it also presents a number of difficulties that need for careful thought and preparation. Implementing a STEAM-focused strategy successfully requires

addressing concerns related to curriculum alignment, teacher readiness, resource availability, assessment techniques, and student engagement.

Only through a concerted effort to overcome these barriers can educators fully harness the potential of STEAM to enhance language learning outcomes.

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