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Exploring STEAM education from policy perspectives of NEP 2020: A review study

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Abstract

This article tries to explore the need as well as importance of integrating the indigenous perspectives and the knowledge systems into STEAM based education for the diverse learners in an inclusive setup. As by integrating traditional ways of knowing and understanding the learners can gain much more holistic and detailed understanding of the science, technology, engineering, maths as well as arts. For the review literature from both national as well as international (N1-5, N2-5) is considered. The findings highlighted that integration not only enhances the educational experiences of the diverse learners in the classroom, but it also promotes the culture and nurtures the respect for the indigenous communities. It enhances the inclusive setup in the classroom by respecting the diverse learners needs and strengths.

Keywords: Steam, science, technology, engineering, maths, art

Introduction

STEAM education is very important for preparing the diverse learners for the success in this rapidly changing world of the 21st century. The recent National Education policy generally known as NEP 2020 of India, targets to transform the education structure and system to be more contemporary, holistic as well as inclusive in nature. STEAM (Science, Technology, Engineering, Arts and Mathematics) is an approach that believes in integrating these subjects for fostering and boosting innovation, creativity as well as problem solving among the learners.

However the STEAM curriculum ignores the rich knowledge and indigenous cultures. By incorporating the indigenous perspectives as well as knowledge systems into the STEAM based education, the educator can create a much more inclusive cultural setup for the diverse learners.

The STEAM based education and NEP 2020 connection lies between providing the modern education as well as preparing the child for the future by providing them the skill based on 21st century.

The STEAM education and NEP 2020 align with each other in various ways like it focuses on vocational education, supports the holistic development of the learner, it supports the foundation skills of the learner, promotes innovation and creativity among the diverse learners as well as believes in providing interdisciplinary learning to the child.

Objective

The primary objective of this research is to find out the effectiveness of STEAM Approach in creating an inclusive environment as per NEP 2020.

Research Question

How can STEAM Approach can create an inclusive environment as per NEP 2020?

Methodology

For this study review of literature was done. The review focused upon how the STEAM approach can be used to increase inclusivity for Children with Special Needs as per the National Education Policy 2020. For the review literature from national and international studies were considered.

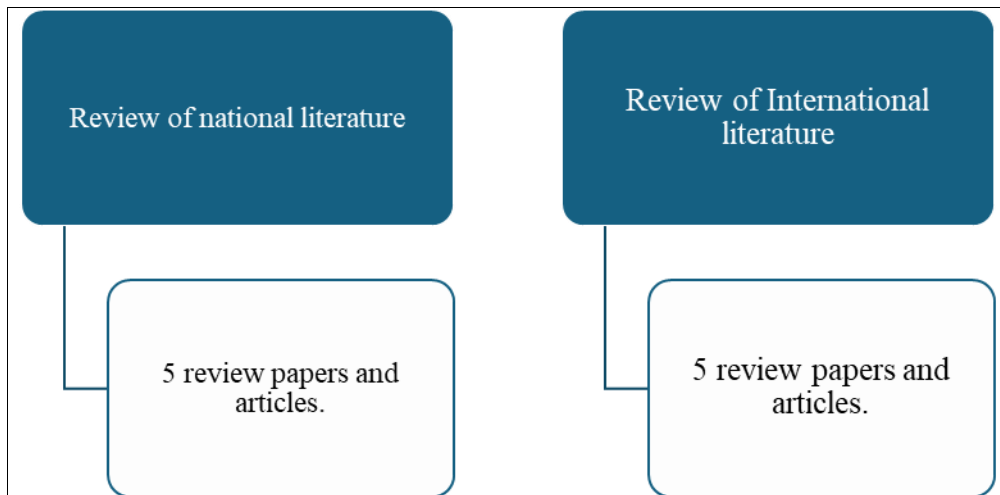


Fig 1: Represents how the review of literature was divided and reviewed (national and international)

Review of Literature

J. Doe in the article a comparative study of the STEAM approach, 2022 highlighted that this approach is very much beneficial for the development of the 21st century skills among the children and that's why most of the educational policies as well as the educational system supports the usage of STEAM approach for the learners.

In the article the importance of STEAM Education in Schools, J. Smith, 2021 explained the evolution of the STEAM based education system as well as the reason behind adding the alphabet "A" for arts. He highlighted the Importance of innovation and creativity in this method. He even pointed out that how the STEAM education can support in bridging gap in the STEAM field by providing support to more females. He further points it out how the STEM module will benefit the educational system as it is a valuable resource for teachers and policy makers also. As it enhances the quality of education.

In the research article by J. Done, 2021. Dr. Done examines the level of awareness as well as understanding and knowledge of STEAM based education among the future teachers. The study aims to identify the knowledge gaps as well as suggest the strategies to enhance the STEAM based learning in the school system. The results of this study highlighted that while most participants were aware about the STEAM method but there was very less awareness and information regarding how this method can be implemented and how it can benefit the learners. Doe even discusses the implementation of her findings in the educational institutions, education program of the teachers as well as policymakers. The research highlighted how better education can be provided by STEAM.

In the article "NEP 2020: The Challenges and Opportunities of Teaching 21st Century Skills", 2021, J. Smith in this discussed the implementation and implications of NEP2020 for teaching the 21st century skills in the schools of India. The article explores the challenges the educators may face in the implementation of this new policy as well as the opportunities it presents to the learners and educators for transforming the new India. He pointed out that it functions on the objectives, such as promoting multidisciplinary learners, fostering innovation, creativity as well as critical thinking. He the highlighted how it focuses upon the development of the 21st century skills among the learners for instance adaptability, collaboration, digital literacy and

problem solving. He points out the importance of integrating these skills in the classroom curriculum. He even highlighted the importance of the collaboration between the policy makers, industries and school structure for this.

In the article the STEAM India: NEP 2020, 2021 the author discussed that the implementation of NEP 2020 on promotion of STEAM education in India. The article highlights the key provisions related to the STEAM education and its important impact on the Indian education system. The author also pointed out how the STEAM education can help in addressing the developmental needs of the nation as well as prepares the learners for the 21st century. At the end the author highlighted that the NEP 2020 as well as STEAM education should be incorporated well by the policymakers, teachers and schools as well as community also.

In the article published by Smile foundation, 2021 it is highlighted that STEM based education can have a very powerful impact on the education system of India. The author begins by highlighting the importance of STEAM based education in supporting the developmental needs of the nation and preparing the learners for the workforce of 21st century. The article even highlighted the important role NEP 2020 can play in building the STEM oriented skills among the learners from the young age.

In the article published in Greater Kashmir, 2021 the author discussed the important role of science education in shaping the workforce of future as well as highlights the major key features of the NEP 2020 connected to the science based education in our country. The article further highlighted that how the policy focuses upon incorporating the science and development of creativity, problem solving as well as critical thinking among the learners. The policy focuses upon sharing the traditional knowledge with the new knowledge.

In the article "STEAM Learning and Design Thinking in Parenting," published on ezschoooling.com, 2020, S. Johnson highlights the integration of STEAM learning with child's education as this method helps in development of creativity, critical thinking as well as problem solving from starting itself. She even pointed out that Design Thinking should be used as a human centred approach by integrating it with STEAM based learning. In the article she also discussed how integrating this approach helps in developing various essential skills, such as collaborations,

communication as well as empathy among the learners from the young age. She even highlighted that these skills helps in personal and professional success of the learner in longer run.

Findings

It will help in promoting the diversity and inclusivity by the STEAM method by highlighting the indigenous viewpoints and the old knowledge systems.

1. It will help the learners to develop a much more deeper understanding of the concepts.
2. It will encourage the different ways of learning and knowing among the diverse learners.
3. The integration will help in enhancing the creativity as well as innovation by incorporating the diverse perspectives into the STEAM based education.
4. This will support the preservation as well as transmission of the traditional ecological knowledge with the help of STEAM.
5. This will help in fostering the holistic development of the child.
6. It will provide the opportunities for the interdisciplinary learning to the diverse learners.
7. It will help the western style STEAM to merge with indigenous learning of our country.
8. It will help the diverse learners by providing vocational education and foundation skills growth.
9. It will help in more holistic, equitable and inclusive society for teaching learning process.

Conclusion

The literature review clearly highlights that STEAM based education shares common goals for diverse learners in the inclusive classrooms. It focuses on improving the quality of education in India as well as focuses on modernization. As this approach not only enhances the students understanding of STEAM concepts in a better way as well as also promotes one's respect for the indigenous culture. As by incorporating as well as valuing the indigenous knowledge, the educator can help the diverse learners to develop a more holistic as well as interconnected understanding of the world around them as well help their all-round development. By incorporating STEAM principles into the NEP we can better equip our learners to face challenges and use the opportunities of 21st century. However more literature review needs to done in this context majorly in the context of India. As more work is available in international context.

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