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A COMPARATIVE STUDY OF MATHE-MATICAL CREATIVITY AND ACHIEVEMENT AMONG SECONDARY STUDENTS

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Abstract : *The present research paper is based on the study of mathematical creativity of students studying at secondary level in the context of their mathematical achievement. Descriptive survey method was used in the present research study. A total of 200 students of class 9th were selected from government and private schools of Almora city by simple random method as sample. To measure the mathematical achievement of students, marks obtained in mathematics subject and to assess mathematical creativity, Mathematical Creativity Test of Secondary School Students created by Dr. Bhudev Singh (1985) was used. For statistical methods, mean, standard deviation, t-test and Pearson's correlation coefficient were used. In conclusion, a significant difference was found in the mathematical creativity of students of urban and rural areas studying at secondary level. The reason for this could be lack of awareness among students, support of parents and difference in parents' education and economic status. No significant difference was found in the mathematical creativity of students of government and private schools studying at secondary level. A significant correlation was found between mathematical creativity and mathematical achievement of total students studying at secondary level.*

Keywords : *education, secondary level, mathematics, mathematical creativity, mathematical achievement.*

1. INTRODUCTION:

'Vidya Yukti: Krunute' means that Vidya (education) develops practical knowledge by providing Yukti (skill) so that he can be successful in every situation of life and solve problems. Through education, man, his need and usefulness are automatically proven. Through education, man's inherent powers are revealed and their channelization in socially useful directions is possible. Human development cannot be imagined without education. Man has reached the highest peak of civilization only due to the spread of education. Vygotsky believes the role of education is to provide children with experiences which are in their ZPD, thereby encouraging and advancing their individual learning (Berk, & Winsler, (1995).From a Vygotskian perspective, the teacher's role is mediating the child's learning activity as they share knowledge through social interaction. (Dixon-Krauss, 1996, p. 18). Vygotsky's Zone of Proximal Development (ZPD) refers to the gap between what a learner can do independently and what they can achieve with guidance. Learning occurs most effectively in this zone, as the learner receives support from more knowledgeable individuals, such as teachers or peers, to help them reach the next level of understanding. Completion of educational program and bright future of students depends on the best curriculum. Curriculum is the backbone of school program and plays an important role in the best art, knowledge of language and mathematics is imparted at primary level and knowledge of science, general knowledge, social science etc. is imparted at secondary level. Language is the means by which man conveys his feelings and thoughts to others. Mathematics is the main subject of school curriculum and it is called the 'Queen of Sciences'. "Mathematics is a group of such techniques which study numbers, quantities, results, sizes and relations between them, qualities, nature etc." According to NCERT (2006): "Mathematics in schools is a subject where students: (1) learn to enjoy (2) understand the importance of mathematics (3) discuss about the subject in relation to their life experiences (4) use abstractions to see structure and relationships (5) understand the basic structure of mathematics".

Mathematics requires reasoning. Reasoning can lead to new ways of solving problems. This ability to discover new things is called creativity. Creativity is a phenomenon where something new and valuable is created. Creativity is a phenomenon where something new and valuable is created. Creativity is the process of creating, inventing or recreating something new in the field of solving a problem related to an object, idea, art, literature. It is a mental operation that gives rise to physical changes. Creativity can be a scientific theory, a musical composition or an idea of physical objects.

Creativity is derived from the Latin word 'creatio' which means: "to create". It is important to study creativity and determine its characteristics. The nature of mathematics provides a suitable platform for developing creativity. Torrance's Theory of Creative Thinking is one of the most influential theory of creativity. **Ellis Paul Torrance** is called **"Father of Modern Creativity,"** transformed the study of creativity through his emphasis on divergent thinking and by developing the **Torrance Tests of Creative Thinking (TTCT).** Torrance's model has influenced both educational and psychological fields, offering a framework for assessing and nurturing creativity across various contexts. Torrance's approach is notable for its focus on cognitive flexibility and originality, suggesting that creativity involves generating numerous, varied, and original solutions to problems rather than settling on a single, correct answer.

Mathematical creativity means 'creating something new in mathematics'. Mathematical creativity refers to the ability of an individual to apply his/her creative potential in mathematics. Chamberlin and Moon (2005) state that mathematical creativity is observed when one generates a non-standard solution to a problem that cannot be solved using the standard method. "The essence of mathematics is not simply to give the right answer, but to think creatively". Mathematician Jerry P. King has described mathematics as an art, stating that "the keys to mathematics are beauty and elegance, not dullness and technicality, and this beauty is the driving force for mathematical research". Mathematics and art are related in various ways. Mathematics itself has been described as an art motivated by beauty. According to some definitions, mathematical creativity consists of: creating a new useful mathematical concept; discovering an unknown relation; and reorganizing the structure of a mathematical theory. Students' mathematical achievement is also affected.

Mathematical achievement refers to the ability displayed by students in mathematics. It is the result of the knowledge or information, understanding, skills and techniques acquired in mathematics at a particular stage. It refers to the learning level of different students in the subject of mathematics. It can be defined as the total marks obtained by students in the subject of mathematics. Since the beginning of formal education, mathematical achievement has been a decisive factor for the success of a student in the modern era of science and technology. Adolescence can be a special reason for affecting mathematical achievement, because students study at the secondary level in adolescence. This age becomes challenging for boys and girls in which students lack confidence and have problems related to subject selection. Due to which girls choose mathematics and science subjects less. Generally it can be said that girls have less interest and achievement in mathematics, which can have various reasons: complex nature of mathematics subject, fear, lack of confidence, not doing difficult tasks etc.

2. Need and importance of study: The discovery of zero by Aryabhatta in ancient times is the result of mathematical creativity, which makes us Indians proud. Radhanath Sikandar first calculated the height of Mount Everest in the Himalayas, which is the best example of mathematical creativity. But in the present times, we find very few such people, due to which there is an urgent need to study this subject. Mathematical creativity solves various problems of mathematics. The importance of mathematical creativity is found in the form of modern mathematics, which is the result of the creative thinking of mathematicians. At present, for mathematics teachers, mathematical creativity develops the process of open thinking, the search for mathematical problems, curiosity and new discoveries in mathematics for the development of hidden talents of students. It prepares students to perform and practice using closed problems with predetermined answers. It contributes to removing the inactivity of students, uninteresting mathematics subject matter, and monotony. To enhance mathematical creativity, many programs were organized by the Ministry of Education, which mainly included Learning Enhancement Guidelines, NCFFS 2022, NCFSE 2023 and National Education Policy 2020. The 'Learning Enhancement Guidelines 2020' was announced by the Ministry of Education to increase the level of education from class 1 to 12. The use of mathematical creativity is to enable students to be characterized by fluency, flexibility and originality in the field of mathematics. Through this, students are motivated to learn by doing themselves. In the preamble of the National Curriculum Framework for the Foundation Stage (NCFFS) 2022, game-based education has been considered important for students in the age group of 3-8 under institutional arrangements so that students can develop curiosity, creativity, critical thinking, and ability to collaborate. ECCE includes the development of early literacy and numeracy, which includes learning about alphabets, languages, numbers, counting, colors, shapes, games, puzzles and logical thinking. This forms the basis for the achievement of Foundational Literacy and Numeracy (FLN)

during the age range of 6-8 years. FLN has been given a key place in the National Education Policy 2020 for holistic education. ECCE under the Foundational Stage gives all students the best chance to become thinking, creative, and empathetic. The National Curriculum Framework for School Education (NCFSE) 2023 was developed based on the vision of the National Education Policy 2020. It aims to positively transform the school education system in India. (NEP 2020, 4.30). Chapter 3 of NCFSE 2023, Mathematical Education involves learning creative and logical thinking through fundamental concepts such as numbers and operations, geometry, algebra, and statistics. It also aims to nurture fundamental mathematical abilities through pattern finding, inference, logical reasoning, creativity, problem-solving, whereby students use many different ways to arrive at the same mathematical truth and solve the same problem. (NCFSE 2023, 3.2) Under this, play-way method, discovery method, problem solving method, inductive method and deductive method have been considered important for teaching mathematics to students. At the secondary level, mainly problem solving method and deductive method (moving from general to specific, abstract to concrete and from formula to example) have been considered more useful. (NCFSE 2023, 3.6.2)

NEP-2020 Recommendations on Creativity: Point-1 of National Education Policy 2020, Early Childhood Care and Education: Foundation of Learning, clearly states that logical thinking, problem-solving skills (creativity) should be developed in students. (NEP 2020, 1.2). Point-2 of National Education Policy 2020, Basic Literacy and Numeracy: An Urgent Necessity and Prerequisite for Learning, clearly states that more emphasis must be given to counting, arithmetic and mathematical thinking throughout the secondary school curriculum. (NEP 2020, 2.4). Point-11 of National Education Policy 2020, Towards Holistic and Multidisciplinary Education, clearly states that mathematics has yielded positive results on creativity and innovation, thinking ability, problem-solving ability. (NEP 2020, 11.2). In the National Education Policy-2020, emphasis was laid on access to education, equality, quality, creative thinking, and encouraging logical decision. The fundamental principle of this educational system encourages creative, imaginative and scientific thinking. There are two major aspects of mathematical creativity: the ability to overcome fixations in mathematical problem-solving and the ability to produce divergent ideas in mathematical situations, which form the basis of the framework for promoting mathematical creativity in students. On this basis, researching and measuring mathematical creativity is to present a problem and solve it. It prepares students to perform and practice using closed problems with predetermined answers, which also develops their mathematical achievement. Mathematical achievement gives an idea of the real status of the ability and actions of the students in the subject of mathematics. The aim is to study the relationship of their creativity in mathematics by evaluating the results of mathematics.

3. LITERATURE REVIEW: The researcher studied previous Indian and foreign research on mathematical creativity and mathematical achievement. In foreign research, in the program on mathematical creativity, mathematics self-efficacy and mathematics problem solving performance of high school students in different curricular programs, Estomo and Bells (2022) stated that mathematics self-efficacy and mathematical creativity are predictors of mathematics problem solving performance in a whole group of participants. In a creative investigation of problem-solving characteristics of high school students, Kells, T. (2022) stated that divergent thinking scores increased linearly with the increase in grade level. In promoting mathematical creativity among secondary school mathematics teachers, Monahan (2021) stated that there are differences among 12 participants and they are classified into three categories: traditional, creative but hesitant and creative. In Predicting Mathematics Achievement in Secondary Education: The Role of Cognitive, Motivational and Emotional Variables, A. Bin, A. et al. (2020) stated that the mathematical achievement of female students is higher than that of male students. In the relationship between mathematical creative thinking ability and student achievement in gender perspective, Marzuki et al. (2020) stated that there is a positive relationship between the ability to think creatively with gender in terms of mathematical learning achievement. In Indian research, in the study of mathematical creativity among 10th grade students of secondary school, Sharma and Nirankari (2019) believed that government school students have more mathematical creativity than private school students. In the components of creativity and mathematical achievement among undergraduate students, Singh and Kushwaha (2019) stated that there is a positive relationship between achievement in mathematics and creativity of undergraduate students. In the mathematical achievement of secondary school students, Pandey (2017) believed that the mathematical achievement of rural students and urban students is the same. In mathematical creativity and achievement in mathematics of undergraduate mathematics students, Thiagu (2014) stated that male students have more mathematical creativity than female students. Mathematical Intelligence and Mathematical Creativity: A Causal Relationship Sharma, (2011) found that girls have higher levels of creativity than boys. The findings revealed that high school students' mathematical creativity is related to different curricular aspects, Mathematics Self-Efficacy and Mathematical Problem Solving, Creative Investigation of Problem-Solving Characteristics of High School Students, Promotion of Mathematical Creativity among Secondary School Mathematics Teachers, Prediction of Mathematics Achievement in Secondary

Education: Role of Cognitive, Motivational and Emotional Variables, Relationship between Mathematical Creative Thinking Ability and Student Achievement in Gender Perspective, Mathematical Creativity among 10th Class Secondary School Students, Components of Creativity and Mathematical Achievement in Undergraduate Students, Mathematical Achievement of Secondary School Students, Mathematical Creativity and Achievement in Mathematics of Graduate Mathematics Students, Influence of School and Home Environment on Children's Creativity but no research study has been done on mathematical creativity in secondary level students in relation to their mathematical achievement.

Therefore, the researcher has selected this research problem as the research work, the study of mathematical creativity in the context of mathematical achievement of secondary level students, the objective of which is to investigate the mathematical creativity of the students and improve it, to find out their problem solving ability and make them comfortable towards good problem solving tasks. This research will also prove beneficial in the logical development of students, it will discover many means to develop mathematical achievement through mathematical creativity in them.

4. OBJECTIVES:

1) To study the difference in mathematical creativity of boys and girls studying at secondary level.

2) To study the difference in mathematical creativity of students of urban and rural areas studying at secondary level.

3) To study the difference in mathematical creativity of students of government and private schools studying at secondary level.

HYPOTHESIS:

1) There is no significant difference in the mathematical creativity of boys and girls studying at secondary level.

2) There is no significant difference in the mathematical creativity of students from urban and rural areas studying at secondary level.

3) There is no significant difference in mathematical creativity of students of government and private schools studying at secondary level.

5. RESEARCH METHODOLOGY:

Research Method:
In the present research study, the survey method under the descriptive research design was used.
Population:
In the present research study, the population consisted of all Class 9 students studying in secondary schools located in Almora city.
Sample:
In the research study, a total of 200 students of Class 9 were selected as the sample from government and private schools of almora using the simple random sampling method.
Research Variables:
Dependent Variable - In the study, mathematical creativity is the dependent variable.
Independent Variables - In the study, mathematical achievement, gender (boys and girls), locality of students (rural and urban) and type of school (government and private) are independent variables.
Research Instruments:
Personal Information Form- In the study, personal information form has been used to find out information related to the residence, gender, type of school and mathematical achievement of the students.
In the present study, students' mathematical achievement was measured using the total marks obtained in the half-yearly Mathematics examination, and mathematical creativity was assessed using the scores obtained from the Mathematical Creativity Test Scale developed by Dr. Bhudev Singh (1985).
Statistical Techniques Used:
In the research study, mean, standard deviation, and T-test were used for statistical techniques.

Ethical Consideration:
In this research, the study purpose, procedures, confidentiality measures and voluntary nature of participation were clearly explained. Appropriate random sampling methods were used to avoid bias and ensure representative, equitable inclusion of students. School authorities and teachers were informed about the scope of the study and their cooperation was sought. All participants were treated respectfully and non-discriminatorily, regardless of gender, ethnicity, socio-economic background or academic performance. Students' identities and personal information were protected by anonymizing data and using participant codes. Findings were reported honestly and transparently, including limitations. The references are written in APA style. Finally, the research has been conducted keeping in mind various dimensions of research ethics.

6.RESULTS AND ANALYSIS OF STUDY:

1) Comparative Study of Mathematical Creativity of Boys and Girls Studying at Secondary Level:

To compare the mathematical creativity of boys and girls, the mean, standard deviation and critical ratio values have been calculated from the collected scores, which are shown in Table 1.

Table 1: Statistical Values of Mathematical Creativity of Boys and Girls

Dependent Variable	Independent Variable (Gender)	Sample (N)	Mean	S.D	Df	T-Value	Result
Mathematical Creativity	Boys	100	150	24.42	198	1.00	No Significant
	Girls	100	150	25.97			

The mean values of mathematical creativity of boys and girls studying at secondary level mentioned in Table No. 1 are 150 and 150 respectively. It is clear that the mean value of mathematical creativity of boys and girls is similar to the mean value of mathematical creativity of girls. The value of t0 for testing the significance of the difference of means is 1.00, which is less than the value of 1.96 at 0.05 level of significance of the't' table value. Hence, the null hypothesis related to this "there is no significant difference in the mathematical creativity of male and female students studying at secondary level" is accepted. Hence, it can be said that no significant difference was found in the mathematical creativity of male and female students studying at secondary level. The reason for this may be gender-neutral teaching methods in schools, materials showing excellence in mathematics, inclusive teaching system, and promotion of interactive and practical teaching techniques. On the basis of Thiagu, (2014), it was found that the mathematical creativity of male students is higher than that of female students. On the basis of Sharma, (2011), it was found that the level of creativity is higher in girls than in boys.

2) Comparative study of mathematical creativity of students of urban and rural areas studying at secondary level

To compare the mathematical creativity of students of urban and rural areas, the mean, standard deviation and critical ratio values have been calculated from the collected marks, which is shown in Table 2.

Table 2: Statistical values of mathematical creativity of students of urban and rural areas

Dependent Variable	Independent Variable (Locality of student)	Sample (N)	Mean	S.D.	Df	T-Value	Result
Mathematical Creativity	Urban	100	157.71	24.72	198	4.545**	Significant
	Rural	100	142.29	23.23			

** Significant at 0.01 level

The mean values of mathematical creativity of students of urban and rural areas studying at secondary level mentioned in Table No. 2 are 157.71 and 142.29 respectively. It is clear that the mean value of mathematical creativity of students of urban areas is more than the mean value of mathematical creativity of students of rural areas. The value of t0 for testing the significance of the difference of means is 4.545, which is more than the value of 2.58 of the't' table value 0.01 significance level. Hence the related null hypothesis "there is no significant difference in mathematical creativity of students of urban and rural areas studying at secondary level" is rejected. Hence it can be said that a significant difference was found in the mathematical creativity of students of urban and rural areas studying at secondary level. The reason for this may be lack of awareness of students, support of parents and education of parents, difference in economic status, lack of resources and fear of solving mathematical problems. Singh (1989) found that no significant difference was found between the mathematical creativity of rural and urban science students.

3) Comparative study of mathematical creativity of students of government and private schools studying at secondary level-

To compare the mathematical creativity of students of government and private schools, the mean, standard deviation and critical ratio values have been calculated from the collected marks, which is shown in Table 3.

Table 3: Statistical values of mathematical creativity of students of government and private schools

Dependent Variable	Independent Variable (Type of School)	Sample (N)	Mean	S.D	Df	T-Value	Result
Mathematical Creativity	Government	100	152.64	26.54	198	1.489	No Significant
	Private	100	147.36	23.51			

The mean values of mathematical creativity of students of government and private schools mentioned in Table No. 3 are 152.64 and 147.36 respectively. It is clear that the mean value of mathematical creativity of total students of government schools is more than the mean value of mathematical creativity of total students of private schools. The value of t0 for testing the significance of the difference of means is 1.489, which is less than the value of 1.96 of't' table value 0.05 significance level. Hence the related null hypothesis "there is no significant difference in the mathematical creativity of students of government and private schools studying at secondary level" is accepted. Hence it can be said that no significant difference was found in the mathematical creativity of students of government and private schools studying at secondary level. The reason for this may be the presence and behavior of qualified teachers in schools, uniform system of teaching and teachers teaching using simple and enjoyable methods, but in the study of Sharma and Nirankari (2019), a significant difference was found between the mathematical creativity of students of government and private schools.

7. CONCLUSION:

The conclusions of the research study are as follows –

1) The mean value of mathematical creativity of male and female students studying at secondary level is of average level. There is no significant difference in mathematical creativity of male and female students.

2) The mean value of mathematical creativity of students of urban areas studying at secondary level is more than average level and the mean value of mathematical creativity of students in rural areas is less than average level. There is significant difference in mathematical creativity of students of urban and rural areas. Hence, it is clear that mathematical creativity of students of urban areas is more than that of students of rural areas.

3) The mean value of mathematical creativity of students of government schools studying at secondary level is more than average level and the mean value of mathematical creativity of students of private schools is less than average level. There is no significant difference in mathematical creativity of students of government and private schools.

8. LIMITATIONS:

• In the study, the problem has been delimited with regard to Almora city.

• In the study, government and private schools located in Almora city have been taken.

• In the study, urban and rural students of Almora city have been taken.

• In the study, only boys and girls of class 9th of secondary level have been selected.

9. RECOMMENDATIONS:

The recommendations of the research study can be as follows-

Administrators should ensure that the level of mathematical creativity and mathematical achievement of students increases as much as possible by including various activities (curriculum, teaching methods and teaching medium) along with providing clear instructions to make the classroom environment in the school skilled with mathematical tools. To increase creativity and achievement in mathematics, logical subject should be included in the curriculum so that students develop interest in mathematics and mathematics is learnable in the simplest form. Curriculum makers should add practice work in mathematics books for learning by doing, which practice work is useful in daily life and mathematics related activities should be included in the curriculum. Teachers should use new teaching methods to increase mathematical creativity. Technology, games, smart boards and teaching learning material should be used to increase creativity. To make the teaching work effective, creative persons, artists, mathematicians should be invited and students should be given an opportunity to talk with them and efforts should be made to increase the confidence of children by inspiring the latest originality. To increase mathematical achievement, students should practice mathematics through logical question-answer. To generate interest in mathematics, use addition-subtraction, math twister, jumping game, flash cards, math fact race, etc. Students are able to imagine and invent by developing basic numerical skills and curiosity. Mathematics is used to solve creative problems in various professional fields ranging from engineering and technology to entrepreneurship and scientific research. Parents should help children understand the usefulness of mathematics in daily life. Parents should allow children to watch clocks at home, do budget work, make transactions and help them solve problems of logical thinking questions. Parents should provide a friendly environment to students so that their achievement in mathematics can also be high.

REFRENCES:

Journal Papers:

1. Abdul Hamid, Nor Haniza; Kamaruddin, Nurzatulshima. 2021. Assessing students' mathematical achievement and mathematical creativity using mathematical constructivist approach: A quasi-experimental research. *Asian Journal of University Education, 17*(2). Pp. No. 100-112. Retrieved April 21, 2024, from https://myjms.mohe.gov.my/index.php/AJUE/article/view/13399.

2. Bals, P. M. and Estomo, T. R. (2022). Mathematical creativity, mathematics self-efficacy, and mathematics problem-solving performance of high school students in different curriculum programs. *International Journal of Research Publications and Reviews, 3*(9), 286-294. ISSN 2582-7421.

4. Chamberlin, S. A., and Moon, S. M. 2005. Exposing activities as models for developing and identifying the creativity of talented mathematicians. *Journal of Secondary Gifted Education, 17*(1), p. 201. 37–47. Retrieved January 18, 2024, from [PDF] Model-Eliciting Activities as a Tool to Develop and Identify Creatively Gifted Mathematicians | Semantic Scholar.

5. Marzuki, Kahya, E and Wahyudin, Wahyudin. (2020). The relationship between mathematical creative thinking ability and student achievement in gender perspective. *Journal of Physics: Conference Series*. 1521. 032039.

6. Meier, Michaela and Burgstaller, Julia and Benedek, Matthias and Vogel, Stephan and Grabner, Roland. (2021). Mathematical creativity in adults: Its measurement and its relation to intelligence, mathematical ability, and general creativity. *Journal of Intelligence*, *9*(1):10.

7. Pandey, B. D. (2018). A study of mathematical achievement of secondary school students. Peripex - *Indian Journal of Research, 07*(01), ISSN-2250-1991.

8. Pandey, B. D. (2017). A study of mathematical achievement of secondary school students. *International Journal of Advanced Research, 05*(12), ISSN-2320-5407.

9. Sharma. 1989. A study of differential effects of mathematics teaching models on mathematical creativity of students. *Trends in Education. 19*(2), 44-50. Retrieved June 15, 2024.

10. Sharma, A. and Nirankari, S. 2019. A study of mathematical creativity among 10th class students of secondary school. *Aayushi International Interdisciplinary Research Journal*. Retrieved April 8, 2024 from 4230_8.Anil Sharma & sarla Nirankari.pdf (aiirjournal.com).

11. Sharma, R. 2011. Influence of school and home environment on children's language creativity. *MIER Journal of Educational Studies, Trends and Practices,* (12). Pp. No. 187-196. Retrieved April 24, 2024, from https://doi.org/10.52634/mier/2011/v1/i2/1614.

12. Tyagi, Kumar T. (2017). Mathematical intelligence and mathematical creativity: A study of a causal relationship. Journal of Creativity Research, 29:2, 212-217.

13. Thiagu, K. (2014). A study of the structure and achievement in mathematics of undergraduate mathematics students. 3(4). ISSN No. 2277-3398.

Thesis:

1. Monahan, Sayer H. (2021). Promoting mathematical creativity among middle school mathematics teachers. Theses, Dissertations, and Culminating Projects. 692.

Web Reference:

1. Bhakti Lok Team. Quotes in Sanskrit on Education/Vidya. Sanskrit Shlok on Vidya with Hindi Meaning - 5 Vidya Sanskrit Shlok for Students » Retrieved August 1, 2024 from Bhaktilok (bhaktilok.com).

Torrance's Theory of Creative Thinking and 5 Important Components of Creativity - Careershodh

Zone of Proximal Development

Government Report:

1. National Council of Educational and Research Training. National Curriculum Framework for School Education 2023. Retrieved July 19, 2024, from b27f04eb-65af-467f-af12-105275251546 (ncert.gov.in).

2. Ministry of Education. National Curriculum Framework for Foundational Stage 2022. Government of India. Retrieved July 18, 2024, from NCF_for_Foundational_Stage_20_October_2022.pdf (education.gov.in).

3. Ministry of Human Resource Development. 2020. National Education Policy 2020. Government of India, New Delhi. Retrieved March 20, 2024, from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_final_HINDI_0.pdf.